THE

CALCUTTA JOURNAL

OF

MEDICINE.

A MONTHLY RECORD OF THE MEDICAL AND AUXILIARY SCIENCES

सुखं भैषज्यं यदारोग्याय कल्पते।
सचैव भिषजां श्रेष्ठो रोगेभ्यो यः प्रमोचयेत॥

चरकसंहिता।

That alone is the right medicine which can remove disease:
He alone is the true physician who can restore health.

Charaka Sanhitá

EDITED BY

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VOL. XXXV.

Calcutta:

PRINTED AND PUBLISHED BY SARAT CH. RAY, ANGLO-SANSKRIT PRESS,
51, SANKARITOLA

1916.

CONTENTS OF Vol. XXXV, 1916.

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No. 11, November.

No. 12, December.

THE
CALCUTTA JOURNAL
OF
MEDICINE.

Vol. xxxv.] January, 1916. [No. 1,

PROPHYLACTIC VALUE OF PLAY.

By Charles Frederick Weller, Chicago.

According to Mr. Dooley: "Play is work that you pay for the privilege of doing." Such definitions are possibly important because it is not always easy to say what you mean. In Birmingham, Alabama, I was told that when Henry Grady went to Boston and delivered a great oration one of the Boston papers described him as a "battle scared southerner." Mr. Grady wrote that he was not scared and he trusted that the newspaper would correct the statement. Next morning the editor said he hoped that every one understood that what they intended to call Mr. Grady was "bottle scarred."

When you put such a subject on your program as the "Prophylactic Value of Play," the layman runs for the dictionary. If he has none at hand, he is in a state of mental confusion. But I believe your purpose will be met if I tell you the true story of a gang of diseased and deteriorated young men who were cleaned up physically and spiritually by playgroud influences.

In Pittsburgh, five or six years ago, there was a gang of eight young fellows averaging eighteen years of age who called themselves the "Eighteen Hour Gang," by which they meant

they loafed eighteen hours and slept six. These fellows were a dominating influence in their neighborhood. They were practically drunkards at that early age. They were loafers. All had juvenile court records or worse. It was learned later that they were all rotten with venereal disease. They were waste products of industrial Pittsburgh. They spent Saturday evenings in houses of ill repute and Sunday afternoons in an old box car clubhouse where they spent the time going over the lewd stories they had picked up on Saturday night. They were about as completely spoiled for any civic usefulness as any gang you could find anywhere.

About five or six years ago there came into this region a young fellow named Ashe, a gentle-acting man who wore glasses, who had been a school principal in Allegheny county. As the eighteen hour gang looked him over they thought he looked "easy." Two weeks after he took charge of that playground center, he was showing the boys some tumbling stunts in the little "gym." One of the gang spat a big pool of tobacco juice on the mat where Mr. Ashe had to roll in it. He got up and ordered the gang to throw out their quids. By preconcerted arrangement, they did throw out their quids; nearly all struck Ashe, some of them in the face. He got mad,—in the plain old garden variety of "mad." He locked the door and sailed into those young men with his fists. The fellows averaged as large as Mr. Ashe. They fought for a long time—they fought fairly. They gave Mr. Ashe a black eye and broke one of his teeth. But he distributed a number of black eyes, and, finally, the gang felt they had had enough and they went out quietly. Ashe next morning resigned. He said he had been a failure,—he had used force, which was against the rules. The superintendent of the playground system of Pittsburgh sent him back on the job saying there was a time for righteous indignation.

As Ashe came back he saw the gang waiting for him; his heart sank; he said to himself, "Have I got to go over it all again!" But the boys had come to make peace. They wanted Mr. Ashe to teach them to box. Through boxing, basket ball,

and other activities of that playground center, Mr. Ashe was able to restore and revive the energies that these young men had wasted by idleness, vice and drink. As those energies were restored and Mr. Ashe established an influence over the young men, he was able to get them into employment.

Now, five or six years later, when I met this crowd of boys last summer, seven out of the eight were employed at two to four dollars a day, each. The oldest is driving an auto truck for the board of education and the foreman says he never had a more satisfactory worker. Only one out of the eight has failed to make good. He makes good part of the time and then goes off on a spree. His father is a drunkard; his mother has a bad reputation; he lodges in one of the "hell's kitchens" which characterize that part of Pittsburgh and it is no wonder he has not yet won his fight. Seven out of the eight have been transformed from civic liabilities to assets. They have been made honest, worthy men and useful citizens. The one thing that did the work for those fellows was the playground movement, the recreation center, the work of which Mr. Ashe was the head.

When I told the story to a hard-headed business man in Omaha, he said: "Huh! that wasn't the play-ground—that was Mr. Ashe" I answered: "Huh! that is exactly what we are trying to make clear throughout America. The playground movement is not a question of space or apparatus it is always a question of Mr. Ashe—a personal leadership that puts vitality and power into your playground—it is always a question of supervision."

Of course I am not talking of "playgrounds" simply. I am not talking of play apparatus alone or even of play space. I am trying to talk of the big problem leisure,—what is to be done with the growing leisure time of our people? It has been said that 80% of all the crimes committed are leisure-time crimes, committed between six and eleven p. m. A superintendent of mines in Arkansas said that for two or three days after each pay day he had not men enough to run his mines; their

leisure meant drink and idleness. You know it is not in the hours of work or in the hours of school that people go wrong, It is in the leisure hours, when they are turned out to express themselves freely, to do the things they want to do. It has been estimated that every man and woman on the average has thirty-five hours every week of idle time, not including meal time. If you take into consideration the vacation time of all children, that thirty-five hours per week is not excessive. On this basis, a town of 5,000 has 175,000 hours of leisure each week to account for; the United States of America, with 98,000,000 people, has 3,430,000,000 hours of leisure every week.

My little boy gave me a very significant illustration of this question of leisure and of the play instinct and what power it possesses. This happened when he was five years old, when we had a summer camp where it was his regular work to keep the wood box filled. The wood was chopped; he had only to pick it up and carry it to the wood box, but it took his mother and me and others of the campers to see that he did it. That was work. But that youngster would take an old, heavy, rusty wheelbarrow that I hated to touch and run it up and down a steep hill, the sweat streaming down his face, because that was an engine and he was the engineer and that was *play*. Now, he was trying to teach me that if I have the wisdom to take hold of my boy by what he calls play, by his native instincts and interests, I shall have him where the future boy is being made. I say the supreme question is not simply one of apparatus or space. The problem of social prophylaxis is not simply a problem of tenement houses and slums. One of the greatest, one of the most fundamental questions of the day is whether America is going to change her three billion weekly hours of leisure from liabilities to assets.

There are now 342 American cities which have supervised play,—playgrounds supervised. They employ 6,318 play leaders, a new profession. They spent last year $5,700,225.81 in addition to bond issues of $2,458,800. These cities include

Chicago, which has $15,000,000 invested in playgrounds. You should visit some of these wonderful playground parks. Call up the park commissioners and they will tell you how to go out to some of these wonderful playground parks. Chicago leads the world in this matter of small-park playgrounds.

But I would have you note particularly that forty-one cities included among the 342 cities with supervised playgrounds have less than 5,000 inhabitants each. Sixty-four of the 342 cities have from 5,000 to 10,000 population; sixty-five from 10,000 to 20,000 and seventy-eight from 20,000 to 50,000. Altogether, 248 cities of less than 50,000 population have supervised playgrounds.

I would like you to believe that the problem, especially of the next ten or fifteen years, the leisure-time problem, is even less a problem for the big cities than it is for the smaller cities and for rural communities.

There are 300 cities in America definitely in danger of what I like to call "autovaccination against playgrounds." In other words, they have no supervision for their playgrounds and they are consequently in danger of having such poor playgrounds that they will become discouraged and soon have none at all. In Kenosha, for instance, where playgrounds were started some years ago, the neighbors found the playgrounds so objectionable, there was so much criticism, that the playground movement was checked for years until lately the Playground and Recreation Association of America helped to develop in Kenosha a system of supervised play. One of the early playgrounds which I helped to open in Washington, D. C., was closed as a public nuisance, until we learned to supervise it more adequately.

In short, it is not easy to solve a community's leisure-time problems. I suppose one of the best things I have tried to do was to run a "saloon" in Washington. We fitted up a vacant corner store with red wallpaper, brilliant lights, an old grand piano, boxing gloves and tables for games. We ran it like a saloon with a liberty-hall atmosphere, and we had each night

from fifty-five to sixty-five of the roughest, most ignorant young fellows who called themselves "wharf rats" and 'rummies" and were occasionally in the police court and work house. When I became too busy and was obliged to delegate our temperance saloon to someone else, we employed a man whose ideals were evidently higher than mine; he tried to standardize the fellows too fast to do them good, and they "evaporated."

When you take hold of the leisure-time problem in any community you find it is possible to make a great many serious mistakes. For instance, you can go into some of the smaller towns and find a great building has been erected, double front, three or four stories high, 125 feet deep or so, built for recreation purposes. The philanthropic interests and funds of the town are exhausted and you find the building empty, useless, because there had not been an effort to study the community as a whole and to adjust the recreational activities wisely and broadly to the real needs and desires of the people.

Up in Minnesota last Saturday a school superintendent said to me: "You know I have noticed that the boys here do not shoot marbles as we used to. With us it was a game of skill. Now the boys simply make a hole in the ground, stand off and throw the marble into it." Two Minnesota men told me of that change in marbles. In Pittsburgh a play leader told me of the same thing, the degeneration of the old game of marbles.

I wonder if you men and women have noticed what has been happening to the leisure time of children. This game of marbles which has lost its skill and become a game of chance is merely an instance illustrating a general deterioration. Take the games you used to play, "Pull away," "Run, sheep, run," "Tag," and twenty others; then go around your communities, wherever you come from, and find if those games have not very largely disappeared. You know chores have disappeared, the snow shoveling, wood chopping, horse feeding, coal carrying; those unpopular occupations of our childhood have disappeared. I wonder if you have appreciated the fact that all through this country there has been a definite loss of vigor, a loss of the

fullness and wholesomeness of physical life. In Minneapolis about a week ago a man who is an expert on vocational training, on industrial schools, who came from Massachusetts, where he was a leader, made the statement that America, which has boasted of its industrial efficiency, has been definitely losing some of that efficiency. I do not know the facts in this case, but to my thinking we in America need to be roused out of our complacency, to realize the fact that there has been a considerable loss of the drive and power and vigor and sweep of life.

In Lawrence, Kansas, a college town with 13,000 inhabitants, the average weekly attendance on picture shows is 13,000. In Kansas City, with 250,000 population, the average weekly attendance upon the "movies" is 449,000. Add to the picture shows the dance halls, pool rooms, vaudeville and other theatres and you have in Kansas City an average weekly attendance of 724,000 upon "Commercial Recreation." These are examples of the general desire for passive amusement, to be entertained instead of engaging in active, muscle-building, character-building play.

In these days, when our country is facing the possibility of war, we might well remember that Wellington said of a battle, which occured just one hundred years ago, "The battle of Waterloo was won on the play fields of Eton." We need to ask ourselves whether we are doing what we should in this country to build up an efficient citizenship. You physicians should help us to arouse a public interest in "the prophylactic value of play,"—using the word "play" for this bigger thing, this effective development of health, vigor, initiative, and "team play" which are best cultivated through organized games.

I had an illustrative experience at the Industrial School for Girls at Geneva, Illinois. There they gather the bad girls of Chicago and other Illinois towns. When Mrs. Weller and I were there nine years ago, there were 350 girls in this reformatory, divided into ten groups or "Cottages." The "Honor Cottage" group had their playground close to the tents in which Mrs. Weller and I were camping. I noticed the girls

trying to play a queer kind of baseball. It was such a poor game that it held their interest for only a few minutes. Five or six girls would try to play but soon stop in disgust or in a tangle. Their playground time was mainly devoted to crocheting, walking up and down, sitting on the seats or grass, and gossiping. They were enthusiastic when I helped them to lay out a diamond, to try a real baseball game and to organize a nine. Shortly I was very much in demand and I had the opportunity of organizing ten baseball nines in the ten cottage groups of 350 girls. That meant that at least eighteen of the girls in each group of thirty-five had some vigorous play throughout the week because the official Cottage Nine practiced against a scrub nine or unsuccessful candidates for the team. On Saturday afternoon two cottage teams played against each other. The entire school looked on, gave their cottage cheers and developed some of the old college spirit which has done so much for some of us who are here to-day.

In the final game for the championship of the school the "Hospital Cottage" team was matched against the "Honor Cottage" and the game was a fierce one. The catcher of the "Hospital Cottage" team refused to wear the catcher's mask or the catching glove because it would interfere with her holding the ball. As the game went on and the girls were sliding for base and forgetting everything but the game, the pitcher, growing fiercer and fiercer, pitched a terrible ball and it went through the catcher's hands and struck her in the face. It gave the girl a severe nosebleed and broke one of her teeth. As umpire I advised her to give place to some one else. Instead, she tied my big handkerchief around her head, over her ears and under her nose to catch the blood; she spat out her broken tooth and went on and won the championship of the school.

Now, remember that these girls had something that the young people in your towns and cities may not have. Every group had a playground. Every group playground had a kind of supervisioon, for the house mother came out with the girls and she was a cordial, kindly woman who wanted the girls to

have a good time. But the girls did not have vigorous play because they lacked the leadership which I had the pleasure of providing that summer. That leadership, that straightening out of difficulties, that help in organizing, that instruction, encouragement and leadership in play, is the keynote to the development of a vigorous play life in this country.

Consider that play leadership applied to the young men of St. Louis, Missouri, and you find a large "Soccer" football league and a great baseball league,—standardized, wholesome games, no professionalism, no gambling, no profanity, but clean, good sportsmanship. Many hundreds playing and thousands looking on. Conceive of that sort of leadership being applied to the young women of a community, as I saw them on the top floor of the City Hall in Columbus, Ohio. There a large room has been turned over to the women of the town and you can see forty, fifty or sixty of the "Business Women" or working women each evening learning "team play" or co-operation and building up initiative and resourcefulness as well as health and working power. Conceive of this play leadership applied to all of us, old and young, male and female. See a group of middle-aged business men playing volley ball in the Y. M. C. A. and you will think them a lot of joyous young lads. Let this recreational leadership be applied to the schools of your communities as it is to the schools of Milwaukee. There the buildings are open for evening activities which include splendid neighborhood dances every Saturday night; choral and orchestral musical organizations; dramatics; athletic sports, study classes; lectures; picture shows; and the bringing of families together in recreation. Competing with the 832 pool rooms of Milwaukee—of which over 800 are connected with saloons—the young people are even given opportunities to play pool in the school centers under wholesome influences.

I have tried to give you some little vision of why it is that we of the "Playground and Recreation Association of America" have for nine years been endeavoring to affect American civilization through the vital leisure-hour influences—why we have

had field men, like Mr. Settle and myself, taking hold of the towns and cities, one by one, and sticking to each community, fourteen weeks in Milwaukee, ten in Richmond, fourteen in Birmingham, until that community has developed such a recreational leadership as I have tried to picture, systematically changing its leisure hours from liabilities to assets.

I want to tell you one more story, of "Piggy" Smith. He was a little five year old boy who lived back of "Neighborhood House," where Mrs. Weller and I lived for five years, in Washington, D. C. "Piggy" was very dirty and ragged and a very bad little boy. His mother seemed to have no affection for him. When her latest baby came, she said she did not know why God sent her another baby; she had five already and they were all bad—especially "Piggy." In truth, "Piggy" was pretty bad; he used to spit on our wrestling mat, and, when we argued against it, he said "Huh! guess I've got a right to do it—I paid my penny." He would throw stones at the girls in our back yard playground and when Mrs. Weller went out to remonstrate, "Piggy" ran to the alleygate and shouted back "Damn Wellers!"

A young woman volunteer came down one day to take a group of children to the zoo for a day of recreation. She was warned not to take "Piggy," "cause he's so bad!" but she took him. He was not only scrubbed, beautifully scrubbed, for the great occasion, but a big hole which he had in the knee of his stocking was repaired by taking grocer's twine, running it round the edge of the hole and drawing the stocking into a pucker like a whistle. "Piggy" had a good time that day. Miss Stanton made a great deal of him. She discovered his name was Charlie and called him that. In the evening, bringing her little group into the big front hall at Neighborhood House, Miss Stanton said: "Mrs. Weller, I do wish you had been with us today, we've had such a good time, and I wish you had seen little Charlie Smith. He's been so good! and I do think he's so sweet." And, suddenly, she knelt and kissed him. I cannot describe, but I never shall forget the sudden,

marvelous look that came over that little boy's face. A beautiful young lady had called him good and had kissed him. It seemed to us that for many months thereafter, in the kindergarten and on the playgound, little "Piggy" never lost entirely that new light which sympathy had kindled in his over-darkened soul.

Something like that, it seems to me, is the spirit of our playground-recreation movement. We are trying to see the children of America as they really are, to get the bandages off our eyes and the preconceptions out of our aging hearts, to see our national wealth of young life as it really is. And, then, seeing it truly, I think we are trying through the play and recreation movement to do what Jesus said was both the purpose and the method of his life when he said, "I am come that they might have *life*, that they might have it more abundantly."

DISCUSSION.

Mr. Thomas Slater Settle, New York, Field Secretary, Playground and Recreation Association of America: Before we attempt to discuss the various papers, especially the first one, Mr. Weller's, on behalf of the Playground and Recreation Association of America, I want to thank you for the opportunity given Mr. Weller and myself to meet you, our partners in the great business of promoting play and recreation. We feel we are the partners of you men and women who are working along the line of preventive medicine and we are glad you have put this subject on your program. This is a way of making people healthy as well as making them happy.

After hearing Mr. Weller's address, and hearing the two splendid papers by the members of the profession, I think my speech is very much in the same state as Jimmie's trousers. When Jimmie thought he ought to put on long trousers, he went over to a neighboring store and got the merchant to show him several pairs of trousers, one of which was just what he wanted, except they were about six inches too long. The merchant said "That is all right, your mother can fix them,

and I will throw off $2.00 on the price." The mother was busy and said, "I cannot fix them tonight, I will fix them next week." Jimmie wanted to wear them to church, so he went to Sister Mary and she was busy, and said, "No, I cannot do it now." So he went to his grandmother; she said, "Yes, I can fix them for you." She cut off six inches and laid the trousers on the bed. In the evening along came Sister Mary, saw the trousers, and thought: "Jimmie will be so disappointed if he don't get his trousers," so she cut six inches off the trousers and laid them back upon the bed. After a while along came the tired mother and she said, "I don't want to disappoint Jimmie," so, tired as she was, she cut six inches more off of the trousers. The next morning, when Jimmie put them on, they looked more like a track suit than trousers. In the same way all the good points of the speech I might have made have been gradually cut away by previous speakers.

So I will only emphasize a few points that have been brought out. Mr. Weller touched upon commercial recreation and he did not have time to develop the idea that our Association stands for. We believe that commercial recreation can be an asset to any community. Dance halls, pool rooms, and other forms of commercial recreation need not be places that will drag our young people and old people down, but can be turned into community assets. We know the old adage that we should eschew evil; and so some of our churches rule that we must not go to this place or that, and not indulge in this or that activity, —not because they are evil, but they lead to evil. After awhile we develop the idea of competition; the Y. M. C. A. competes with commercial recreation; the churches are opening their parlors for social uses. Now we go a step further and propose the supervision, the regulation of all forms of commercial recreation.

I want you doctors to understand what I mean. There was a time when every man looked out for his own health. Now, the doctors are demanding that when there is a manure pile it must be cleaned away because it is a public nuisance. You are

demanding that the groceries must sell nothing but very carefully inspected food. Now, in the same line, as there is a place for commercial recreation, it is as much your duty to see that citizens abate any nuisances in connection therewith, so that the commercial recreation shall be pure, as it is to see that the manure pile is cleaned away. It is your duty to see that whatever is handed out in a public place is morally fit, as it is to see that, that which is handed out over the grocery counter is physically fit.

I have seen this worked out all over the country. I knew a place where the dance halls were a nuisance. The Commissioner of Police put through several good sensible regulatory ordinances. One was that no dance hall should be within fifty feet of a saloon. He closed up the red light district. The dance halls went out of existence. Now there is not a single one of these places in that city. The local pool rooms were also a place of evil. The ordinance was passed that no pool room should be run in connection with a saloon. He had the police tear down every indecent picture. The pool rooms were turned into a valuable asset. Bear that in mind as you go to your different cities, that we must make commercial recreation an asset rather than a liability, places where the people get pure milk and clean food, instead of adulterated food. Above all, no matter how good this passive recreation is, it needs to be superseded by active recreation. What we must do so to get every man and woman in America out into recreation in God's out-of-doors every day in the year. That is the object of our Association, that over 98,000,000 people every day in the year shall get out into some form of clean, wholesome recreation. Then the doctors will not have very much to do.

Mr. Weller mentioned the fact that there are 342 cities having supervised playgrounds. I want to say they are not the large cities only. In one of the smaller cities, some time ago, I spoke to some teachers. When I got through, one man got up and said: "Mr. Settle, I think you have insulted us. You have compared our fair little city with its clean atmosphere and won-

derful climate, to New York, Chicago, and other unwholesome towns." I had to tell him it was not for those alone, but for every town. From the Appalachians to the Rocky Mountains appropriate recreation is needed as much as it is needed in the slums of New York or Chicago. The need is not confined to large or small cities, but wherever there are people with leisure time on their hands supervised recreation is needed. It is not needed in the slums alone.

We have had some experience and now, whenever I am called to map out for a city the playgrounds needed, and we can only put in a few, I am in favor of putting some of them in the best parts of the city so that, seeing them, resourceful people will be willing to assist in putting them into less fortunate districts. In Birmingham one of the best districts of the city has a playground in which we have had our largest attendance. Children of parents worth $150,000 to a million dollars come out to play, some of them coming from lawns that were so attractive they could not play on them, or if they could play there, they had to play by themselves.

Something was said about the relation of recreation to education. In mapping out a city's playgrounds there is only one system upon which to plan them. Every school needs a playground. When I go to a city and they have a system of forty or fifty schools and only a few little playgrounds, I realize they have only begun to grapple with the problem. The school yard of the future is going to have at least two city blocks with the school located not in the center, but located at the end, where a front yard can be kept with flowers and grass and beauty, and the other part can be devoted to playing vigorous games. The children can go out at different hours, for one of their regular periods—arithmetic one-half hour and play another half hour, etc. Then when that ground is provided with apparatus and supervision, the fathers of those children, as they come back from the office, store or factory, can stop in to play a game or have some kind of recreation. It is coming to the older people as well as the children.

I believe in working on the basis of a broader educational program. Just as the public is learning we must have schools for adults, so the public school is going to realize it must give recreation to adults. Then each school building will have on the basement floor a gymnasium, auditorium, swimming pool and shower baths, used by the children during the day and by the older people during the evening, one central plant that will furnish recreation for the community. At little added expense we can furnish recreation for all. The recreation of the future is going to gradually revolve around the school plant.

This is a movement for adults as well as for children We often hear about people failing in business and I believe you doctors will bear me out when I say there are more failures among business men from lack of play than from too much work. I learned at college that too much work made more failures on examination than too little, that those of us who stopped at five o'clock and went out and played tennis stood a better chance for examination than those who studied right through to the time of examination.

In one city recently I ran across a man, an architect, who had broken down I lived next door to him, and one afternoon I went out to get some recreation. I gathered together some of the neighborhood children and asked, "Can you children get up a game?" Those children had been going to school where they were teaching different kinds of games. They said, "Yes sir, we can play 'Patch Ball'." I said "Teach me how." So we got out a ball and had such a pleasureable game that the architect next door was drawn out of his shell.

This architect was one of the most brilliant men I have known, stands high in his profession, yet he had gone from a a position of great prominence to where he was doing practically nothing, because he neglected recreation. He began to have quarrels with people for whom he was so irritable they would get some one else. He had rheumatism. He had become a broken down misanthrope. When he saw me out playing with those children, he thought, "If one man can do it, another

can." He came out and played with us,—patched. Every day he came back with more enthusiasm. Finally he had his whole family out for a picnic and they took along a bat and ball. I saw him afterward and he said, "We had the greatest time on that picnic that ever was. A fellow sits around so long that he needs a crutch. I did not mean half the bad things I said about my neighbors." That man who was a pessimist and a knocker is getting started toward optimism and success. His failure was due, not to lack of ability, but to lack of play and recreation. It is the children of his family who are going to lead him back to success if he ever gets back.

So, through the playground-recreation movement, I believe a little child is going to lead us to a richer and broader life in America.

Dr. J. E. Gilman, Chicago: A child has to learn everything through play at first. When the boy gets a little older he takes a piece of broomstick and it becomes a wonderful horse. The girl takes a rag and ties a string around it, and it becomes a baby. Or the boy takes a wheelbarrow, and it becomes an engine. Everything is growth. The amount of work that a child does, or the amount of play that he does bears some resemblance to the mind of the boy at the table. His mother was cutting the pie for the family. "Is all that for Pa?" "O, no, that is for you," his mother said. And he said, "What, that little piece?" When I was a boy we got to work to build a snow fort. In one evening we rolled up the snow until we had a big fort. If we had had that amount of work to do, we would have thought it was awful, but it gave us exercise and we wanted to do it, and when it was done we were tired and went to sleep.

The physical, mental and moral growth of a child is largely built up by these measures, more so than it is by work that might be given to him to do. I think these playgrounds that are being built are wonderful things in the way of keeping children out of mischief. It gives them something to do that is pleasant and harmless.

Dr. R. H. Street, Chicago: Dr. Cobb asked me to open the discussion on his paper, and I very promptly said I would, without having seen the paper. I rather reminded myself of the colored lady who went to the telephone and heard voice saying, "Sister Jackson, will you marry me?" She said, "I sure will, Niggah; who is speaking?"

Dr. Cobb, in his most able and scientific essay, has brought to your notice one of our most valuable remedial and prophylactic agencies, play. He has told you everything about it except the dosage and the frequency with which it should be administered.

It is true, as he says, that the tendency for more systematic and better play has increased, but with it the Almighty-dollar-worship has also increased, making it even more essential today to insist upon regular play than ever before in the history of our country.

The dose should be as large as the patient can tolerate without marked interference with his daily business and study. It should not be prescribed according to the homœopathic principle, *i.e.*, the smallest amount that will effect a cure, but should be given in large daily doses with an extra amount on holidays. In other words, every one, especially the business and professional man, should so arrange his affairs that a part of each day be set aside for healthy out-door exercise. A good working formula is that the worst out-door air is better than the best in-door air. It is the physicians' province to so advise his patients. It is a mistake to postpone little daily pleasures for a big one of the future, such as an annual vacation of from two weeks to a month.

The great trouble with many of us is that we take life too seriously. It is really a beautiful gift which should be made up of three parts, equally divided between work, rest and play, devoting eight hours of every twenty-four to each.

Dr. George G. Caron, Detroit: It is hardly possible for me to criticise these papers. I endorse very cordially what has

been said. In listening to the various speeches and papers, we often wonder why this phase of preventive medicine has not been taken up more thoroughly before. It is eminently proper that the medical profession should take up this question, but it should not be participated in by them as charity or as philanthropy. Medical men have to supply bread and butter to the family, and they should be recompensed, and from their education they should naturally be better fitted for this line of work than any other class of people.

Dr. Cobb's plea has brought to my mind many phases of enlargement upon the topic of metabolism. I would like to know and see the effect of play immediately after a meal, what effect it has upon digestion, what possible effect it might have upon elimination, especially of intestines and kidneys. This would open up a line of investigation.

It opens up the necessity of individualizing each child before he enters the playground. That may seem for effect and unnecessary, but I have in mind a serious condition from allowing a child to engage in a contest of play who had had tonsillitis followed by organic heart lesion, and this child engaged in a football game, which resulted seriously. That brought to my mind the idea of individualizing in the kind of play and the length of time the child should engage in play,

Dr. John F. Edgar, El Paso, Texas: It is nice to have pure food and water and air, but we as homœopathicians represent a law of nature. You can make play as teachable as the lesson that precedes and demonstrates that lesson and the impression will instruct. There should be a teacher of play as also a teacher of elocution, of music and other things. A correctly educated teacher can overlook the play to a certain extent, that will demonstrate the lesson of that day, and it will be impressed on their minds. You know when reading the history of Hahnemann's life, he had "teaching lessons." My father also used small notations and the impression, *via* the vision as also the hearing, made it more easily remembered. If you have a teacher, a so-called professor of play, he should follow the lesson

that has been given and make the play similar to that. All things should be supervised.

Dr. Edward Beecher Hooker, Hartford, Conn.: The keynote of the recreation movement today is leadership, as has been emphasized by the two experts who have spoken to us. It is not sufficient to provide simply the facilities for recreation—there must be leaders. If you keep track of the programs of the meetings of societies for correction and charity, you will find this year that note of leadership emphasized. It is interesting to note that our medical societies also are advocating systematized recreation today as a part of the great movement of prevention. I have had some opportunity for the investigation of social problems and there is no question whatever of the prophylactic nature of recreation in keeping boys and girls from getting into bad personal habits and habits of vice.

I believe, although Mr. Weller intimates to the contrary, that games are played just as much now as in the past. (I regret duck-on-the—rock, prisoner's base and that type of game we used to play when the cities were smaller.) Football was never played so enthusiastically as it is today. There are matches in Hartford between teams from every district school which excite great interest. The recreation which girls now enjoy is more general and of greater variety than formerly—tennis, basket ball, golf, such sports as these. And as for adults, it is remarkable the way the parks are made use of for golf, tennis and baseball showing the hold that recreation has obtained upon the people in general.

A group of men in Hartford were greatly stirred by the "men and religion" movement a few year ago and determined that the impetus gained then should not be lost. We organized in one of our churches a social service committee, which has been in existence ever since. We divided a portion of the city into sections and each one of us on that committee has a street over which he has voluntary supervision. We have no official capacity, but, so far as in us lies, we know what is going on in our streets. I have such a street and I know the condition of every

back yard on that street, and how many saloons there are and where located. When there is an attempt to put a new saloon in this district our committee investigates the matter and so far has prevented any increase in the number of saloons. We know where the playgrounds are and where they are needed.

The difficulty is to get convenient playgrounds. In most cities they are provided somewhere, but often they are too far away. I notice that in New York they are keeping traffic out of certain streets and letting children play in them. A city which is asphalting its streets should asphalt first those in the poorer districts. If the children are to play in the streets, give them asphalt to play on and an improvement in their back yards will follow.

A concrete illustration of the moral prophylaxis of recreation came to my knowledge recently. It is regrettable, but nevertheless true, that some boys and girls form bad habits and indulge in evil practices when very young. It is not infrequent that boys and girls make attempts at sexual intercourse before the age of puberty. In a back yard, which was enclosed by a high fence, in an overcrowed district, a group of boys and girls were accustomed to play. A man working in a tinshop was able to look directly down on this yard and observe what was going on in it, while the actions of the children were hidden from persons on the ground. He saw these boys and girls—some of very tender years—amusing themselves by having sexual relations with each other. One girl in particular, larger than the others, was very popular with the boys. The man was much concerned by these practices and took the pains to learn who the girl was. He went to her mother and told her what was going on. What do you think she said? She said, "Oh, let her have a good time now while she is young—she will have trouble enough when she is older." Such a mother deserved such a daughter. Soon afterwards a well-equipped recreation ground was opened close by. This back yard was emptied and the vicious practices ceased, the boys and girls preferring wholesome games in the public playground. This well illustrates what recreation will

do to prevent vice.—*The Journal of the American Institute of Homœopathy*, November, 1915.

CASES ILLUSTRATING THE DANGER OF SALVARSAN AND KINDRED PREPARATIONS IN THE TREATMENT OF SYPHILIS.

By William Olin Forbes, M. D.

In presenting these cases I do not wish to be understood as believing that all cases of syphilis are injured by the administration of salvarsan, neo-salvarsan or kindred arsenical preparations. The cases I am reporting are but a few of those that have come under my observation, since these preparations have been in use, cases that have been seriously injured by their administration.

Case F—582—Age 38, Tabes Dorsalis.

This patient presented a typical case of tabes with the initial lesion twenty years previous. He had no secondary symptoms, had but little treatment and was advised at that time to wait until something developed before continuing his treatment.

Nineteen years later he began to develop symptoms of locomotor ataxia, and was advised to go to Hot Springs, Arkansas. When he consulted me, I confirmed the diagnosis beyond all doubt. I prescribed the tonic tub bath, temperature 95 to 97 degrees, ten to fifteen minutes, followed by shower and spinal douche, with the temperature reduced to 70 degrees. He was given such other treatment as was indicated, which in this case was mercurial rubs, iodid of soda, 30 drops after each meal, and 1/40 grain of strychnia before each meal.

The improvement was remarkable; after eight weeks he returned home for the holidays, with instructions to return in March for another course of treatment. In December, while at home, he was given an intramuscular injection of salvarsan. This was repeated the following March and again in May. In July I saw him at his home and found that in every respect his condition had become much worse. He was partially deaf,

totally blind, could not walk without assistance, and was using a drug to control his pain. He has since died.

This case would have progressed nicely under the old form of treatment, and would probably have been living today had he not been given arsenic.

Case L—371—Age 42. Incipient Tabes.

This case consulted me March, 1911. History of the initial lesion ten years previous. No history of secondaries. He had taken but little treatment and had been pronounced cured.

I prescribed tonic baths, put him under mercurial inunction and gave him iodids, with such other remedies as were indicated from time to time. He remained in Hot Springs for six weeks and returned home very much improved. I gave him a letter to a physician outlining the treatment I had given him, advised him to take interrupted courses of treatment for a year and return to Hot Springs the following fall. He only kept up his treatment a short time and was advised by a friend to take salvarsan, which was supposed to be a quick and sure cure.

He was given an injection of salvarsan, which was repeated three months later, after which time he was given a sodium cacodylate injection in the buttocks each week for twelve weeks. He became very nervous, despondent and depressed, developed severe pain in his back, in his arms and in the left leg between the hip and knee; lost considerable weight, his bladder became tight and he was very constipated.

He returned to Hot Springs with the above mentioned symptoms. The diagnosis at this time was a well established case of locomotor ataxia, with too much arsenic.

Upon examination I found four or five large nodules in each buttock, more or less painful to touch. He was again put under treatment and responded very well for a period of four or five weeks, then one afternoon he slipped and fell, striking heavily on the left buttock. The following day the pain in the left leg had disappeared, but he was unable to use his left thigh as formerly.

It seemed very weak and forty-eight hours from the time of the fall the flexor muscles of the left leg were totally paralyzed. This gradually extended to the right leg and by the fourth day he had no use of either limb.

I continued the inunctions and iodids, pushing the same to the point of toleration, gave him tonic baths and light massage. He improved some, but was not able to walk alone when he returned home. I have recently heard he was in a very serious condition and no hopes for recovery are offered. Rupture of the nodules due to the fall, followed by free absorption of arsenic, is undoubtedly responsible for the paralysis in this case.

Case H—477—Age 53. Tabes.

Gives no history of initial lesion.

In January, 1914, he began having shooting pains in feet and legs. Consulted his family physician, who advised a Wassermann. The same proved positive and he was given seven injections of salvarsan and neo-salvarsan, three of the former and four of the latter, covering the period between July, 1914, and January, 1915.

In March, 1915, he consulted me with the following objective and subjective symptoms: Eye and knee reflexes totally absent, pulse 96; had lost sixty pounds in weight in the past eight months, was very deaf; complained of pain in legs, arms and chest; stiffness in the muscles of the legs; had difficulty in going up steps; was anemic; functions were all inactive, and patient was very despondent.

He was advised by his physician to go to Hot Springs and take the "sweet baths to boil out." He had taken a few with temperature 100 degrees before he consulted me. I immediately reduced the temperature to 92, followed by shower and cold spinal douche; also advised inunction of mercury and iodids and such other remedies as were indicated.

He showed no improvement, was gradually becoming weaker and returned home without any benefit.

These are just a few of the cases that have come under my observation in the last few years, cases that I believe have been materially injured by the use of arsenic preparations.

It is not customary to have such results as these from the old time treatment, and I am positive that we get more lasting results from the use of the mercury, iodids and baths than we do with the interrupted doses of arsenic preparations. You will notice in all of these cases there was very little early treatment and none of them presented secondary symptoms.

It is my experience that it is in this class of cases that we have the most serious late results. Almost invariably the nervous manifestations are found in cases that have nothing but the primary lesion, with little or no treatment.

I do not wish to be understood as saying that there are no cases in which the arsenic preparations are not of some benefit; however, I wish to go on record as believing that they are far from specific and that their indiscriminate used has caused more harm than good in the treatment of syphilis.

Discussion.

Dr. Ogle, Indianapolis: I was somewhat glad to hear the Doctor modify his report of cases, just at the last, when he made the remark that he didn't wish to go on record entirely as condemning salvarsan in the treatment of syphilis. It occurs to me that the Doctor's paper should have been entitled, "The Treatment of the late Manifestations of Syphilis," since that is what he had to deal with very largely. We all know that in all of our locomotor ataxia cases we can many times stay the progress of the disease. In fact, cases which have had very little treatment for months at a time will have a remission from their symptoms and improve. I have three cases on hand at the present time that get very little treatment. They refuse it, and they have improved quite a good deal by measures that they employ in taking care of themselves. In these cases that the Doctor had, the Doctor asks a very pertinent question, in my

opinion. The cases that the Doctor reports that were much improved undoubtedly indicate that the treatment they received was beneficial. Whether or not they had reached the limit of their improvement under such treatment must, of course, remain problematical. As to the use of neo-salvarsan or salvarsan in the early stages of syphilis, I certainly would feel very much handicapped if I had not the advantage of using it at the present time. My experience probably is not as extensive as some, probably only six or eight hundred injections that I have given, but my experience has been very satisfactory. The intramuscular injection of either the salvarsan or the neo-salvarsan I have given twice and those are the only two cases in which I have had any trouble whatsoever. I prefer the intravenous and I have gotten just as good results from the intravenous of salvarsan or neo-salvarsan in the late manifestations as I have in the earlier ones.

Dr. Collins: I am a friend of salvarsan and salvarsan has been a friend to me. I am also a friend of mercury and mercury has been a friend to me. If I should have to part with either one I think I could best part with salvarson and would stick to old mercury, but why let go of either if they are good? We have simply added one more good remedy to our armamentarium and I shall continue to use both.

I prefer to start my treatment with mercury. It matters little whether it is given by way of inunctions, hypodermics or tablets of mercury internally administered. After a period of three or four weeks of mercury then I give a dose of salvarsan. This is followed by another period of mercury and again another salvarsan. I am convinced the best results are obtained in this manner. Immediately after a dose of salvarsan I give a capsule containing five grains of blue mass and one grain of cascara at a dose, one capsule at night for three nights, then every second night until ten capsules are taken. I rarely give iodids in the early stages of the disease but very often combine tonics with my treatment.

Too much stress has been placed upon a single dose of salvarsan. Many people, and some physicians, think that a single dose is sufficient to effect a cure and after it is administered they cease to give the case further attention, believing that the great cure-all has accomplished all that is to be done. From three to ten doses of salvarsan is to be recommended in all cases, in alternation with such other treatment as may seem called for.

Dr. Forbes (closing the discussion): I think the inunction method the very best means of mercurial medication in the treatment of syphilis. Our method at Hot Springs differs from the cycle system generally used. We employ regular attendants who apply the mercury to the back each day after the bath, rubbing same for fifteen to thirty minutes, depending upon the size of chart used. The attendant uses large rubber mitt, each patient having his own. The mercury remains on the back from one bath to the next; the patient wears a light gauze undershirt to protect other garments. An ounce of mercury is divided into 4, 6, 8 or 10 charts or papers. Little or no irritation results if rub does not follow too soon after the bath.

I wish I could explain to you the benefits derived from the baths. At the Government bath house there are from 500 to 700 indigents bathed daily. The majority of them are suffering from syphilis of some form and but few receive regular medical attention. The Government bathes these people free, but does not provide medicine or medical service for them. It is gratifying to see the benefits derived from the baths alone in their cases, proving beyond doubt the great beneficial effect of the hot waters. I wish the physicians of the United States interested in this subject would visit Hot Springs, stay there a few weeks, and see for themselves the wonderful results obtained in these cases.

The radioactive baths, together with mercury and other indicated remedies, have certainly cured thousands, and have produced no bad after effects. As far as the arsenical preparations are concerned, the Doctor misunderstood my paper. The cases all had tabes before coming to Hot Springs. The trouble

also developed in each case before taking salvarsan; however, I have seen more early tabes (during the first and second year of the disease), since the introduction of salvarsan than I ever did before its use became general.

The first case I mentioned develoved his deafness and blindness after three injections of salvarsan. Previous to that treatment he had no trouble whatever with either sight or hearing. The second case was very interesting and I am sorry did not bring out more discussion. I cannot see why this patient developed a paralysis of the flxor muscles of the thighs if the arsenic was not responsible.

According to Dunham, "Arsenic exhausts the vital powers of certain organs or systems or of the entire organism, produces symptoms of impeded activity in the functions; indeed, in some cases positive paralysis." If Dunham is correct, isn't it probable arsenic produced the paralysis in this case?

If the baths, mercury or iodids had anything to do with this condition. I was in hopes it could be shown. A year or two ago I was not so sure but that salvarsan or kindred preparations would supplant the old proven remedies in the treatment of syphilis, at this time, however, I thoroughly believe mercury, the iodids and other indicated remedies are the best, safest and surest, while arsenical preparations are only indicated in selected cases and are by no means specific.—The *Journal of the American Institute of Homœopathy*, November, 1915.

EDITOR'S NOTES.

Butyric Acid—A Proving.

Butyric acid occurs in the animal organism under a variety of conditions. It is chiefly characteristic of butter, being found there in the form of an ester, a triglyceride, and as such constitutes the chief fat of butter and milk. To butyric acid set free by fermentation is due the peculiar rancid taste and odor of contaminated butter. When milk sours, milk sugar is converted into lactic acid by the lactic ferment of various bacteria. The lactic acid is then acted upon by butyric acid ferment contained in the air. Butyric acid in pure condition is a strongly acid liquid, mixing with water in all proportions and having a boiling point of 163 degrees centigrade. It may be present in the gastric contents under abnormal conditions, viz., with a markedly diminished hydrochloric acid secretion. In excessive fermentation in the enteric tract butyric acid may be formed in significant amounts.

The following provings were conducted under the Constantine Hering Foundation at the Hahnemann Hospital of Philadelphia and upon students at that institution. The students took the 3d potency of the remedy every two hours, and in all the proving was carried along approximately about seven weeks or more. Mention will be made in a brief fashion only of those outstanding characteristics strongly indicative of the main sphere of action of the drug. All the symptoms about to be summarized are strongly characteristic and were persistently provided in such a manner that they might be denominated truly enough the Red String Keynotes calling for the employment of this useful medicine in the cure of the disease.

(1) Great fearfulness and a pronounced disposition to worry over all sorts of inconsequential trifles. Thoughts of an impulsive nature brooding about self-destruction. (2) Tremendous formation of gas in the whole belly—much belching of gas—a great deal of the gas is passed at the "call" to stool which in many cases fails to come. Complete loss of appetite. Straining at stool very marked. Stools become small like lumps. Intermittent belly cramps which are below the umbilicus. These are the distinctive symptoms of the enteric tract, and they are highly prominent. (3) The drug induces a peculiar effect on the superficial part of the body. It has a very pronounced and awfully malodorous foot-sweat. Students at the Hahnemann College often had to constantly change their socks, a thing quite foreign to the provers under normal conditions. It had

another local effect and just as distinctive. It causes a crumbling away of the finger nails. This was very decided. (4) The backache, it is no exaggeration to say, was of the most aggravated kind. It lasted in the subjects of this experiment for days together. (5) A very reliable modality was perceived while watching the effects of this steady proving, and that was that all symptoms are decidedly worse at night. This was as pronounced as the sleeplessness which the drug produced.—The *Homœopathic Recorder*, January 15, 1916.

Radium in Carcinoma of the Cervix and Vagina.

Ten of fourteen surgical cases were operated in and treated prophylactically with radium. Of these, two have been well over three years, one over two years, four over one year, and three for more than six months. In the four cases not operated in, all were treated with radium and two have remained well for over three years and the other two for over one year. Fifty-three patients out of 199 were clinically cured by radium, 109, greatly improved, and thirty-seven have not been improved. Of the fifty-seven clinical cures, one patient has remained well for six years, three for over four, four for over three, and five for over two years.—*New York Medical Journal*, December 11, 1915.

The Doctrine of the Super-Man.

Professor J. A. Lindsay, in an address on "Eugenics and the Doctrine of the Super-Man" to the Eugenics Education Society at the Grafton Galleries on Oct. 7th, showed how the war had served to make known the views and teaching of many German writers, amongst whom an important place must be assigned to Friedrich W. Nietzsche. A Slav by origin and temperament, and quite out of sympathy with German militarism ideals, Nietzsche doctrines of force, strength, and self-realisation had exercised, in Professor Lindsay's opinion, much influence upon the modern German mentality. Nietzsche despised the virtues of pity, sympathy, and altruism, regarding them as psychologically false and enervating. He approved of war, apart from its causes or results, as being the final test of efficiency and a necessary tonic for humanity. He advocated the rule of the strong and the efficient, and thought little of the mass. He looked forward to the evolution of the super-man, the genius, leader, teacher, conqueror, who should guide humanity

to new paths of action and achievement. Nietzsche's teaching, therefore, was ultra-aristocratic and opposed to all modern democratic ideals, condemning science as aiming at an ideal of industrial equality and mediocre culture, and exalting suffering as the source of all that is noblest in life and as the great stimulant of artistic creation. His attitude to life and to civilisation was that of a prophet and an enthusiast rather than that of a man of science. Nietzsche was ignorant of biology, and his theory of the evolution of the super-man had no real biological basis. Professor Lindsay concluded that Nietzsche's emphasis upon the strong and virile virtues contained elements of truth not to be lightly set aside, for the conflict between the aristocratic and the democratic ideal is not yet over, and modern democracy is still upon its trial. Much depends upon how the fiery ordeal of the present war finds the various elements of society competent or wanting.—The *Lancet* October 16, 1915.

Water Drinking with Meals Beneficial.

Recent experiments, clinical and laboratory tend to show that drinking water with meals is beneficial. Cutler quotes experiments by Hawk to the effect that copious water drinking facilitates the digestion and absorption of fat for the following reasons: There is an increased secretion of gastric juice and independently of pancreatic juice as a result of the stimulating action of water. The increased acidity of the chyme brings about a more active secretion of pancreatic juice and bile. There is an increased peristalsis, due to the larger volume of material in the intestine and an increased blood pressure due to the rapidly absorbed water. There is a more complete hydrolysis of the fats by lipase, due to the increased dilution of the medium and the consequent more rapid absorption. The ingestion of large amounts of water with meals not only does not inhibit the normal flow of digestive juices, but acts as an excitant to their flow. The digestive juices are not rendered less efficient by dilution but, on the contrary enzyme action is more complete, within limits, the greater the dilution. Even if the food were washed into the intestine more rapidly than usual, contrary to Cohnheim's belief, the greater efficiency and greater amount of the digestive juices would out-balance this.—The *North American Journal of Homœopathy*, October, 1915.

The Law of Similars.

Dr. George H. Clark, of Germantown, Pa., sends the following note and clipping to the Editor "*Medical Advance.*"

The enclosure gives a good illustration of the similia.

Hahnemann gave a similar illustration of a homœopathic cure.

Hahneman's case was that of a young woman who was silently grieving for a lost friend. Her condition was serious. At last she was taken to see a family of children who had lost their parents.

Their grief cured the young lady, Yours truly,

GEORGE H. CLARK.

A BALLAD OF BUDDHA.

Who is the woman that cometh
Where the Buddha sits at rest,
Sobbing the while she beareth
Her dead child on her breast?

"Help me!" the cry of her anguish.
"Help me, Enlightened One!
Hast thou the power and the mercy
To give me back my son?"

Answers the Buddha kindly:
"Thy grief it shall pass away,
And thy son shall be thine forever,
And thy night be turned to day.

"Bring me the seed of mustard;
Though but a single seed,
If it come from the place appointed,
That shall be all we need."

"What is the place appointed?
Tell me, Enlightened One,
Where shall I find the mustard
That will give me back my son?"

Answers the Buddha kindly:
"In hovel or hall of pride
Where never a wife or husband
Or parent or son has died."

Searching, the woman wanders
Afar on her eager quest
For the seed that will soothe and banish
The pain that gnaws her breast.

But in every home she enters,
Or hovel or hall of pride,
There are hearts bowed down in sorrow
For loved ones who have died.

Their sorrow calls for service;
And the while she tarries there
She lifts a bit of the burden
That comes with grief and care.

Then lo! her search is ended;
Her night becomes the day.
For in the grief of others
Her own has passed away.

—*John Clair Minot in Youth's Companion.*

[Many other illustrations could be adduced as instances of this law. Anger, for instance, in one individual frequently cures anger in another.

External tumult and hubbub frequently quells internal mental states of unrest and leaves a calm.

The disorder and shock of the San Francisco earthquake cured a case of insanity under the charge of Dr. Carmel.—The *Medical Advance*, October, 1915.

Gleanings from Contemporary Literature.

REPRODUCTION.

By Henry N. Guernsey, M.D.

[This essay by Dr. Guernsey gives a very noble rank to the role of reproduction. It is now reprinted as an antidote to the vicious action of the committee on birth control.—Editor]

From production in the inorganic world nature takes an upward stride to reproduction in the organic. And, as in general, reproduction appears in a consecutive and constantly ascending series, from the lowest forms of organized but inanimate existence up to the highest forms of animate and conscious life; so, in particular, it may be traced as an everadvancing development, from the lowest, most external and material or physical form of the individual up to the highest, most interior and spiritual form of his being.

Reproduction, then, is not to be considered as an isolated fact; but rather as a series of phenomena corresponding, in their progressive order, to the several and successive grades or planes of the material, mental and spiritual spheres of human life; in each of which it is alike governed by the same universal law of similarity. Like causes produce like effects in the physical world; like influences lead to corresponding consequences in the moral world, and like forces occasion similar results in the spiritual world. And, to come to our immediate theme (as if from union of all these), children resemble one or both their parents in all the important elements of their bodily constitution, and in all the faculties and powers of their intellectual and spiritual natures.

To trace the dynamic *physiology of reproduction* in such a manner as to illustrate the progressive development, and to show *how* and *why* this threefold similarity arises, will be the object of the following paper; in which the subject will be considered—first, physically; then physiologically, and, finally, spiritually.

1. REPRODUCTION PHYSICALLY CONSIDERED.

In the physical conformation of the sexes appears a remarkable similarity; not, indeed, of identicals, but of equivalent apposites. The man corresponds to the woman in general and in every particular. And here it seems impossible to consider the body apart from the soul, which occupies it and employs it, in its totality, as an instrument. Hence certain ideas are here anticipated, the more complete

exposition of which will be made as we proceed. The male, with his more powerful physical form, is adapted for protecting, providing for and giving to the female; while the latter, by reason of her more slender physical frame and delicate organization, is suited to receive protection and support—to be loved and cherished.

In no respect do these similar and corresponding characteristics appear more evident than in the generative organs. Those of the male, as is well known, exactly correspond with those of the female, both being, by their comparatively slight difference in form and structure, reciprocally adapted to each other, and fitted to promote the great end of reproduction; which can be secured only by their conjunction.

Thus the scrotum of the male finds its counterpart in the labiæ of the female, as the penis does in the vagina—in either case the one receiving and enclosing the other; while the testes no less obviously correspond with the ovaries in number, in external form and in function.

The uterus and the Fallopian tubes, being instruments of processes secondary to conception, and performing functions peculiar to the female, have no counterpart in the male. It may also be here remarked that the generative organs of the male—*en rapport* with the man himself—are adapted to *give*; as those of the female are to *receive*.

A more particular account of the respective functions of these organs will be presented in the second or physiological division of our subject. We shall, therefore, conclude the present physical or external-material view of reproduction with a slight observation: These generative organs (whose external form and physical properties we have thus briefly considered) become the basis of all the subsequent physiological and spiritual superstructure of reproduction; for they are not only the points of connection of the procreative and conceptive soul of the body, but they are the instruments also—the representatives and the very ultimates—of the soul itself. In the coarser lineaments of these external organs we find abundant evidence of design; proofs of the great doctrine of *final causes*, of which our views will be still clearer and higher when we come to see how these material forms, these *organs* of generation, are quickened, inspired, almost created, by the reproductive soul which possesses them.

II. REPRODUCTION PHYSIOLOGICALLY CONSIDERED.

Here, far more than in the physical consideration of our subject, it seems impossible to separate function from structure. As before

we could not describe parts and organs without some intelligent reference to their uses, so now it becomes apparent that no exposition of physiological functions can be given which is not based upon a description of the particular structures by means of which they are carried on; and the more minutely we explore the physiology of reproduction, and the more nearly we thus trace it to the *origin of its life*, so much the farther do we remove our minds from the unworthy contemplation of it as a mere material-development process; and so much the more clearly do we come to see that it is not only a renewal, but in a higher sense a continuance of life from above; and so much the better do we become prepared to realize its still more exalted spiritual nature and significance.

This study must be pursued, *pari passu*, in the generative organs of the male and of the female. The general, *physical*, similarity and correspondence in number, form and function of those of the one sex to those of the other have already been briefly indicated. Their more particular, *physiological*, similarity and correspondence will become evident from a survey of the vital parts and structures which, in both instances, make up these organs; parts and structures which are themselves more immediately connected with the existing vital forces, and whose special functions combine to promote the function of reproduction.

When individually examined these organs, on either side, are found to be furnished with similar and corresponding arteries, veins, lymphatics and nerves. All these (as already in part explained) are structurally adapted to the accomplishment of such a conjunction of the entire being, on each side, as may result in reproduction. By their local orgasm and erethism they correspond to the excitement of the will and affections; which latter so inspire them that they become the *media* by and through which is effected that simultaneous and complete conjunction of body with body and spirit with spirit which forms the *crisis* of the vital function of reproduction, and determines a corresponding new creation.

The closer the analogy between the respective male and female organs the closer will be the correspondence of their minuter parts in structure and in function. Thus the *testes* and the *ovaries* are alike supplied with branches from the aorta; the spermatic arteries, thence arising, being distributed to the testes in the male, and under the name of ovarian to the ovaries in the female. A spermatic, becoming tortuous, divides into several branches, which accompany the vas deferens and supplies the epidydimis and the substance of

the testicle; in a similar manner an ovarian artery supplies an ovary. The spermatic cord in the one sex and the Fallopian tubes in the other are also supplied by the spermatic derivatives from the aorta; while the veins, secondary in all cases, follow the course of the arteries to which they correspond. If we compare the accessory structures of the generative organs we shall continue to find a correspondence which is not accidental. For as the internal pudic of the male, and its branches, are distributed to the prostate gland, and to the bulb and corpus cavernosum of the penis, so that of the female supplies the labiæ pudendi and the erectile tissue of the vagina and clitoris. The nerves of the ovary and testes, belonging to the great sympathetic, and derived from a conjunction of branches from the solar and aortic plexuses, are similar to the arteries in name and distribution; the *spermatic plexus* accompanies the spermatic vessels to the testes, while the *ovarian plexus* is distributed to the ovaries.

It scarcely seems necessary to trace with greater minuteness this remarkable anatomical correspondence. Sufficient data have already been given to warrant the induction that as these organs were originally designed to fulfill a most important purpose, so are they supplied for the same purpose with the very highest and purest of vital forces and fluids—those transmitted through the nerves and arteries just described. The ovum, which corresponds to the material body of the embryo, becomes *gradually* developed; the factitious ova which exist before puberty giving place to those more susceptible to fecundation. These ova, while in the *primary womb* of the female, slowly acquire all that the mother can bestow; until, by means of the vitalizing influences transmitted through the fecundating *aura* of the father, they successively receive the *breath of life* and become a new creation—a living body and soul.

The corresponding physiological action in the male is so much more rapid and strongly pronounced that its description is less difficult. Here—as, indeed, in the female—the best and purest blood in the body is put into requisition; the arteries in either case which supply the generative organs, as branches of the aorta, are derived almost immediately from the heart, and the purest of the blood, consequently, is conveyed to the testes; which, inspired by high instinctive choice, eliminate from it and secrete that purest life-giving fluid which becomes the immediate agent and instrument of the soul in reproduction. With respect to the nerves, also, the case is similar. Through the spermatic plexus—and the ovarian—the entire involuntary sympathetic system is involved in the reproductive nisus; and

with it the voluntary cerebro-spinal system, with which it is most intimately and vitally associated.

The external union, therefore, partly instinctive and partly voluntary, is thus seen to be accompanied by a corresponding physiological and truly vital conjunction; in which the life-giving elements commingle, and whose crisis, accompanied by the profuse expenditure of the most precious *seed of life* on the part of the male, and its reception and vital absorption as such by the female, is followed by the formation of a new creature. Or, as expressed in the concise language of our "Obstetrics:" "*Impregnation*—the application of the semen of the male to the ovum of the female gives rise to *fecundation*, or the reception of the former by the latter; and this to *conception*."

On page 296 of my work on "Obstetrics" occurs the following statement: "During the act of copulation the male secretes the semen in the testicle, and deposits it in the vagina of the female, whence the fecundating principle arises; and entering certain ducts specially arranged for that purpose, passes up through the walls of the uterus, out through the ovarian ligament to the ovary. Here it enters and impregnates an ovule on that side."

This brief account of conception comprises two items which have long been subjects of dispute:

1. *Where is the fecundation of the ovule effected?*
2. *What is the course of the semen in its passage to the ovary?*

Since the views presented in the above quotation have been particularly objected to, I now propose to devote to each of these questions a degree of attention proportionate to its relative importance. In so doing I shall first set forth the opinions of some authorities, and subsequently give the reasons which have determined my own.

Many years ago "Jean Bohn published a work on 'Physiology,' in which he defended De Graaf. He was decidedly of the opinion that the *aura seminalis transmitted through the porous structure of the uterus reached the structure of the ovary* and fertilized the ovum, which then descended through the Fallopian tube."

"Another position assumed by De Graaf (which had been maintained previously by Warton, and afterward supported by Haller and almost all preceding physiologists) was that *impregnation was accomplished always in the ovaries*."*

* Under the head of "Impregnation of the Ovum While Still in the Ovary," J. Muller says: "This is the place of impregnation, at

all events, in man and mammiferous animeals. In all cases of extra-uterine pregnancy, in which the ovum is developed in the ovary itself, or escaping into the abdominal cavity is developed there, it can not be doubted that the ovum was in these instances impregnated in the ovary."

"A constriction (of a Fallopian tube) may prevent the arrival of the fecundated ovule into the uterus, and may thus give rise to a pregnancy of the tube."

"Haller found it possible to 'produce artificially an extra-uterine gestation by tying the corona of the womb of a mammalian animal three days after conception. The result of this operation was that two fœtuses were discovered in the tube between the uterus and the ovary."

Cazeaux, referring to the experiments of Nuck and Hoighton, and the later observations of Bischoff, says: "Such results evidently prove that fecundation sometimes takes place in the ovary."

Ritchie (already quoted) mentions cases of ovarian pregnancy. Mr. Stanley publishes an account of a case of ovarian pregnancy (British Med. Trans., vol. vi., art. 16); and Dr. Granville a more extraordinary example, the fœtus being perfect and four months old (Phil. Trans., 1820). The celebrated Tyler Smith says: "Of the occasional occurrence of ovarian pregnancy there can be no doubt."

"In the admitted cases the entire fœtus has been found within the (ovarian) sac, or escaped from a perforation of the ovarian cyst."

The instances adduced from these authorities amply prove the fact of the occasional occurrence of true ovarian conception. Now, while no case can be brought forward to show that conception ever occurs in any other place than in the ovary, I offer the following reasons, among others, for believing that *it never does occur anywhere else.*

1. Extra-uterine pregnancies, whether ovarian, tubal or interstitial, all show that the ovule must have been impregnated within the ovary; but *failed to be transmitted* by the Fallopian tube to the uterus.

2. No embryologist has ever yet found either the germinal spot or the germinal vesicle in an impregnated ovule, even at its first entrance into the Fallopian tube. Both must have been obliterated, as the effects of impregnation, before leaving the ovary; while its gradual and progressive course down through the tube is always marked by a corresponding development looking toward the production of a new being.

3. The length of time occurring after conception before the ovule can be found in the uterus becomes a still more convincing proof. "In the present record of our science," says Cazeaux, "there is no one conclusive fact that proves the ovule to have ever been seen in the womb of a woman prior to the tenth or twelfth day after her conception."

4. The preparation made in the uterus itself, in the shape of the decidua, for the reception of the impregnated ovule becomes additional proof when considered from the true physiological point of view. In accordance with the most beautiful economy of nature, this preparation commences immediately and only upon the completion of the impregnation in conception, and occupies the entire time consumed by the product of conception in passing from the ovary to the uterus. Thus the impregnated ovule is preparing for the decidua, and at the same time the decidua for the impregnated ovule, each vital process being influenced by the other.

5. It is well known at the present day (see Cazeaux, third American edition, foot-note, p. 98) that the ovule which causes the menstrual flux is never impregnated. After the cessation of the menses, at any time prior to the succeeding *nisus*, impregnation of an ovule now lying within the stroma of an ovary may be effected. This is proven from the preparation made within the uterine cavity, as stated in 4. This preparation could not be effected otherwise than by the evolution of the impregnated ovule. The attendant physiological process proves the event, and the whole is confirmed when we consider the length of time occupied by the ovule in passing from the ovary to the uterus after *effective* coitus.

These considerations will, perhaps, suffice to convince the unbiased mind that *the ovary is the seat of conception.*

An answer is now demanded to the second question, viz: What is the course of the semen in its passage to the ovary?

I am aware that, according to the opinion entertained and supported by the greater weight of authority, this course is through the Fallopian tubes. But while the positive determination of this question is at once impossible, yet, as I have felt entirely dissatisfied with the solutions of the vexed questions already offered in obstetrical authorities, I have been led to believe, as above stated, that the semen passes through the walls of the uterus and out through the ovarian ligament to the ovary. And if the following reasons for *this* belief appear less convincing to others than to myself, it should

be remembered that the whole question is still a matter of opinion, rather than of actual demonstration.

1. In numerous cases of extra-uterine pregnancy the cause of the non-transmission of the impregnated ovule into the uterus has been found to be an imperforate condition of the Fallopian tubes. In these cases there could be discovered no sign of an opening ever having existed through which the semen might have passed to the ovary. The only natural channel which otherwise appears is that through the ovarian ligament.

2. Normal uterine pregnancies have been found where the *os uteri* was entirely wanting, and where not the slightest trace of its ever having existed could be detected. In these instances, as well as in those of an imperforate condition of the tubes, the semen certainly could not pass up to impregnate the ovum through the Fallopian tubes.

3. This modified doctrine of absorption is descriptive of the most simple process that nature could adopt for conveying the semen to the ovary; and while it is true that the assertion that semen is conveyed "through the walls of the uterus and out through the ovarian ligament to the ovary" is not predicated upon any anatomical discoveries of ducts or passages that I have made in the human uterus' such ducts or passages have been found in the elephant, and (by Dr. Gartner, of Copenhagen) in the cow and sow.

4. The correspondence of the general affection of the whole female organism to that of the male requires that even as the semen is given from the *inmost* of the male, so it shall be received into the *inmost* of the female, even into the ovaries, and there perform its vitalizing function. And here we wish to remark that while it is admitted that the actual reception of some portion of the semen into the ovule is necessary in order to impregnate it, still this portion need be no more than the *minutest particle*, which, in organized bodies, corresponds to the elementary or primary atom of the inorganic world. And that, in addition to this, the old doctrine of the universal impregnation of the blood of the female by means of the seminal *aura* of the male seems to be confirmed rather than refuted by the later discoveries of modern physiological science. The entire system of the female is influenced most powerfully, and in a direction highly favorable to reproduction, both by the general magnetic sphere of the male and by that richly-endowed secretion which is given off as the representative of his energetic vitality.

5. It is to be remembered that the ovaries are encompassed by, first, the serous *peritoneum*, and, secondly, by the *tunica albuginea*, a highly organized and dense fibrous tissue, impervious in a much greater degree than the comparatively porous textures of the uterine walls and the ovarian ligaments. Thus, though it may be true, as is claimed, that spermatozoa have been observed *on* the ovary, it does not follow that impregnation of the contained ovule is effected through the passage of these spermatozoa through the Fallopian tube. The ovules are *within* the ovary, at one end of an uninterrupted porous chain, and it is reasonable to argue that the vivifying principle is conducted to the ovule by that way.

Again, it is to be remembered that the Fallopian tubes *(oviducts)*, being lined by *ciliated epithelium*, have the ciliæ in a direction to *aid* movement *from* the ovary *toward* the uterus, and to retard movement in the opposite direction.

There are other considerations which might be adduced in support of our view of the course pursued by the semen in order to bring it into the most interior—the ovaries; but what we have already cited will suffice. We hasten on to conclude our physiological view of reproduction.

The voluntary portion of this grand function is sustained by the cerebro-spinal nervous system, which is the seat of the rational soul; to which belong all the *highest* and *holiest* affections and *aspirations* of our nature; all of which, together with *all* the *powers* of *body*, *mind* and *spirit*, concentrate with *intensified* energy in *that* movement whose crisis is reproduction.

Thus, in each individual, the entire being is involved; the magnetic circle of reproductive life becomes complete and active, the excited orgasm of the generative parts being reflected upward from the sympathetic ganglia upon the voluntary nervous system, arousing the mind and soul to tremendous exertion; and the return current of the determined will and ardent impulses powerfully affecting the voluntary nervous centers; through the former, inspiring the subtle fluids of the nervous system, and through the latter, those of the sanguinous circulation with that "*formative force*" which alone is competent to inaugurate a new creation.

Thus both individuals—one positive, in giving; one negative, in receiving—combine all the energies of their united being to complete, for the moment, the perfect current of human life. And thus, finally, at the momentary completion of this wonderful circuit, is evolved a *spark* which is the commencement of a new being, and which shall eventually correspond in general to both, but in particular to one or the other of its progenitors.

How the similarity arises, of the male to the female, and of their offspring to both in general and to one in particular, is thus plainly revealed in the physical and physiological views of reproduction. *Why* this twofold similarity and correspondence invariably occur will appear, now that we have come to.

III. Reproduction Spiritually Considered.

From the nature of our subject, and the constantly anticipating descriptions hitherto given, there remains little more to do than recapitulate the principles already advanced, and in an orderly manner to present them and the conclusions which must be drawn from them.

Step by step we have traced the influence of the lower forms of involuntary organic structures, of the instinctive but still involuntary passions, and of the voluntary affections and determined will; and shown how they all combine and co-operate in reproduction. How the entire being is involved, from its lowest to its highest nature; how the generative organs themselves—by the intimate connection of their nerves and vessels with the great centers of life—become the *media* through which are poured out the vital currents on either side; how the *ova* are slowly elaborated from the finest and most interior elements of the mother's constitution; and how the semen, secreted from the most precious elements of the blood, and from the still richer and more subtle spirituous fluids of the nervous system, becomes the suitable embodiment of that truly spiritual influx which, in conception, is imparted to the ovule, whereby the latter becomes a living soul. We have seen how the very highest potencies (powers) ever given to material substance is by man communicated from his *inmost* to his semen; how this latter, deposited in the vagina of the female, takes a direction backward, and finally reaches her inmost. The minutest particle of the semen, thus vitalized and spiritualized

by the soul (immateriality) of the male, sufficing, in turn. to vitalize and *spiritualize* the ovule of the female, transforming it into a new creature, which in all respects resembles its progenitors. Thus, in the very act of sexual intercourse, is effected *at once, a physical, a physiological and a truly spiritual union.*

We have already explained how the generative organs of the male, especially and entirely adapted for giving, and those of the female, equally fitted for receiving, correspond to the representative natures of the two sexes; and how, through these organs, are wrought out the equally correspondent seminal and ovular elements of reproduction. And we need here to extend our views but little farther in order to see how the special characteristics which thus *originally* distinguish one sex from the other are not, by any means, founded upon the physical or physiological differences in their sexual or general constitution, but that these physical and physiological differences are really due to previously existing distinctions in the mental, moral and spiritual nature of the parents themselves.

The characteristic principle of the male is to be found in his intelligence and reason; that of the female in her predominating will and affections. Man thus corresponds to wisdom; woman to love. And these characteristics themselves correspond on the one side to the physiological organizations in which they are ultimated and which they inspire, and on the other side to similar principles in the divine nature from which they are derived. And it is by the conjunction of these two principles, by true spiritual union in the married state, in addition to the external physical and physiological union already described, that the perfect and complete man is formed.

As the particular organs and structures exist and are developed only for the sake of the functions which they perform, so does the whole body, and even the entire being, exist pre-eminently for the sake of the highest use of which it is capable. This *noblest use* is found in reproduction of the species; and the general design of this, as well as all the particular means by which it is accomplished, indicate a designer, a primary creator, who thus provides for that constant succession of creation which is included in the continuance of life on earth. And in reproduction man himself becomes a

secondary creator, an image of the primary creator. But the analogy may be drawn still more closely. For the intelligence and affections, which are the predominating characteristics of the male and female, respectively, we have seen uniting to form one *complete* man in the married state, and vitally conjoined in reproduction—these same characteristics correspond with the divine wisdom and love—the two eternal principles whose union constitutes the divine nature, and whose operation makes God creator.

As the great I AM flows into and sustains all things in and all operations of nature, so here, in the reproductive process is His immediate influx through the male as the giver into the female as the receiver; and the ultimate union in the receptacle results in a new creation, a newly-formed being, spiritually, physiologically and physically.—*Medical Advance*, September, 1915.

THE
CALCUTTA JOURNAL
OF
MEDICINE.

Vol. xxxv.] February, 1916. [No. 2,

MASSAGE AND ALLIED MEASURES IN THE TREATMENT OF JOINT DISEASES.

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MASSAGE, thermo, hydro and electrotherapies are generally known and to some extent employed by physicians, but details may be overlooked, and the following, therefore, is an effort to emphasize points that are more likely to escape the attention of the busy practitioner. The above systems of treatment should be regarded as adjuncts and part of medical science; they do not take the place of medication, but are valuable assisting agents. Combination treatments, as a rule, make the recovery more rapid and certain, largely removing the necessity of resorting to painful measures.

Infectious diseases with accompanying acute affections of the joints are not treated with massage until the fever subsides. Compresses, fomentations, and radiant heat, however, are valuable in relieving the inflammation and pain and in counteracting permanent injury to the joints. In the very acute and painful period the cold compresses should be changed as soon as warm in order to abstract the excessive heat, but as the inflammation subsides it may be left on continuously until dry. The compress is in the last instance wrung fairly dry, and must be covered

well with some impervious material such as oilsilk, which in turn is covered with two or four thicknesses of woodflannel. The joints and surrounding parts are thus subjected to a continuous and even heat which causes hyperemia and increased fluxion of blood and lymph. The compress may, in this manner, be made to cool or heat as the case requires. The cooling compress controls the inflammation effectively, but does not, as the icebag, cause entire suspension of vital activities. The paralyzing power of the icebag indicates its dangers and other disadvantages. Even in the application of the compresses care must be taken not to arrest the skin activity in the acute condition. Perspiration may be maintained by hot water bottles, packs, etc. Salicylic ionization is said to give immediate relief. Remaining exudates of a nonpurulent character are treated with massage, passive and active movements, backing, heating, compresses and high-frequency currents. Chlorine, iodine or salicylic ionization is successfully employed in treating stiff joints from any cause whatever; it dissolves the exudates and softens the ligaments.

Contusions are treated for the purpose of preventing ill after-effects, for the relief of pain and for the hastening of the recovery. Fomentations or radiant heat twice or three times a day with the protected cold compress in the intervals; if heat and pain is great the compress is changed every 10-15 minutes; as swelling and heat diminish the change should be less frequent. Effleurage is started at once and is given particularly over the centrally-to-the-joint located parts of the limb. Effleurage is slow, sweeping friction, with the whole palm of the hand and is always given toward the centre. The venous blood and lymph is thereby pushed toward the heart leaving a relative vacuum which is immediately filled with fresh blood drawn from the arteries. This press and suction action greatly hastens the circulation without irritation and breaking down of tissue. This explains its resting, soothing and healing qualities. Gerst has told of a contusion on a leg with mortification and resorption of bone substance that was rapidly healed by effleurage.

Deep thumb massage is gradually included as the swelling diminishes and infiltrations are likely to follow. Ionization, the Morton wave current and Darsonvalization may be used with advantage in the acute stage as well as for remaining exudates. The low vacuum, high-frequency current are given in the acute stage, and the high vacum (White ray) later. Baking should not be used in the acute stage, but is beneficial afterward.

Sprains and dislocations are treated in a similar manner but in dislocations eight to fourteen days' rest is indicated before any passive or active movements are given. Derivative effleurage may be given immediately after the accident.

The harmful action on joints from immobilization in fractures is counteracted by massage on the accessible portion of the limb while the cast or splint is on. Alternate heat and cold may be given at an early time over the fracture and adjoining joints without disturbing the former. There is no reason why the high-frequency currents, as well as ionization should not prove of extraordinary utility in preventing abnormal formations and processes while the immobilization lasts. Joints, which, after the cast is removed, are left in an ankylosed condition with edema, infiltrations and shrunk ligaments, frequently cause permanent disability unless immediate and vigorous measures are instituted. Disintegrating thumb massage is given to the central edge of the edema, and, as the treated parts disappear, more space is included until all is covered. The thumb manipulations must be alternated with effleurage for the purpose of removing the broken-up matter. When force is used it must be preceded and followed by massage (heat is also good) in order to cause absorption of the inflamnatory products. If this precaution is not taken the joint may become stiffer than before. The infiltrations and edema should be practically removed before force to any great extent is employed. The force used in stretching adhesions is adapted to the individual and to the case. If force is alternated with circulation, promoting measures the ligaments and adhesions are gradually stretched until full mobility is gained. Neglected joints often assume a rheumatic

character and in such cases general eliminative and tonic measures (incandescent light sweatbath, autocondensation, etc.), are prescribed in addition to the local treatment. The patient is told to move the joint as much as possible but he needs supervision since he is likely to exercise every joint except the one that needs it. When inflammation from any cause whatever still exists in a joint the extensive use of the same will increase the trouble.

Gonorrhoeal arthritis is relieved by massage, salicylic ionization and various heating measures.

Cases of rheumatoid arthritis benefit by massage, baking, compresses, ionization and vacuum high-frequency currents. General massage, incandescent light sweatbath, autocondensation, sun baths, saltwater baths, exercise tend to restore normal metabolism and to eliminate various waste matters. The abdominal organs and muscles are stimulated and strengthened by massage, exercises, the slowly interrupted low-frequency currents and alternate heats and cold to back and abdomen.

Gout is treated in a similar manner. The uratic deposits around the joints are removed by a combination of massage, heat and lithium, salicylic or thyminic acid ionization.

Tubercular joints are not treated with massage until after the infection is passed. Any treatment producing hyperemia of the parts without spreading the infection is indicated. Baking, Darsonvalization, vein compression and heating compresses are generally employed. The heating compresses should be employed whether other treatments are used or not,, because they can be worn continuously night and day. Sunbathing in high altitudes has been extensively tried with the most gratifying results. The sunbath cannot always be taken, but artificially produced ultraviolet rays can be had at any time, and constitute an excellent substitute. They are generated by Finsen apparatus or the mercury quartz lamps. Clothing of any kind as well as glass absorb the ultraviolet rays and the skin, therefore, should be exposed and no glass intervene while this treatment is given.

Acute serous synovitis is rapidly removed with effleurage to the whole limb, heating compresses and alternating heat and cold provided rest is secured.

Scars often prevent the proper motion of joints. Massage can do something toward increasing the freedom of motion, but ionization is far more effective. Thiosinamine has a selective action for scar tissue and is often employed as an ointment, but used in ionization its effect is much more powerful. Chlorine ionization also softens scar tissue. The high-frequency vacuum spark is employed for the same purpose. Dupuytren's contraction yields to chlorine ionization. Bathurst tells of a clarionet player who was restored in a month's treatment. Tenosynovitis responds admirably to salicylic ionization.

Falling and weak arches of the feet are now rarely left without special treatment in addition to bandaging and supports. In many cases it is possible to strengthen the arch to such an extent as to remove the necessity for supports. This is done by special exercises, massage, and slowly interrupted currents. The patient is told to use his toes in walking and to press them down frequently even when standing, sitting and lying. He should raise himself on his toes often. Turning the toes and feet inward is a good exercise. In walking he should not turn his toes outward. By alternating the exercises with massage much more certain and rapid results will be gained. The slowly interrupted sinussoidal current may take the place of exercise to a large extent.

None of the above measures will yield expected results unless thoroughly and expertly administered.

Ionization is, as is well known, a process of introducing elements into the tissues by means of the galvanic current. The choice of poles is easily determined by remembering that the positive pole repells positive elements while the negative pole repells negative elements. The bases, being positively charged, are therefore applied on the positive and the acids on the negative pole. The current is applied by metal plates

covered with felt and 15-20 layers of absorbent lint or some soft cotton fabric which is soaked in the solution or by bowls containing the desired solution. A ½% solution is generally employed. The pad is firmly and smoothly bandaged on the parts to be treated. The indifferent electrode should be larger but equally well covered and may be soaked in salt solution. The many layers of linen or cotton cloth are necessary to hold the solution and to prevent burning the skin. As oil offers great resistance to the movement of the ions the skin should be thoroughly cleaned immediately before the treatment. Possible injuries to the skin are looked for and covered with collodion or adhesive plaster. The current is turned on very gradually allowing (for joints troubles) as large currents as the patient can bear—50-150 milliamperes—for 30 to 60 minutes. The patient is questioned if the current is evenly distributed; if a strong burning is felt in a small area, the trouble—generally uneven application of the pad or skin abrasion—must be attended to at once. In using bowls of water it is well to remember that considerable irritation on the skin will take place at the line where the limb emerges from the water unless this area is well oiled and protected with many layers of cloth. Three treatments a week are generally indicated.—*Long Island Medical Journal*, December, 1915.

FOOD *versus* PHYSIC.

By Dr. J. Haddon.

It is said that a man is either a fool or a physician at forty, which I suppose means that a man of forty ought to know what to eat; and eat only such food as agrees with him. With such a test, I fear that even the majority of modern physicians are fools far beyond forty. I saw one of the leading physicians at the meeting of the British Medical Association held just a few weeks before his death, and warned him of the danger he was in, and the need he had to be careful as to diet, but he thought he was all right, which is a common failing, and said he had

been studying diet all his life. Hippocrates and Galen and other ancient physicians have lived far beyond the allotted span, but modern medical men die comparatively young, and there can be little doubt that they would live as long as Hippocrates did if they paid as much attention to food as they do to physic.

I broke down in health very early in my career and after a severe attack of appendicitis retired from practice at the age of thirty-seven. I am now seventy and during the interval I have had time as well as occasion to study diet, and now I need no drugs, my food having become my physic. In my attack of appendicitis I was attended by Dr. Roberts (afterwards Sir William Roberts) when he was working pepsine and before it was prepared and sold as Benger's food. The first time he saw me, he ordered me to be fed on peptonised milk, and as it were by way of apology he said, "Now, you are the first patient I have prescribed pepsine for to-day." There is a story told of the late Sir J. Y. Simpson, who was fond of physic. One day a lady had looked at her prescription and not understanding one of the ingredients she asked the old man who attended the door about it. He looked at it and said, "Oh, it is all right, he's giving them all that just now." Such facts prove that some of our best physicians are like the alchemists of old, hoping to find the elixir of life in the form of physic, utterly unconscious that food ought to be their physic.

I am old enough to remember the tail end of the turmoil caused by Homœopathy in Edinburgh. The Profesor of Pathology (Henderson) was a homœopath and wrote in its favour, while the Professor of Midwifery (Simpson) was its most prominent antagonist, so that I knew something about Homœopathy in my student days, and tried it when in practice with results no better so far as I could judge than from allopathy. But, since I studied diet, and learned its importance, my conscience urges me to bring the subject before the profession. Some years ago, I thought of visiting Edinburgh and Glasgow at the week-ends and trying to get some consulting practice, but when

looking for rooms in Edinburgh I called on a fellow student who lectured on Materia Medica in the College of Surgeons, who, on hearing my views and my anxiety to spread them, said I should come in to Edinburgh and lecture to the students. That idea had never occurred to me, but finding that it was practicable, and thinking that if I could influence the students, I would do more good than I could hope to do in consulting practice, I determined to follow his advice. To get a room was the greatest difficulty, but as I intended to lecture on the Saturday morning only, when no other classes met, I thought I might get a room in the University. On applying I was informed by the Dean that they could not let me have a class room, but referred me to the College of Surgeons where they thought I might get one. I went there and saw the secretary (who taught anatomy) and he thought there would be no difficulty in getting a class room. The lecturer on Materia Medicia told me that £10 a year was the fee for a class room for an hour lecturing five times a week. After waiting for a long time I received a post card from the College of Surgeons telling me that the fee for a class room for an hour on Saturday morning would be "at least 10 guineas." It was evident that diet was not more popular in the Edinburgh faculty in my old age than Homœopathy had been in my youth. However, in spite of the boycott of both Universities and College I secured a room opposite the new Infirmary, put up my placard letting the Students know that I would lecture on "Dietetics," or "The Science of Human Life," and that attendance would be free, for I was determined that the poorest should not be kept from attending through poverty.

At my introductory lecture there were about half a dozen students among the audience, but they did not return, and as I did not care to lecture to the public I brought the course to an end. Baulked by the teaching profession and unable to attract the students and determined not to be beaten I continued to visit Edinburgh at the week-end and attended the meetings of the Royal Medical Society, of which I was a member, and where the cream of the medical students met every Friday night to

discuss medical and surgical cases. At these meetings I took every opportunity of speaking, and before the end of the session the members were pretty well acquainted with all I had to teach as to the value of a knowledge of Dietetics. At the first inter-University Congress in Glasgow held after my attempt to teach the students, it was moved that their teachers should be asked to teach them Dietetics, but the motion was lost by a majority of one, the chief argument against it being that it would be dictating to their teachers. Next year, however, when the Congress was held in Edinburgh, the same motion was carried unanimously; but, so far as I know, the teachers made no move, and are, I fear, not likely to do so. If, however, the General Medical Council were doing its duty, it would make "Dietetics" a compulsory subject for a licence, and then it would be taught. The history of my attempt to teach "Dietetics" in Edinburgh proves, I think, that there must be some personal feeling against myself, or against the subject, as there was against Homœopathy when it was first enunciated as a new theory.

Not being in practice, I determined to write out my views, which I published in a book called "A Doctor's Discovery," for, though not new, it was quite original on my part; and, as I kept the book in my own hands, I know that a good many members of the British Medical Association have got it; but, a few weeks ago, a homœopath wrote for a copy, having seen a letter of mine in the *British Medical Journal*, saying that I was "proving" foods, as Hahnemann "proved" drugs. He advised me to appeal to homœopaths, who he thought, would be more likely than allopaths to listen to my doctrine, hence this article. I used to think that it was owing to Homœopathy that allopathic physicians said there had been a change of type in disease, when they gave up bleeding, but when I was going to Edinburgh at the week-ends I used to visit old book shops, and a man in one of them, having heard my views, said I should read "The Forbidden Book," by Dr. Dickson. I had never heard of it, but he produced a copy which I read with great interest and I think it probable that Dr. Dickson may have

helped. When I was resident physician in the University Clinical Wards of the Royal Infirmary of Edinburgh, I remember a woman who had brought her invalid husband to the waiting room who spoke for him, saying he required to be "renovated." Much as I have forgotten, I have never forgotten that. That woman seemed to think that a man could be put right as a watch could when it got wrong. I was amused at her ignorance, but the author of "The Forbidden Book," a Dr. Dickson, compares the animal body to a watch. He says, "The best medical education is to study the action of remedial forces on living man! But previously to applying himself to such study, the young physician ought to be made acquainted with a piece of knowledge, which, to this hour, I believe, is still untaught in any of our schools of medicine, namely—the Periodicity and Intermittency of all animal movement, whether in health or disease—the tidal fluxes and refluxes—the alternate attraction and repulsion of every organ and atom of the living body—together with the varying thermal changes they undergo. All this it has been my fortune or fate to discover. Like the various movements of a watch or chronometer, all the movements of the body of a man in health resolve themselves into a unity or harmony of special periodic action. So like, indeed to a living thing is that curious invention of human genius—the watch, on first beholding it the savage will scarcely be convinced that it does not live. Each wheel of that machine completes its revolution in a special period of time. Each organ and atom of a being in perfect health has the same. Any alteration of the time, or period of movement of every other important part, perceptibly alters in a corresponding manner the periodic movement of every other important part of either machine. To cure sickness you must make the body to keep time, time in the pulse—time in the breathing—time in the functions of the various secreting organs—time in the hours of eating, sleeping, walking, in a word, you must periodise every one of the organic motions of man—you must periodise the man himself. You must do the same with the wheels of a watch that goes badly. When in perfect working order, both machines are chronometers, or time

keepers." That quotation may suffice to give your readers some idea of Dr. Dickson's theory of Chrono-Thermalism, which take it all in all is so far as I know the best theory that has ever been conceived to account for disease. A wrong food puts the system out of time, and the recuperative power in the animal body, acting like instinct, sets up a fever to put things right, and if let alone would no doubt succeed, but the physician is called in, and what with food and physic the " vis medicatrix naturæ " as it has been called, has no chance. The late Dr. Donaldson, principal of the University of St. Andrews, when dying at a very advanced age, would neither have a doctor to attend him nor take physic of any kind, and, I think, on the whole he was wise, for, in these days of such patent medicines, and abominable viruses of all sorts there can be little doubt that many die of the doctor. Burns in "Death and Dr. Hornbook," was very near the truth as to the whole medical faculty in his day. Now, if one has a doctor, and it is possible we may have legislation to compel folks to have a doctor, as well as to have a half holiday, a homœopothic one will be the safest, for a small dose is, at least, less harmful than a large one. But I must not trespass further on your space, and conclude by hoping that your readers will study food as they have studied physic, and they will find it will pay.—*The Homœopathic World*, January 1, 1916.

EDITOR'S NOTES.

Use of Sodium Citrate for Direct Blood Transfusion.

Dr. CHARLES B. SCHILDECKER, of Pittsburgh, said the use of sodium citrate for direct blood transfusion in human beings had been suggested by Hustin, of France, in 1914. In the Argentine Republic a number of investigators had had success with this substance. Lately in New York, Dr. Richard Lewisohn and Dr. Richard Weil had reported success with sodium citrate in blood transfusion. At first he was afraid that the toxic effects of sodium citrate were such that it would not be advisable to use it. He was studying the effect of citrate blood transfusion and would report on that subsequently.

In order to make transfusion a simple procedure so that it could be easily performed, an apparatus was devised, consisting of a glass stopped, graduated cylindrical container, so made as to have a side tube near the top. The bottom of the vessel was drawn to a tube about a quarter of an inch in diameter bent at right angles. Accompanying the apparatus were two glass cannulæ, one male and one female, which fitted in and on respectively the end of the container. The method of performing the transfusion was as follows: Under all aseptic and antiseptic precautions, the male tube was inserted into the vein of the donor and the female tube into the vein of the recipient. The tubes were so made that they could be securely fastened in the veins. Bulldog clamps could occlude the veins at any moment. The apparatus was then connected with the cannulæ in the arm of the donor. Five c. c. of a ten per cent. citrate solution was put into the vessel and the blood allowed to run, gently stirring with a glass rod to effect a good mixture of the blood and the citrate solution. The blood was allowed to run until the required quantity had been obtained. The clamp was then adjusted so that the blood flow ceased. The thumb was placed on the side tube and the apparatus removed from the female tube and adjusted on the arm of the recipient. The blood was allowed to run in. The whole procedure should not take more than ten minutes.

The advantages of this apparatus were 1. The whole procedure was visible. 2. No hurry was necessary. 3. The exact quantity of blood taken could be measured. 4. It did not require much experience to use it. 5. It could be used in a private office or dwelling; it needed no hospital surroundings. 6. The operation was not unsightly.—*New York Medical Journal*, December 18, 1915.

Local Anesthesia in Herniotomy.

At the Providence meeting of the association in 1913, had reported twenty-eight operations for the radical cure of inguinal hernia performed under local anesthesia. Since that time he had done ninety-six operations for the radical cure of inguinal hernia; six operations for the radical cure of strangulated inguinal hernia; seven operations for the radical cure of femoral hernia; five operations for the radical cure of strangulated femoral hernia; three operations for incarcerated femoral hernia; two operations for incarcerated umbilical hernia; and five operations for incisional hernia, a total of 124. There had been no deaths.

His further experience with this method of performing herniotomy had convinced him that, whenever possible, such operations should be performed under local anesthesia. The only exception to this rule should be in herniotomy in children and where the operation must be performed in uncontrollable nervous adults. The latter exception in actual practice was not as frequent as they might think, for the reason that most nervous individuals could be controlled by carefully explaining to them the nature of the operation and the reasons for operating under local anesthesia.

A preliminary hypodermic injection of morphine and scopolamine or pantopon and scopolamine was usually sufficient to allay all nervousness, and the operation could proceed even in nervous patients with the same facility as under general narcosis. In only three of the operations was it necessary to complete the operation with a slight amount of ether. These were among the earlier operations. Local anesthesia recommended itself for hernia operations because it assured the patient absolute safety. No other form of anesthesia gave the same degree of safety as did the modern Braun technic of local anesthesia. When a surgeon had mastered the few principles which were necessary for success in local anesthesia, he would soon abandon all other anesthetics in herniotomy. He had never observed the slightest toxic effect from the use of the one half per cent. novocaine and adrenaline solutions which he had employed for these operations. The frequency of hernia in otherwise normal patients should make it the most common of all surgical operations. This would be only when the entire surgical profession gave such patients a method which involved no danger to life and which allowed a maximum of cures. These conditions were at the present time best fulfilled by the use of local anesthesia.—*New York Medical Journal*, December 11, 1915.

Present Status of Twilight Sleep in Obstetrics.

Dr. A. J. RONGY, of New York, said, after referring to 2,000 cases which he had collected from the literature, that judging from his personal experience, extending over a period of fifteen months, and covering a series of over 350 cases, the value of the treatment and its acceptance, as a recognized therapeutic measure, would depend upon their interpretation of the physiological processes which were produced by these drugs. If they accepted the theory that the semiconsciousness prevented the actual experience of pain, although apparently present in all its clinical phases, then labor must be considered painless, and therefore to refuse to adopt it would be a failure on their part to carry out the trust imposed upon them. On the other hand, if the mental state induced did not actually prevent the sensations of pain and the patient had actual suffering, even though it was modified, then the value of this method would devolve upon the degree of pain and diminution of analgesia, and not upon the lack of recollection of pain or amnesia. He found it difficult to recognize the fact that a patient, displaying all clinical evidences of pain, such as crying and groaning, as was observed in these patients, did not actually experienee it. However, he was fully convinced that pain in a goodly proportion of cases was influenced to a degree that would warrant the adoption of the method in selected cases, more particularly in primiparæ of the highly emotional type and in multiparæ in whom they expected long and tedious labors.—The *New York Medical Journal*, December, 18, 1915.

CLINICAL RECORD.

CLINICAL CASES.

By B. L' B. Baylies, M.D.

Case No. 1. May 31, 1912. SEQUENCE OF EMPYEMA AND PARACENTESIS THORACIS.—J. T. D. had, two years ago, an attack of *la grippe* succeeded by pleuro-pneumonia on the right side. Six or eight weeks later, he states, the pleura was tapped and serum was drawn: a week later a second aspiration was made, withdrawing pus; and a year and a half ago a portion of rib was exsected at the point of election, the inframammary region, and a larger quantity of pus removed. The cough continued after the operation with great prostration and loss of flesh. Phthisis pulmonalis was suspected. He was sent to Portland, Oregon, in hope of beneficial change of climate. The humidity was to him unpleasant and aggravating and that, with possibly other climatic conditions, appeared injurious. He was brought home and placed under my care.

May 31: He is emaciated, the bones prominent, the bed feels hard; he feels sore all over. At times he has severe headache over the right frontal sinus and frontal eminence; the tongue very red and dry, narrow, not accuminated. Diurnal aggravations of cough beginning at 4 and 12 P.M., and in the early morning. At 6 A.M. he falls asleep, breathing quietly, sleeping until 9 or 9-30 A.M. Paroxysms of cough last from half an hour to two hours, with gagging and difficult expectoration of much adhesive stringy mucus.

Examination—Respiration and resonance on percussion found normal in left lung. Very loud and rude vocal resonance akin to aegophony, and respiratory sound of harsh rumbling tone, indicating plastic exudation and pleural friction over the right lung posteriorly. Expiration and inspiration of duly proportionate length, and normal resonance anteriorly, except at the site of the exsection of rib, demonstrated the non-existence of tubercle, which had been announced by a Portland physician.

May 31: The locality of the exsection is extremely sensitive. Lying on the affected side excites cough. Nothing abnormal found by palpation of the abdomen.

June 1: ℞ kali bichromic cm, 1 dose. Headache in the evening, cough at 4 P.M. and twice in the night, each paroxysm lasting half an hour. The day before, the duration of a paroxysm was said to be two hours.

June 2: Sputa less adhesive and less stringy.

June 3: Slept better but at intervals of about every half hour, two or three hacks, expectorating a little white or yellow non-adhesive mucus; pulse accelerated, irritable and tense. Inhaling hurts the right side; lying on it excites cough; sitting relieves cough.

℞ phosphorus 200, several doses of the solution at intervals of three hours.

June 4: No improvement; some blood expectorated.

℞ at 7 P.M. nat. mur. 45m, 1 dose.

June 5: He had better rest last night than for a long time—slept remarkably better; less frequent coughs; soreness and pain from coughing diminished.

June 6: I found him sitting up and shaving. He said he felt "good". The previous night he had been restless until 12 o'clock; he then took nat. m m. a dose dry, and slept till 5 this morning.

June 7: He slept at intervals, 12 P.M. to 2, 3 to 6 A.M. Cough causes headache from forehead to vertex, with soreness of the scalp. Better after sleep; floating nummular sputa.

June 8: Very restless, could not lie still; coughed with strangling, expectorating stringy mucus. Stomach sore during cough; must sit while coughing till he expectorates. After nat. m. a dose, slept from 10 to 11-30 P.M.; again from 2 to 5 A.M. No headache to-day. Legs ache when restless and they are tossed about. Quiet after the nat. m.

June 10: Very restless last night till he had taken a dose of bacillium (Health) 10 m; then very restful.

June 11: Was much harassed by cough with headache and soreness of the stomach. Profuse expectoration. Little sleep.

℞ nux v. 25 m at 8 P.M.

June 12: Slept remarkably well. Pain in stomach better, also headache and scraped feeling in throat; the head tells "clear as a bell."

June 20: The patient was seen daily till 14th of June, after which no medicine was given. The cough became infrequent and there was rapid improvement in health and strength till when after over exertion, he had hard, hacking cough in the night, with some pain and soreness of the old spot in the right of chest. I gave him nat. mm., after which he coughed with less pain and soreness; the phlegm jumping out of his mouth with each cough, the paroxysms not severe. Auscultation shows more expansion of the right lung, improved respiration, but a tremendous reverberation of the voice with some resonance on percussion of the posterior chest.

The following fall and winter the patient was able to attend to active business.

CASE No. 2.—HÆMORRHOIDS OF NINE YEARS' DURATION. Rev. E. F. D., a Priest, had been afflicted by extremely painful hæmorrhoids and sufferered many things mechanical and chemical for nine years. An allopathic physician, whom personal experience under my care had converted to homœopathy, commended the patient to me. His excruciating pain induced him, by advice of a lay friend, to use suppositories containing a very dangerous proportion of opium. Having used several of them on one occasion to enable him to peoform his ministerial duties, he became unconscious after leaving the subway, and was taken to a hospital. There, when consciousness returned, he was told he had had an epileptic fit and discharged. He asked me if opium could produce them. I told him they were a positive feature of the operation of opium in enormous doses.

The symptoms attending the hæmorrhoids narrated, were violent, contractive, constrictive and shooting pains in the rectum; burning and dry feeling there, without itching; a little

relief by warm bathing of the painful parts, and aggravation by cold. He has some cough in the morning, with scraping sensation in the throat. Discomfort in the abdomen from confined flatus; constipation, wholly ineffectual efforts at stool; frequent cramp straightening out the toes. He had neuritis in the left arm two years ago.

Nov. 14th; ℞ nux v. 25 m. night and morning, dry, which regulated his bowels and enabled them to move without pain in two or three days. He continued the remedy, urgently sending for it at a few days' interval, and on November 23rd received a dose of lachesis 50 m. He has remained perfectly well, rejoiced and surprised by his first experience of homœopathy.

N.D. Case No. 3.—ULCER OF THE STOMACH. Miss McD., a school teacher, about 38 years of age, of somewhat brown complexion; had been a patient of Dr. F., a stomach specialist, who, by chemical and miscroscopic test, diagnosed gastric catarrh and ulcer of the greater cul de sac of the stomach with deficient hydrochloric acid. She complains of a sore spot in that locality, and from there extended a diffused burning sensation. Mucus drops abundantly from the posterior nares causing choking, with nausea and vomiting. Vomiting relieves the stomach pains. The soreness and burning sometimes relieved by external heat and counter-irritation with iodine.

She takes only liquid food, has little thirst, is very constipated. The stomach was repeatedly washed out during a long period, but not for the past year. Her medication, she informs me, has consisted of two cascara tablets nightly and a portion of Phillips' milk of magnesia daily. Crusts adhere to the lining of the septum and alae nasi, and mucus is discharged from both the anterior and posterior nares. She was very restless previous to passing the Easter holiday at Lakewood, but since has slept well.

Occasional eructations of gas and bile "burn the throat and œsophagus." Formerly some mucus and apparently membranous matter were, she states, discharged from the intestines. She has painful borborygmi, headache at times over the frontal

sinuses with simultaneous aching and throbbing as in waves, at the lower occiput; at times coincident pain at the epigastrium and back, with burning sensation in front and to the left of the medial line; and when pain is severe, cutting and boring. She lies on the right side in bed, the head low; when on the back the stomach feels strained. During pain while sitting she inclines forward and toward the left side. Pain worse when fatigued, better when busily moving, or mentally occupied.

In considering the remedy the burning sensation in the stomach, vomiting of mucus, sitting bent forward for relief, profuse catarrh from the anterior and posterior nares, mucus crusts on lining of alae nasi, violent frontal and occipital headache, with throbbing in the occiput; lying on the right side with the head low, amelioration by busy occupation, afforded sufficient indication for natrum muriaticum. Absence of thirst for cold water did not exclude it.

May 30, 1912: ℞ Natrum muriaticum 45 m, a dose dry daily on two succeeding days.

June 4: Improved.

June 7: Natrum mur. m. Fincke. 1 dose.

June 21. She has been remarkably well, after almost instant relief under natrum muriaticum. For recent moderate recurrence of pain, chiefly in the left hypochondrium, another dose of the same.

Sept. 14th: Owing to illness of a relative for several weeks she denied herself vacation and rest, suffered much fatigue and anxiety, and has had severe frontal and occipital headache, with occipital throbbing, supra-orbital boring pain anteriorly. Pain, nausea, and weakness in the stomach, also right facial and dental pain, better from applied heat. On very carefully comparing these symptoms, ignatia 1500, swan, was given and relieved.

Oct. 9 and 16th: On each of these dates a dose of natrum muriaticum for slight return of symptoms. She then removed beyond my reach and I did not see her again, but received favorable report.

CASE NO. 4.—GASTRO-INTESTINAL CATARRH. The before-mentioned Dr. F., the stomach specialist, has been treating with gastric lavage, etc. Miss D., a very anemic young lady, presenting the following symptoms:—

At times, even after eating, a gone, weak feeling in the stomach, tasteless empty eructations, painful movement of flatus, with soreness of the bowels as if something traversing the bowel had moved over a sore surface. The bowels relaxed; stools of light color. At other times a very sharp pain like a cut in the rectum, continuing several minutes, at 2 or 3 A.M., relieved by escape of flatus; in the very early morning, an attack of diarrhœa. Ordinarily the bowels move in the evening. The extremities often "go to sleep," more the lower limbs by crossing the knees. Toothache awakens her in the night, the pain moving from the upper to the lower jaw. Better by drinking cold water; worse, hot.

March 9th: ℞ Kali carbonicum, 45 m F.

March 13th: The medicine was benificial.

March 31st. Occasional stitches in one hypochondrium or the other; sensible commotion in the bowels, constipation and insufficient stool, supervening diarrhœa. The 45 m of kali c.c.; dose relieved.

April 10th: Pain and rumbling in the bowels; kali c. m.

April 16th: She has been very comfortable, without pain during the last week.

May 12th: Complains of soreness and inflammation of the right tonsil, with pain extending from the tonsil to the right ear while swallowing abnormal quantity of saliva, and too freequent inclination to swallow.

℞ Merc. vivus 30 m. 1 powder, and this trouble was removed.

June 8th: She had, immediately after eating ice cream, sore pain across the abdomen, which made her sit down and double up, pain lasting a few minutes. The same symptoms occurred after supper, and at other times when she had not been eating.

Soon after the pain, rumbling in the bowels and passage of flatus, with relief; faintish feeling in the abdomen right after eating, with pressive pain in the hypochondria. She had the pains all the week. Worse with cold food; better with warm.

℞ Calc. phos 45 m. 1 dose.

July 13th and 15th: Calcarea phosphorica, 45 m. for recurrence of symptoms apparently induced by fatigue and shock from burning of her hotel during vacation. After the latter date her health was established without further treatment. She was no longer anemic or troubled with digestive disorder.

It is somewhat remarkable that remedies of opposite modalities, as to aggravation or amelioration by heat, or cold, were required at the two extremes of the case: kali carb., and calcarea phosphorica. The *North American Journal of Homœopathy*, October, 1915.

Gleanings from Contemporary Literature.

ADDRESS AT THE OPENING OF BOSTON UNIVERSITY SCHOOL OF MEDICINE FOR ITS FORTY-THIRD ANNUAL SESSION, OCTOBER 7, 1915.

By John P. Sutherland, M.D.

Ladies and Gentlemen:

It seems but a short time, and yet in that short time the earth has made its annual journey through its orbit around the sun since many of us were gathered together on an occasion similar to the present:—*viz.*, the opening of a new year of school work;—and once more it is my deeply appreciated privilege and honor as well as my duty to appear before you as the representative of the Faculty of Boston School of Medicine, and in the name of the Faculty, and in the name of the School and all it stands for, to extend to the student body here assembled a most hearty welcome, and most sincere greetings. We do not welcome you into an unfamiliar field or to unknown duties and experiences, for members of the Faculty have trod the path you are now entering, have passed through the vicissitudes of student life, are familiar with its numerous and varied phases, have been drilled in its disciplines and tried by its drudgeries, have been elated by hopes and successes, and even have known something of the possible disappointments and disillusions which are experienced by humanity in general as well as by medical students who with high hopes and exalted ambitions enter upon a definite and serious life work. It is this wide and deep familiarity with medical life, as students, teachers and practitioners, that permits the Faculty to extend to you, individually and collectively, not only a hearty welcome, but a welcome that is permeated through and through with sympathy. This sympathy, however, is not to be misunderstood as an attitude of weak and careless indulgence, or obliviousness to shortcomings, but as that paternal friendliness which endeavoring to appreciate all factors in a given problem seeks a solution from the standpoint of your own best and highest welfare. However high your expectations, however lofty your ambitions, however earnest and enduring your hopes and endeavors, let me assure you of the Faculty's hearty and willing encouragement and assistance; and if

these expectations and amibitions and hopes and efforts are still somewhat immature we trust that under the stimulating influences of your school life with us, they may attain a sturdy growth and generous proportions.

To-day our School. of which you as a matter of volition now form an integral and definite part, begins its Forty-third (43rd) Annual Session. While still young in comparison with the life of the world, our School has attained an age and maturity and has acquired experiences, standards, traditions and history which carry it beyond the realms of youth and inexperience, and place it among the more mature and established influences in the educational world. Since the memorable day—Nov. 5th, 1873—when its first class assembled, the sun (in popular phrase) has set many times; many moons have cast their radiance over the earth; many summers and winters have passed in established order: many classes have passed through the School's portals, and most of the high-minded, independent, liberty-loving, self reliant pioneers to whom the School owes its origin have relinquished active work on the teaching staff, or have passed from this life-leaving a rich legacy of policies, ideals, customs and accomplishments. After more than two score years have passed in successfully carrying forward the work undertaken by the School, it is fitting that in order to accurately judge of the present and prepare for the future, an occasional retrospective glance be taken at the purposes which called the School into existence, and at some of the results of its efforts.

Very briefly let me remind you that the aims of the School (as set forth in its Announcement) have been and are to give its stunents a broad and sound training in the fundamental sciences of medicines; a thorough training in the Principles of Homœopathy: practical training in Materia Medica; special training in Homœopathy Materia Medica; and special training in Homœopathic Therapeutics. It aims to impart a working knowledge of modern surgery, obstetrics and the specialities; to make useful, practical, liberal and successful physicians,—true healers of the sick; to uphold high standards of medical education and to inculcate lofty ideals of ethics and morals.

Historically it might with justice be claimed that our School was twenty-five (25) years old on its birthday, for it was, from the legal standpoint, the successor of the New England Female Medical College,

the first medical school in the world to be established for women, and a school which for a period of twenty-five (25) years, from 1848, had done sturdy pioneer work in the medical education of women. Naturally this fact in connection with the purposes of the Founders of Boston University accounts for the medical department of the University being at its initiation in 1873 co-educational; and since that time it has made no discrimination in sex among its students or on its Faculty.

From the date of its establishment (1873) it demanded entrance examinations of all applicants for admission who were not college graduates; a new departure at that time in medical education. At the same time also (1873) it offered a graded course of three years:—the average medical course at that date being two years.

In 1877 it made the three years course compulsory.

In 1878 it offered for the first time in this country a four years course. The same year it also offered courses leading to the degrees Bachelor of Medicine and Bachelor of Surgery, and lengthened the annual session to eight months.

In 1890 it took the lead among medical schools in making the four years course compulsory.

In 1907 it instituted an option five years graded course.

In 1908 in conjunction with the College of Liberal Arts of Boston University it offered a six years combination course whereby the two degrees Sc.B. and M.D. may be acquired.

In 1912 its graduates became eligible, under specified conditions, to the degree Ph.D., from the Graduate School of the University.

In 1914 its entrance requirements were increased to the extent of of demanding at least one "premedical year" of training in a college or technical school.

On three occasions of national and international competition (1904–1905–1908) the School acquired the unique distinction of being awarded two gold medals and one silver medal on the excellency of its exhibits,—the only known medical school to make such a record.

Within its brief history its buildings have been more than doubled in size; its course more than doubled in length; its faculty and the subjects included in its curriculum more than doubled in number; and its clinical facilities have been increased more than four-fold.

During this period of two-score years its graduates have been making creditable and even enviable records in their various communities as general practitioners, specialists, surgeons, members of boards of health, examining and licensing boards, and school boards; as trustees and superintendents of large states institutions; as medical missionaries in foreign fields and in a useful way performing their civic and professional duties with credit to their Alma Mater.

These points are referred to not in any boastful spirit, but simply with the idea of presenting to you in brief a suggestion of your medical heritage in becoming a part of our School.

The work of the School is a continuous and unbroken record running throughout its history. The *personnel* which has formed the working machinery naturally has undergone changes as the years have passed, until at the present time binding us of to-day with 1873 we have only one living link still an active member of our Faculty. Of the twenty-six members of the original Faculty, Edward P. Colby, Professor of Nervous Diseases is still in the ranks. To be "on duty" is characteristic of Prof. Colby, for since those dark days in our Nation's history in the sixties, when he served his country in the medical department of the navy, he has responded "present" to duty's roll-call, and we are inspired and encouraged and strengthened by his living interest in the affairs of the School to-day. Prof. Colby by his long-continued devotion to the welfare of the School, by his generosity, loyalty, faithfulness and unselfishness, by his genial and sympathetic temperament, by his clear and forceful teaching, has endeared himself to generations of students and to his colleagues on the Faculty, and there are many among us who do affectionate homage to him as respected instructor, collaborator and most highly esteemed friend.

It may not be of service to linger very long in contemplation of the past, but during the School year which terminated last June certain modifications in methods of teaching were introduced experimentally, and with such success and general approval, that they are to be continued during the coming year. The senior students, especially, will be interested to know that a large part of their time during the coming year is to be spent in the practical work of actual clinics, in which they are to occupy the position of participants and not merely that of observers. The advantages of coming into close personal contact with patients, of being obliged to make diagnoses and prescribe treatment, of assisting in operations, conducting anæsthesia, making all necessary examinations and analyses under

the direct supervision and with the assistance of instructors, are so obvious that no comment is needed. The Faculty reports made at the end of last year's work showed that there had been held during the year, 90 special medical clinics of two to three hours duration each, at which a large variety of cases came before the students for observation, analysis and treatment. In the surgical department one instructor performed over 200 operations in which the students in turn acted as assistants, thus coming into the closest possible contact with surgical work and obtaining an experience not to be had from text-books, in the lecture hall or elsewhere. In the surgical department as a whole the students assisted in over 3000 operations including more than 1100 abdominal cases. The orthopedic clinics had an average attendance of 40 cases, the number at times exceeding 60. In ophthalmology over 200 cases illustrating practically all the diseases met with in ophthalmic practice were brought before the class and utilized for instruction. During a period of five weeks students in small groups spent the forenoon hours at the Contagious Department of the Hospital where scarlet fever and diphtheria in all their different phases and complications were available for the closest clinical study. Also each student spent an unbroken period of five weeks at the State Hospital for the Insane at Westborough, Massachusetts, where an average daily population of 1300 patients was under observation:—where all types of mental alienation, with the general and systemic complications possible in such a large community, could be studied; and where also special opportunities to study the pathology of such cases were offered under the guidance of a pathologist of international reputation. These few extracts from the records are presented to show what a wealth of material is available for study, and how fortunate the School is to have such incomparable clinical facilities at its disposal. The subject is introduced here, also, to suggest that the benefits to be derived from these clinical opportunities are dependent largely upon the earnest, intelligent and conscientious work done by the individual student. There is offered in these clinics the opportunity to develop powers of close and accurate observation, originality in solving problems, ingenuity in adopting appropriate therapeutic measures, and in short all the qualities which make a useful and successful practitioner. It is for the individual student to take advantage of the opportunities thus offered

It was only a year ago that new admission requirements were put into operation, and applicants for admission who had not acquired a

primary degree in Arts or Science were required to present evidences of having pursued at least one premedical year, as it is generally termed. This premedical year was to be equivalent to the first year in a college or technical school and was to include in its work Physics, Chemistry, Biology, and French or German of the accepted freshman year grade. To these requirements another year has been added, and the announcement has been made that the Faculty has voted that a year hence, viz., in 1916, applicants shall have had two years of college training as a prerequisite to the medical course. Whether or not these advanced requirements are consistent with democratic principles; whether or not they are desirable from the educational standpoint; whether or not they are to prove of real benefit to the sick and suffering humanity which is served by the profession, are questions which cannot be profitably discussed at this time. Whether approved or disapproved by medical faculties many state examining and licensing boards have ruled that no candidate for practice can be admitted to examination who has not had two years of college prior to entering a medical school, and the newly formed American College of Surgeons has voted that beginning with the year 1920 no candidate will be admitted on credentials to a fellowship who cannot comply with these same requirements. It certainly behooves medical schools to qualify their students to meet the requirements of state medical licensing boards and similar organizations. It was partly in anticipation of the modern advanced standards that as long ago as 1908 Boston University established by a co-operation of its College of Liberal Arts and Medical School a six years combination course whereby two degrees are obtainable. The collegiate part of this course includes prescribed courses in English, Mathematics, French, German, Chemistry, Physics, Biology, Comparative Anatomy and Psychology, and a number of electives. This Combination Course has been heartily advocated by the Medical School Faculty, but the new requirements for admission to the School practically make this course compulsory. Its advantages are evident to all who are familiar with the demands of modern medical education, and it is to be hoped that students and members of the profession will recognize the desirability, if not the necessity of this new departure in the way of requirements.

It is with pleasure attention is called to ceatain much-needed improvements which during the summer have been made in certain of our laboratories. For several years the chemical laboratory has been sorely inadequate to the work demanded of the department, the

cramped, ill-lighted and poorly ventilated quarters being a serious handicap to both pupils and instructor. The big laboratory on the first floor of the new building has been converted into an attractive and most desirable laboratory for this valuable chair, and will now be known as the chemical laboratory. Its commodiousness, excellent lights, accessibility, and thoroughly new and adequate and up-to-date equipment are most satisfactory and will make possible the most accurate and convenient performance of all the delicate analyses required in organic and physiological chemistry and toxicology.

The bacteriological laboratory has been installed in and consolidated with that used for so many years for histology. By the introduction of new slate-topped tables, a system for artificial tighting, convenient working benches, and the rearrangement of lockers for apparatus, together with the usual sterilizers and incubators, a particularly desirable and appropriate new home for this department is made. And all this has been accomplished without interfering with the facilities for histological work.

Another valuable addition to our teaching facilities has been made during the summer months by the mounting of approximately five hundred new and selected specimens for the Museum. New display tables have been made, old specimens have been remounted and rearranged, and such improvements made generally that the exhibition and preservation of material will be made more effective. The cheerfulness and attractiveness of the entire laboratory building have been greatly increased by painting and varnishing, and it is expected that during the coming year more valuable work than ever before will be done therein.

The School is to be congratulated upon other and highly valuable additions to its facilities through its connection with the Massachusetts Homœopathic Hospital which during the past year has been made the recipient of a new building to be used as a Maternity and Out-patient Department. The old "Dispensary," through the generosity of a philanthropic Boston business man, has been reconstructed on a fireproof basis, and in accordance with a modification of the original plan, has been converted into a five story and basement building, the lower portion to be used for Out-patient work and the upper three floors as a Maternity. During the past year (1914) approximately 1000 maternity cases were treated at the Hospital and the removal of this large tax on its resources will by so much increase its possibilities for conducing its other work.

I have referred to the aims of the School, to some of the things it has done, its requirements for admission, to its standards, to the standards of licensing and examining boards and closely kindred subjects. It has occurred to me that before separating to take up our various routine duties it might be profitable to spend a moment in considering the general subject of requirements and standards in order that we may have a guiding idea to help us during the year we are to work together.

What things are required of us; what things shall we require of ourselves? What standards are imposed upon us by others, and what standards shall we elevate for ourselves? Upon our answers to these questions hangs the record we shall have made at the end of the school term, at the end of life's term. According to physiologists many of the acts of our bodies are involuntary, are performed without reference to our will, reason or intelligence, but these are, or should be, wholly of the lower and least important order of functions, and comply simply with physiological standards. Our higher functions, those things which make the real individual; the thoughts, the desires, the will,—these things should be wholly controlled and "voluntary" and these are the things by which we, as individuals, are ultimately judged, by ourselves and by others.

While you are with us as students you have a certain curriculum laid out for you sufficient to occupy your time and energy and thoughts for the greater part of the eight months, or the four years, ahead of you. A certain attendance upon your duties, a certain industry, a certain rank will be required of you, but there is absolutely no doubt in my mind about your making good and creditable records if you will simply perform your various outlined duties perseveringly, faithfully and intelligently. The standards are not unattainable: they are adapted to the ordinary demands of life, and with systematic and reasonable application to mastering each day's tasks, the result at the end of the year is sure to be satisfactory, from the pedagogical standpoint. You unquestionably have other objects in view than simply making records as medical students. Your student life here is simply preparatory. It is here you are to fashion the weapons and secure the equipment needed in the warfare with disease. Our function as teachers is primarily, and usually is understood to be only, to instruct you in the mysteries of organic life, normal and abnormal; to acquaint you with the structure and functions of the body in health and disease; to train you in the detection and quick recognition of causes of ill-health; to develop your techni-

cal skill so that difficult and delicate manipulation of laboratory and clinical apparatus and instruments may be deftly, safely and successfully accomplished: in a word to make anatomists, bacteriologists, pathologists, diagnosticians, "internists," surgeons, and specialists of you. But you are not to be contented with being converted simply into doctoring machines. Such an ideal, such hope such an object is utterly unworthy of a medical student, and if the work of the Faculty results in nothing more than that, we shall have miserably failed in our task, fallen far short of any worthy standard.

To put the matter another way, you are here to be prepared for life's work, for your special part in the great life of the world. But one's life cannot be restricted--certainly should not be, to the technical and mechanical routine of the medical life. Of course, a useful, well-trained and capable physician is better than an inefficient one, again, one's influences in life extend beyond the limits of his vocation or industrial pursuit, and it is to some of these duties and influences and to the spirit that should animate us; to the standards and objects and motives, the purposes, aspirations and hopes that guide us in our actions, that I would ask your present consideration.

Among your own personal ambitions may be that of making what the world calls a "success in life." The medical profession is sometimes looked upon as a portal to social recognition and prestige, and occasionally as the roadway to financial eminence, although such ideas, fortunately I think, rarely form the real incentive to entering its ranks. The standards of what is called the "world" frequently need revision and it is a comfort and encouragement to hear a voice raised in protest against some of the world's standards. I should like on account of the appropriateness and excellence of the sentiments expressed, to quote in this connection a few sentences from an oration recently delivered by Hon. Charles J. Bonaparte before a graduating class of dental surgeons. He said,—"Professional men, at least if they are worthy to be so-called, render an immense service to American Society in teaching by their example and by the avowed purpose of their lives and labors, that the mere accumulation of wealth is not the true end of human endeavor, that it is, or at all events, it ought to be, in some sort, a by-product of the fulfilment of duty.

"One of the gravest dangers which I foresee for the American of the future is that it may become a land where honor and dishonor, justice and injustice, right and wrong shall be all measured in dollars and cents. Against this peril, the vital principle that looks on

money-making as a mere incident to faithful, strenuous and effective service, is, to my mind, our best safeguard; a society with honorable and conscientious professional men as its exemplars and guides may not be a society of saints, but it will never bow down in adoration before the Golden Calf.

"While a profession, no less than a trade, is a means of gaining one's livelihood, a profession is not practised, as a trade is pursued, with moneymaking as its conscious, avowed and legitimate end. I wish each one of you most heartily a large and lucrative practice, but I wish you this only because I feel confident you will get it unless you deserve it; in your case, as in all cases of honorable and worthy professional labor, if you shall succeed in making money, it will prove that you have also succeeded in gaining the respect and confidence of those you serve, and these things are beyond purchase by money. Moreover, although I hope you may be prosperous, I cannot say I expect to see you multimillionaires; if the great end in life of any among you is to become such, I fear those of you have started on the wrong road. The man who is guided by principle acts and lives under orders; he does his best, and leaves responsibility for the outcome where it rightfully belongs."

The standards of success in professional life, therefore, by some are considered to be more than possession of material things, such as number and power of automobiles, the size of a bank account or of "investments," the kind of house one lives in or the social entertainments one offers, the works of art one possesses or the variety and richness of one's apparel. These things all have their place, but they should be incidentals and not incentives.

One of the standards of the day is the "Educational," and in medicine it has been brought into the foreground in recent years by the action of various state legislative bodies, examining and licensing boards, medical associations, and the Carnegie Foundation for the Advancement of Teaching. Unfortunately for true progress in things medical, these standards have been and even are too arbitrary and material in their nature. It is chiefly the length of time spent in study, the number of courses, preparatory and advanced, the size and valuation of the School buildings, the laboratories and equipment; the size of Faculties and number of full-salaried instructors and the amounts of their salaries; the possession of libraries number of volumes contained and the salary of the librarian; the hospital connections and size and variety of clinics available; and things of such nature that have been adopted as the standards by which medical

schools and students are valued and classified. That such standards are unworthy and inadequate when applied to educational matters should be self-evident and it is with distinct approval that I am able to quote the president of the Carnegie Foundation, who in his latest Report points out the incongruities of such standards, especially as applied by the Council on Medical Education of the American Medical Association. He says in brief, classification of medical schools upon such a basis "has now become almost meaningless" (page 67); also, on page 69 ". . . the problem of classifying schools into four or five groups upon such criteria as the Council has assumed seems to me practically insoluble. It has served its day, and some looser form of grouping seems now desirable." Furthermore he says, "The first test of any school . . . is the *quality* of material that it accepts as students;" and ". . . the *quality* of the teaching, the ability and devotion of the faculty, must be taken into account." And again ". . . the principal function of the medical school is the *training* of *medical practitioners*. To sacrifice their interests to the preparation of a few men for *research* is not to be thought of." The really significant thing in these quotations is the use of the word "quality" as applied to students and teaching, and that is the one idea I am anxious to impress upon your minds to-day. It is the purpose, the motive, the ideal possessed by the student or teacher that will decide in great measure, if not entirely, the real "quality." Education should be considered as much more than the acquisition and possession of some knowledge of geography, literature, languages, mathematics, history, chemistry, physics, biology, logic, medicine, etc. These things are chiefly things of memory and of the so-called "senses" and are desirable and useful, but the education that is worth while and that makes for "quality" of life must include in addition to all these and allied things:

1. The ability to interpret Nature, Nature's purposes and natural phenomena, in so far as finite mind can interpret these manifestations of Creative and Infinite Power;

2. The ability to perceive the truth that is within or behind phenomena or appearances in whatever form presented; in so far again as absolute truth can be apprehended by mortal mind;

3. The education that is worth while results in the development of judgment, powers of perception, analysis and descrimination.

4. The education that is worth while enables one to deal justly with one's neighbour, and to enact laws or make guiding rules that

will result in the social, industrial, economic, political, medical and spiritual uplift of humanity.

5. The education that is worth while empowers one to differentiate between the *essential* and *non-essential* in all the phases of life.

6. The education that is worth while leads to humility; to a wide and generous sympathy with others; to practical altruism which appreciates and approves of "will to serve" and shuns and abhors "will to power"; and which prompts one to hold out a helping hand to those in need of physical, financial, mental or moral aid.

In connection with this question of education it may serve a purpose to ask if the mind of the man of to-day is any stronger, or more capable than the mind of his predecessor. There are those who claim that as far as real ability is concerned man's mind has not changed much, if any, during historical ages. The ancient Egyptians excelled all the peoples of their day in their possession of scientific or natural knowledge, and in this respect it is doubtful if they have been surpassed by the peoples of to-day. Their constructive ability along architectural lines is indicative of their knowledge of physics and mathematics, and of the imagination and artistic sense they possessed. The social, economic, political and artistic conceptions as well as the ethical and moral ideas of the Incas of America and many of the ancient Orientals seem to have been on a par with those current to-day throughout the world. According to a most instructive article by S. M. Mitra on "War Philosophy, Hindu and Christian" printed in "The Hibbert Journal" for July, 15, the ancient Hindu's War Philosophy, Ethics, Diplomacy and Strategy anticipated even down to minute details the war philosophy, ethics, diplomacy, and strategy of the modern civilized nations. The "*Mahabharata*" of 1500 years B.C. is quoted on the morality and expediency of war, and to show that many of the "conventions" or agreements of the Hague Conferences were not only discussed, but settled in that far-off day, in accordance with what are to-day called "humane principles." True there is to-day a greater utilization of Nature's forces than ever before in historic times, in the navigation of the sea and air, in the application of electricity in industrial arts and manufacture; there have been marvelous developments in wireless telegraphy and telephony: and there are greater national and international co-operations than the world has before known; and there never was a time when Nature's forces were more perverted or put to more destructive uses than at the present time, but has there been any essential development of

mental power, any real growth in mental capacity? An answer in the negative would probably be correct. As to possessing vast revenues and accumulating huge financial capital the rajahs of India were not, or possibly are not, a slow second to our modern great captains of finance. The wonderful harmonies, symphonies, beauties and majesty of Nature in color, form and sound are to-day not as fully appreciated as by the Psalmist who wrote "The heavens declare the glory of God; and the firmament showeth his handiwork. Day unto day uttereth speech, and night unto night sheweth knowledge." (Ps. xix).

Doubtless with all the educational machinery of modern civilization there is greater diffusion of natural knowledge than ever before, but that does not mean that the mental power of Man has increased, any more than that his muscular, respiratory or digestive powers have increased.

On the other hand there is much all about us to show that this wide diffusion of "knowledge," lacking as it does the proper development of Man's best possibilities, is a particularly unfortunate and undesirable circumstance. A glance at the havoc, destruction and devastation being wrought in the world to-day, a thought of the suffering, unhappiness and misery prevalent, would seem to be enough to convince one that there is something wrong and wholly wrong with humanity, in spite of, or possibly because of, the wide-spread diffusion of what is called science, or scientific knowledge, without a suitable counterbalance. That is, upbuilding standards and ideals and motives have not been able to control Man's tendency to pervert things and misuse them. Many of us can appreciate the following which is quoted from a sermon in the "New Church Messenger":

"The great thing for us to realize is, the pressing and paramount duty lying before man of putting the life of this world right. It is man who has put it wrong, wrought such havoc in it, overrun it with manifold evil and their manifold miseries. This is man's work, and man will have to undo it. We may blink that truth in any way we please. But there it is, moveless, inexorable. It will not stir from its place, until its bidding is done. Man has wrecked human life. Man must rescue it from destruction. That cannot be too strongly insisted upon, nor, can this as an attendant truth. It is perfectly useless to look to Divine Providence to bring this about, unless man, the free agent, religiously does his part. God works for the better, through man; not instead of him.'

Man unquestionably always has had, and to-day has, great mental power, and it is within his control to utilize it to his own profit and happiness.

I trust you will not weary with me if I carry my idea a step further. In "The Hibbert Journal," already referred to, is a noteworthy essay entitled,—"A Spiritual Balance-sheet of the War" by Cloudesley Brereton which gives evidence of keen analysis, deep perception, excellent literary style and sound judgment. As an explanation, not excuse, for writing on such a subject he says, (page 731) ". . . as one who firmly believes that the spiritual factors in war are even more important than the material—Napoleon no mean judge in these matters, assessed them in the ratio of three or four to one,—I cannot help feeling that any attempt, however crude and imperfect, at making a trial balance-sheet of the spiritual factors involved in this war promises certain definite advantages." One of the causes of the great war he says is that a ". . . Godless science has taken the place of religion" (page 742). And again he writes, when discussing the devoted patriotism and loyalty of the German people, "But this group loyalty seems to me only a part in its turn of that deep religious feeling which I consider to be the most distinctive quality of the race, and which lies to-day *crushed under the weight of appalling materialism*. One must not forget that the Reformation first took root in Germany and not elsewhere. The misfortune is that to-day in Germany this religious feeling has been made the *bondswoman of science*, whereas science ought to be the handmaiden of religion."

It is interesting, and I think instructive, to study historical events with the idea in mind of the incentive, the motive, the purpose, the ideals which were behind the facts, that is as far as it is possible to interpret the motives from the facts or acts themselves;—because there is probably some connection between the incentive and the final result. For an instant, glance at the story of Alexander the Great, weeping because there were no more worlds to conquer; of Cæsar and the Roman dominance; of Napoleon and his dreams of conquest. The standards and visions of these historic personages were very mundane. They evidently did not have deeply in mind kingdoms of freedom, of justice, of liberty, of equality, of high intellectual and spiritual development, of uplifting arts and useful industries, but rather kingdoms and empires of might where by physical power peoples might be kept under subjection. History

will repeat itself throughout time while such visions and standards and ideals control men's actions.

The great voyages of discovery of the fifteenth century, the colonizing enterprises of the sixteenth and seventeenth centuries have their lessons when measured by the highest standards. The biography of Columbus is a wonderful story of enthusiasm, imagination, confidence, patience, determination, heroism, and endurance, and it is suggestive that among the motives which spurred him on to his great work was the hope that he might convert the great Khan and his people to Christianity. In fact, he came to believe that the Most High had chosen him as his instrument to carry the light of faith into the kingdoms of oriental paganism. To the best of my knowledge there is no such high faith and desire connected with the so well known names of Cortez, Balboa, Ponce de Leon, Pizzaro, De Soto. The idea of plunder and conquest and self aggrandizement seems to be reflected from the records of their achievements. And what is the 300 year result of their work as witnessed in many of the West Indies, Mexico and adjoining territory?

The mere mention of such names as the Cabots, Cartier and some of the noble priests who were his successors, Magellan, Drake and Raleigh is enough to stir the blood and waken the spirit of those who love out-of-doors and adventure, but I want especially to ask you to think of the puritan colonization of New England and the Quaker settlement by William Penn. There was a compact signed in the cabin of the Mayflower on Nov 11 (old style), Nov. 21 (new style), 1620 in which the forty-one signatories claim that "haveing undertaken, for the glory of God, and advancement of the Christian faith, and honour of our king and countrie, a voyage to plant the first colonie in the Nathern part of Virginia, doe by these presents solemnly and mutually, in the presence of God, and of one another, covenant and combine ourselves together into a civill body politick, for our better ordering and preservation and furtherance of the ends aforesaid," etc. With no more courage or strength or pluck or endurance than other colonists had, but with the avowed purposes declared in the compact, what have been the chief results of their efforts?

A little more than a half century later, in 1681, the so-called "Holy Experiment" of William Penn was made in the state named after him; an experiment based on the Golden Rule without soldiery, weapons or gunpowder. The records of these two colonies contain

many contrasts with those of the 1607 Jamestown settlement of Virginia where in the short space of twelve years, in 1619, slavery was introduced.

Purposes and standards and ideals which stand behind or stimulate to action, do make a difference. In more recent times compare or contrast the purposes and results of David Livingstone's explorations into and his opening up of the "Dark Continent" with those of some of his successors.

And now, Ladies and Gentlemen, let me ask in conclusion, in what spirit, with what guiding motives shall we begin our year's work; I have been tempted to outline some standards for you, but the best ones were long ago given to humanity. It is simply for us to unstop our ears and hear,—open our eyes and see. Seven hundred years before the Christian Era the Prophet Isaiah was exhorted to "Go through, go through the gates: prepare ye the way of the people; cast up, cast up the highway; . . . lift up a standard for the people." (Isaiah 62,'10). And the standard existed long before his day and has been exemplified since, so there is no excuse for us for unfamiliarity with it.

I trust that in the year ahead of us we shall all make strenuous endeavors, in all our different relationships, to live up to the highest standards that have been given to us. Work done in that spirit, life lived in that effort, is sure to bring its own rich blessings.—*The New England Medical Gazette*, January, 1916.

PLAY—A FACTOR IN MENTAL DEVELOPMENT.

By Anson Cameron, M.D.

Play is nature's method of education. It is the fundamental form of all developmental activity. Play is the child's chief business in life. He plays to live and lives to play. Play is superior to work as a developer of the nervous and mental powers used in work because of its emotional content. Play is spontaneous, more intense, and because of the sustaining power of enthusiasm postpones the onset of fatigue and reduces the consciousness of effort, which characterizes the volitional attention of work. Enthusiasm is the spirit of healthy child-hood; it is the very essence of play and carries the burden of sustained volitional effort until the capacity for sustained effort is established as a habit.

The child's natural life of play is the best developer of its capacity to work. The fear that the love of play will interfere with the love of work and so undermine character, is groundless. The difference between work and play is often wrongly conceived. The difference, generally, is in the degree of physical or mental motives. Young people often do their hardest work while playing; and even to older persons, with interest, obnoxious work may become play. Work is important, but it is only one of the important things

Play develops organic vitality, nervous energy and skill and interests specific attention and enthusiasm together. Work is less effective it lacks spirit and develops only in a negative way when the child does things foreign to its nature in obedience to the commands of adults. It is always the spirit that plays. Such lack of activity depresses vitality and inhibits the development of the nervous system, play instinct and experience. Vivid life is possible through play.

By realizing a progressive series of aims in play, the child learns how to work and to achieve life through work. From an educational standpoint, play develops all the fundamental powers of the plastic growing organism; as internally impelled activity, play is practically the only method of education during infancy. Too often the mistake is made of forcing a child mentally or lavishing too many toys upon him, thus teaching him to constantly expect diversion instead of developing his own imagination and resourcefulness.

Play retains a conspicuous place during youth, and even in adult life, as indicated by the modern attitude towards more recreation and leisure for everybody; a great playground movement is going on all over the country. The playground should be organized, supervised

and recognized as a vital and co-ordinate branch of our scheme of education. Plays are progressive, and that which is the greatest fun at one time is not at another, because life itself is progressive.

In the past the attitude toward recreation in America has been that of the puritan to whom joy is danger and the pleasure side of life is reduced to the lowest possible point. Modern psychology teaches that joy is power, that right recreation is not merely wholesome, but developmental, and that like industry, recreation has become a matter of public concern.

Greek education was essentially a playground education, and the education most nearly approaching it to-day is that supplied by the playgrounds of America The Greeks placed emphasis upon hygiene, exercise, games, and play. They cared for the strong and knew more about health; we vastly more about disease. The Greeks had no patience with sickness, they seemed to look upon being sick as an offence

Recreation is the most powerful agency in raising the subnormal to the ranks of the normal. The physical and mental life are so closely correlated that the type of the one cannot be disassociated from the type of the other in any individual

Institutes and schools devoted to the training of atypical and backward children secure their most notable results in mental development by means of manual training, physical training, gardening and similar types of work. The effect of motor training upon mental development is receiving daily greater recognition Many of these sub-mental children, either from lack of intelligence or lack of muscular powers, are disqualified from any active class work or games, and for these children no resort is left except medical gymnastics. Physiologically the brain has attained nearly its full size by the seventh or eight year, but the physiological pathology of this type of child demands a brief preliminary consideration. Although the excito-motor centres in the spinal cord and brain are well developed at birth, the higher centres in the cortex and the commissural fibres connecting the higher and lower centres are still very imperfect.

The material brain at this period of their life is practically destitute of a corresponding mind, and is so far from being the basis of a consciousness that is capable of associating recollections and developing ideas, it cannot even receive the permanent impressions that form memory. But the cells of this brain have a latent potentiality that is almost boundless. They are gradually incited into activity

by the stimuli constantly received from the sense organs and muscles, and thus developing consciousness makes its first efforts at rational thought.

In cases of developmental retardation, due to inheritance, disease or other causes, the brain cells do not react properly to the continued impressions and stimuli that reach them; they tend to remain in a rudimentary state. This fact has been confirmed by experiments on animals, in which section of the nerves supplying any area results in the corresponding brain centres remaining rudimentary. In a mentally deficient child the brain does not achieve its normal active development. The power of memory is deficient; the impressions of previous stimuli do not become sufficiently imprinted to facilitate the responses based upon previous experiences. Co-ordinated movements are carried out only with difficulty, as speech or walking may show obvious defects. Sensation also may be impaired, as is shown in the newly born child, which is very susceptible to forms of gentle stimuli of the skin, but in newly born idiots or mentally deficient children, no response, or at best a feeble one, is obtained by similar stimulation. The muscular sense is diminished, the muscles being generally either in an atrophic or spastic state (or both) according to the respective conditions of the brain or spinal cord. Increase of muscular power goes hand in hand with progress of mental development or improvement in the sensory condition of the child. It has been proved experimentally and clinically that for properly carried out co-ordinated movements normal muscular sense is necessary; section or disease of the posterior roots produce ataxic symptoms, due to loss of muscular sense.

Imitation is a natural instinct in children and attempts at imitation of a given movement are one of the first steps towards attainment of co-ordination.

The chief objects in play and games in children subnormal mentally are to aid in developing efficiency of the motor, sensory and psychic elements of the cerebrospinal system, the muscular system and the sympathetic system, and to improve the constitution as a whole by stimulating circulation, respiration, digestion, etc. The psychic effects of educational gymnastics upon healthy children apply also to the effect of carefully directed gymnastics upon mentally deficient children. Respiratory exercises play an important part in the treatment of mentally deficient children in the physiological as well as the pathological cases.

The close connection between physical and intellectual improvement is clearly demonstrated in the case of the mental defective. The result of systematic and well conducted training of the body is a proper balance of the mind and body.

In some cases, quite apart from the cretin, the thyroid gland is not properly developed. Stimulation of the gland and also of the superior and inferior laryngeal nerves and cervical sympathetic can be employed to excite the gland to normal activity.

Modern education, stimulated by recent profound social changes, is experiencing a period of restlessness, discontent and experimentation. Several new types of school are being tried; one, the play school, correlates and gives a balanced relationship between physical education, moral education and cultural education. In the play school the teacher's interest is centered in the children and their activities and not merely in subjects of study. The lay school unites the spontaneous playlife of the child with society's demand that he be instructed

With the most perfect ventilation in the schoolroom there could not be the full aeration of blood in a child obtained on the playground. There must be the exhilaration of joyous exercise, the strengthened pulse, the quick and deepening breathing, the full chest and sustained effort that drives the air into the very apices of the lungs. Playground activities not only purify the blood but also stimulate healthful activity of all excretory organs, thus preserving a well balanced system.

The convergence towards a fusion of the school and play centre is seen, on the one hand, in the tendency of the school to organize the play-life of the child as is being done in Gary, Indiana, and on the other hand, in the tendency of the best year-round playgrounds to organize activities that are usually considered school functions. The school has absorbed an increasing amount of the child's time but it does not supply what has been eliminated from child life by modern social changes.

The child's reflex mechanism does not merely respond to external stimuli but he is driven by internal needs and hungers that are fundamental springs of conduct. The child is a spontaneously active creature and develops his organic, nervous, emotional and intellectual powers in the process of gaining adjustment.

Another new type of school is the vacation school, which recognizes the fact that the child's education is going on every day in the

year and the school replaces the home and community in supplying opportunity for experience. A prominent educator thus expresses himself:—"A generation ago, a boy had three months' schooling and nine months in which to get an education; now he has nine months schooling and three months in which to gain an education."

Then we also have the open air school which provides a fresh air school for the anemic and tubercular child, but the masses of children are kept indoors to be devitalized and subjected to a string of diseases with their train of adult weaknesses. At present, to obtain the best educational advantages a child must be blind, deaf, feeble-minded, incorrigible or truant. Then he is given exercise, playgrounds, gymnasiums, baths, fresh air in abundance, gardens and playshops. Normal children must get along the best they can without them. The widespread rebellion among parents against putting their children in public schools where they will be shut indoors has resulted in many private out-door schools.

The campaign for school hygiene has become almost hysterical. Accumulating evidence has shown the physical, mental and moral effects of long hours, confinement and overpressure in mental work. Nevertheless, there is a demand for a broader manual training, a larger nature-study, a fuller "physical education" and an efficient moral education—all interpreted as "subjects of study" and added to the old subjects. The real business of the child is not to pass examinations but to grow up, his real life is lived on the playground, not in the schoolroom.

Athletics are a phase of play for the adolescent stage, at which age play is more intense and vigorous. Competitive play in adolescence is nature's instinctive method of completing the development of the fundamental powers upon which the individual depends for constitutional, strong expression and social adjustment and service.

The athletic field of the late adolescent years is as truly a laboratory of conduct as is the playground of the child. Fourteen to twenty years is the critical period in which all the larger fundamental social character traits and moral habits are formed and they are formed in a large measure on the play side of life.

Athletic games have long been regarded as a moral prophylactic for boys, but it is only recently that they have been recognized as serving a similar purpose in girls. In the girl's general development the playground is a school for initiative, self-control and organization. The genuine life-giving exercise and the invigorating air of

the playground develop their bubbling and exuberant spirits and give opportunity for self-expression.

The time has come when men are beginning to realize that the stifling of the child's developing enthusiasms in life through a back-warping, chest-cramping, nerve-breaking, mind-deadening desk and schoolroom program of studies is cruel, and a reinterpretation and re-organization of his school work is demanded.

In every city there should be a psychological clinic connected, if possible, with the city hospital and controlled by the board of education. This clinic should determine scientifically the degree of mental dullness of subnormal children. Full clinical records of the patients should be kept and these patients should be assigned to a particular school or institution where they may be observed under controlled conditions.

Educational organization is focussed on the movement for directed play and leisure, as is now being demonstrated in the Boy Scouts and Camp Fire Girls, in which there is a program of activities and hours of achievements as a means of character development. Vocational training and guidance are receiving special attention as well as the avocational or recreation adjustment, which depends upon the educational adjustment during the years of growth.

Education is now the dominant science, the source of appeal in all social effort, as well as in the efficient adjustment of the individual. Of the three forces determining what any individual shall be at maturity—heredity, activity, and environment, with the three corresponding sciences,—eugenics, education, and social economy—activity alone is the source of power in the individual after birth. The environment sets conditions for activity, therefore influences results: but activity itself is the developer of all power, and education the science of constructive effort with the individual. Education has become the new inspiration in Human Engineering.

Even the universities feel the new responsibility of education, and schools of education are arising, still dominated by the old narrow ideas of education as an intellectual process, but destined to fulfill their real function,—producing engineers of child life and child adjustment to meet the requirements of an advancing civilization. It is not enough to know the psychology of the child, one must know the child's psychology. Education must tell us not only how to get the most out of the working hours, but also how to spend most profitably and joyously the hours that remain.

Summarizing, we see that play is an essential part of every well-balanced system of physical education, and that its value is threefold, physical, mental and moral. From an educational standpoint, play's greatest value lies in the fact that, if rightly conducted, it awakens and strengthens the high moral qualities of fairness, courage, determination, steadfastness and presence of mind. Play gives energy, decision and promptness to the will. Play and games teach obedience and subordination of self for the benefit of the group. In short, by training not only the physical and mental, but also the moral powers, they are of very great service in cultivating the civic virtues which are necessary for the life and welfare of the individual and of the community.—The *North American Journal of Homœopathy*, October, 1915.

THE
CALCUTTA JOURNAL
OF
MEDICINE

Vol. xxxv.] March, 1916. [No. 2,

THE THERAPEUTICS OF EXERCISE.

By B. F. Roller, B.S., M.D.

The word therapeutics is of Greek etymology. It means the healing of the sick. Its modern meaning includes the treatment of disease. Therapeutics of exercise, therefore, means the use of exercise in treatment of impaired or unnatural conditions of the human body. The medical profession and the public generally acknowledge that exercise is contributory to health, but the fact that it deserves a place amongst the most potent of therapeutic measures in the treatment of actual disease is only beginning to be recognized. Diseases have practically as many degrees as they have days of life Therapeutic measures vary also in effect and indication according to the degree, the stage, or the kind of the disease. Exercise has always been classed as a prophylactic measure only. When a patient takes on too much fat and the integrity of the heart's action becomes mechanically impaired, for example, exercise has been recommended to avoid the onset of disease. When elimination is below par and the retained poisons begin to produce a fatty degeneration of the viscera with the signs of functional or even of incipient organic impairment the doctor says perfunctorily, "Eat less and excercise more"

The conscientious and intelligent prescribing of definite exercises for each special indication, however, has not been done for several hundred years until recently.

It is difficult to understand why the therapeutic efficiency of exercise has been so long overlooked. To any thoughtful man, especially if he be a student who understands the physiology of exercise, the remarkable curative powers of that agency will become apparent upon even superficial consideration. The conditions which I have described are not merely threatening signs except that the first indications of begining disease should be construed as a warning always. Obesity and obstipation are nothing less than disease, for it is only a matter of stage. The fact that we have not always recognized them as such is probably responsible for the fact that the mortality from degenerative diseases has doubled in the last thirty years, a fact for which the profession should be severely criticized. A degenerative disease is none the less a disease in the beginning than in any other stage. It has been the tendency of the profession, however, to treat degenerative diseases as merely abnormal conditions of functions in the beginning, to underestimate their importance and to leave their treatment to the Turkish bath men, physical culturists and quacks. The unfortunate thing about this particular fact is that degenerative diseases when allowed to progress as they so frequently and insidiously do, to an advanced and dangerous point before therapy is begun, are then found to be difficult, if not impossible, to cure.

It is easier to prevent than to cure any disease. Most diseases are much more easily cured in the beginning than in any later stage This is particularly true of degenerative diseases, including all non-infective forms of diseases of the heart, blood-vessels, and kidneys. In spite of the fact, however, that such diseases are now the chief causes of death in New York City and probably in every other American city, the physicians of to-day feel themselves above this simple but most effective measure and, therefore, listlessly, vaguely and indefinitely, recommend exercise and the Turkish bath. By so doing a physician resigns his most

important function—the prevention of disease or the curing of it in its earliest possible stage.

In a paper read before the American Medical Editor's Association at the McAlpin Hotel, October 19, 1915, I said "In 1914 the deaths from heart disease in New York City led with 10,058, and combined with kidney diseases and apoplexy, degenerative diseases all three etiologically allied, numbered 16,772 or 23·7 per cent. of the total deaths. The reports of the Department of Health issued in January 1915, show that 19,228 deaths occurred between the ages of 45 and 65 years. That means that 25·71 per cent of the total deaths are mostly from degenerative diseases."

Those deaths were largely preventable. In fifteen years the death rate from all causes in New York City has been reduced from 20·57 to 13·4 per thousand, almost 35 per cent. In infant mortality the reduction from 181 per thousand births in 1902 to 95 in 1914 was 52·4 per cent. Dr. S. S. Goldwater, New York Commissioner of Health, said in a brochure entitled, The Next Step in Preventive Medicine, "The death rate from diseases of the heart and kidneys has doubled in the last thirty years."

Dr. Lyman Fisk, who promoted the establishment of a certain life extension institute, says, "The diseases which are gradually being conquered, the diseases to which public health activities in the past have been directed, are diseases of the self limiting type, namely, those in which the human organism if possessed of a reasonable resisting power summons to its aid from its own tissues and organs the antidote and cure. But the diseases that are on the increase, those of the degenerative class are not so characterized. Once their processes begin, they tend to progress to a fatal ending unless there is some change in the habits or the environment of the patient, and even then the complete restoration of condition is often difficult if not impossible. As the demand upon the profession to check these maladies of the nervous, renal, and cardio-vascular type increases, the value of a periodic inspection of the apparatus that is to be guarded and conserved, becomes logically evident. It also follows that the

physician must spend less time in mastering an obsolete pharmacopœia and more time in accumulating knowledge of the Influence of Living Habits so that he may keep his patients out of trouble instead of trying to perform impossible tasks on worn-out and broken-down tissues."

It is a self-evident fact that the medical profession has been paying too much attention to big things compared with the amount of consideration they give the supposedly unimportant details. The majority of men want to be great specialists; they want to do the unusual and the heroic thing. They would rather excise a lung by aid of a pulmotor or in a vacuum than to direct a patient's hygiene and health building so that he may avoid tubercular degeneration or overcome it in the early stages. They would rather extirpate an intra-cranial ganglion for tic-doloroux than to impress emphaticaliy upon the patient's mind the proper kind and importance of oral hygiene. To guide and direct a patient in special exercises and auto-massage for the relief of constipation and the degenerative diseases for which that condition is responsible is fully as important as the dilatation of the sphincter, for removal of an appendix, or an exploratory incision for adhesions and strictures, but it is not half so dramatic. The majority of good physicians treat easily and effectively the major and advanced pulmonary conditions, but few of the best know how to cure a simple cold in the head.

The school in which I studied medicine certainly ranks as one of the best, but I never heard a lecture there on exercise. I don't remember ever having seen an exercise prescribed throughout my college course But experience has taught me, since the fact which a few others have already recognized, that in a number of important conditions therapeutics offers no hope except in exercise.

The public has found out that exercise is a very excellent medicine. They have found out that exercise will cure a great many ailments, will cure them inexpensively and early in their course. It is to be deplored that they did not learn that fact from us. We have admitted and sometimes even advised that

exercise is generally beneficial, but since Rome fell we have not prescribed and urged and directed it as a therapeutic measure until very recently. The tremendous growth of the athletic spirit and patronage of sports as well as the thrift of physical culturists and all sorts of so-called and mostly uneducated physical therapeutists, bears witness that the people realize in an unscientific way the benefits that exercise affords. That, in a way, is an appreciation of the therapeutic uses of exercise, for the majority of so-called merely abnormal conditions are really diseased conditions and the effects of exercise are correspondingly curative therefore instead of preventive only.

The few educated and especially prepared men who have tried intelligently and systematically to obtain cures by exercise have obtained such gratifying results as to make them unusually enthusiastic. The tendency of the profession anyhow is to get away from strong medicines as much as we possibly can. All we can do with medicines in any case is to help nature in the fight againt disease. I believe that a careful study of the physiologic effect of exercises will show that we can do that thing better in a great variety of cases by exercise than by any other means.

Exercise means the performances of work or the overcoming of resistance. In its broader sense it includes exercise both active and passive, and therefore not only voluntary muscular movement but those mechanical agencies which produce a similar result, such as massage, vibration, and electricity. Its physiology may be expressed as follows,—any function or tissue of the body to maintain health and efficiency must be more or less constantly used. It is generally acknowledged that anything which is unemployed soon atrophies and loses its usefulness. The principle is conversely true that the trained use of any organ or tissue makes that structure more efficient. The fact may be easily deduced also that tissues which are the seat of atrophy and degeneration have derived that condition from an insufficient use.

The beneficial effect of exercise is due to an increased flow of blood and lymph which carries a greater amount of nutrition and oxygen to the tissues and more of the waste products away. The arteries are dilated and hold a larger amount of blood. The strain is taken off the heart, which has then a chance to recover. The blood pressure may be temporarily increased and also the strain on the heart but, on account of the increased oxidation, nutrition, and elimination every tissue in the body is bound to be benefited and the only necessary precaution is to administer the remedy so mildly as not to defeat the end in view. Exercises must be given in every indication gradually, increasingly, and with extreme care. If they are given with sufficient caution, however, to avoid the immediate danger of sudden strain in the heart or vascular system, the increased physiologic effects in cleansing, metabolism, and growth are sure to result in the repair of tissues in the majority of degenerative conditions.

In an atrophied or undeveloped muscle, for instance, there is a diminished amount of cellular protoplasm involving all the structures of that muscle. Even the blood vessels, nerves, and connective tissues seem to share in the retrogression. The only hope for repair lies in the vigorous and persistent use of that muscle, for by that means the physiologic processes are increased. Nervous and electric impulses are sent to the part, and to that extent to which they are effective, the blood supply is increased, the cells grow by the absorption of oxygen and nutrition from the greater supply of blood and lymph which in turn wash out the waste products and leave healthier and better cells. These principles will apply in all cases where there is not present an active inflammation or the invasion of a microbic cause. In a simple cold, for instance, where there is even a marked congestion with a loss of vascular tone, nothing will relieve so quickly as vigorous exercise. In incipient tuberculosis where the condition is a fight between the invading power of microbes and the resisting power of the individual, the increased circulation, oxidation, and elimination result in a cleansing growth and increased strength of the tissues, not only at the infected site

but in the tissues throughout the body. There are fewer poisons to break down the healthy cells; there are stronger phagocytes to fight the unwelcome invaders; and Nature is enabled thereby to wall off the disease. In infantile paralysis, for instance, and also in tabes dorsalis, after the disease has once been stopped, the remaining motor cells in the anterior horn of gray matter are capable of very great development. Exercise takes to these cells and their separate motor tracks a fresh and wholesome of blood, lymph, and nutrition, while it carries away the poisons of both disease and catabolism. The motor cells grow consequently in size and strength and function until the few that happen to remain can do the former work of all. In pressure paralyses increased blood and lymph supply and corresponding oxidation and metabolism make possible the repair of affected nerve tracts until the impulses which practice keeps continually driving from behind are enabled to bridge the chasm and the motor power returns. In fatty infiltrations the increased metabolism and oxidation simply burns up the excess of fat, not in the fat cells alone, but the oil globules in cells of every kind. In fatty degeneration the process of repair is much more difficult. The protoplasm of the cell, including the nucleus, has been changed into useless microscopic globules of oil, and there is little left of the original vital protoplasm from which tissue can rebuild. But the process remains the same. In such conditions the walls of the blood vessels and the heart are the first and most involved on account of the immediate effect of poisons circulating in the vascular system. Those poisons when not the result of bacterial egestion are due to lack of exercise and bad living habits, which means that they are chiefly the auto toxins from over-eating, and the catabolic waste products from imperfect elimination and also none the less frequently, drugs, tobacco, and booze. Again the restoration of the normal and active physiologic processes which are supported by a more abundant supply of nourishing and cleansing blood and lymph and which encouraged by a more vigorous oxidation, is most effectively brought about by physical exercise. Fatty degeneration is res-

ponsible for the great majority of heart and blood vessel disease. The great majority of those diseases, therefore, will respond more quickly to the therapeutics of exercise than they will to drugs for the reason that medicines commonly deal with the effect instead of with the cause.

Exercise helps Nature along in its most natural way. Exercise is not always alone sufficient but, when supplemented by diet, baths, and proper medication, it is certain to be in a great many cases a most potent factor in the cure of disease.

Dr. Russell exhibited a case before the American Medical Editors' Association last week in which he had reduced a hypertrophied heart by more than two inches by systematic exercise, supplemented of course by diet, baths, and medication. In my early football career in a western university my heart was so enlarged that its noisy pounding made sleeping very difficult, and the resulting headache made study almost impossibe. It required a little more than a year of carefully graduated exercise, supplemented by diet alone to reduce my heart to the normal size.

In the mercy Hospital in Chicago a few years ago there were two cases of tubercular caries of the spine, one involving the fifth thoracic vertebra, the other a little lower down. Both resulted in complete paralysis below the waist line, progressing finally to sphincter involvement. When the patients became moribund the abscesses were aspirated by a leading surgeon. They were both placed in plaster cast, and except for exercise, were treated precisely alike for months. One took an interest in himself and had faith in the therapeutics of exercise. After a certain number of applications of electricity and massage there were slight evidences of the return of power in the toes of both patients. From then on one exercised and the other did not: one improved, and the other did not. Exercise was limited in the beginning to the wiggling of the toes which one thought well worth while, but the other thought not. That wiggling-power extended in one case until in fourteen months he could walk on

crutches; the other remained a paralytic and ambulated in a rolling chair.

To-day the one who exercised his erstwhile paralysed limbs tirelessly and persistently (weight 240 pounds) is one of the strongest and most active men in the State of Illinois and, except for the fact that he is two and one-half inches shorter than he was before that experience, you could not detect that he had ever been ill. The patient who did not exercise and who refused because he did not believe in the therapeutics of exercise, is still an hemiplegiac, with a pair of helpless shrivelled limbs, still ambulating in a rolling chair.

Exercise as a therapeutic agency must be used with care and discretion. When so used its possibilities are almost incredible. I shall not tire you with the history of numerous successes, but I appeal to the medical profession to use fewer drugs and more exercise. By far the greater portion of the pharmacopæia has already become obsolete. In the search for a substitute the profession has turned to surgery, and that specially has been much abused. The people in terror and despair have rushed out in overwhelming numbers to Turkish bath men, untrained physical culturists, charlatans, and medical apostates. It is to be hoped that the medical profession will take hold of and prescribe therapeutics by exercise, and that some day it will be found in the curriculum of every college course.

Discussion of Dr. B. F. Roller's Paper.

Dr. D. E. S. Coleman: The great value of exercise is manifest from the experiences quoted in Dr. Roller's most excellent paper. The necessity for a proper understanding of this efficient therapeutic agent is not fully grasped by the medical profession. No medical college curriculum is complete without proper instruction in this important branch. I know from personal experience the benefit derived from the proper use of the muscular system, and I never neglect my exercise. The result is that at forty-three I feel better, am stronger and possess greater endurance than I did at twenty-three, and I expect to feel better at fifty-three than I do to-day.

While it is true that some people take too much exercise, the fact remains that for one individual who is harmed by over-activity, millions pass to an early grave because of indolent habits. Observe the great majority of men of middle life, the time when they should be at their mental and physical prime.

Their large abdomens, narrow chests, flabby muscles and lack of energy show how much they have neglected one of the laws of nature. A part unexercised degenerates. The toxins, which accumulate in the bodies of those who "look upon the wine when it is red" and who stuff themselves with improper food, have full rein to exert their pernicious influence because of the lack of elimination possible through judicious physical exertion.

Dr. Roller has pointed out the value of proper exercise for those who are suffering from disease. His results are remarkable. Although the medical profession is familiar with the exercises used in degenerative disease of the nervous system and other ailments, physical therapeutics is a field sadly neglected. A doctor friend of mine, whom you all knew well, was obliged to leave his New York practice because of valvular disease of the heart. No one expected him to return. A portion of his treatment consisted in systematic exercise. Walking up hill was apart of it. He returned to an active practice some years ago. I walked up a long hill with him last winter and, although he suffered from slight dyspnœa, the same exertion at the time he left the city probably would have caused serious results.

Great care is of course necessary in the therapeutics of exercise and any excess would be harmful. We would not put an old man with a fatty heart playing football, or a big-husky, lazy fellow playing mumbledy-peg. Each case must be individualized by a competent observer, and Dr. Roller's long experience makes him especially qualified.—*The North American Journal of Homœopathy*, December, 1915.

EDITOR'S NOTES.

Sir Henry Roscoe.

Sir Henry Roscoe died suddenly on December 18th at his residence near Leatherhead. He was born in London on January 3rd, 1833, and was a grandson of William Roscoe of Liverpool, the biographer of Lorenzo de Medici, and Leo X. From an early stage of his career he showed a bent towards chemistry, which he studied first under Thomas Graham and Williamson at University College, London, and afterwards under Bunsen at Heidelberg. When he was awarded the Royal Medal by the Royal Society, it was for his photo-chemical work with Bunsen from 1855 to 1863, and for his work on vanadium after he had gone to Manchester. As professor of chemistry in Owens College he was, from his appointment in 1857 until his resignation in 1887, one of the small band of men who raised that college from an apparently moribund condition to the great place which it now holds. His name is well known to many generations of medical students by his *Lessons in Elementary Chemistry*, a work which only a master of his subject could have written, and one worthy to stand beside Huxley's *Physiology*. It was, perhaps, after he began to take an interest in public affairs, and especially after his election to Parliament as Liberal representative of South Manchester, that he did his most important work for science. Before this he had said "the spirit of research must be in the air of the laboratory." He was a man of strong character and conviction, but of a genial temperament, which enabled him easily to make friends, so that his influence with the governing classes became very great. Few men did more for scientific education, both directly and indirectly than Henry Roscoe. He had lived out his life and died full of honours, but the country very much needs men of his type to day to take up his mantle.—The *British Medical Journal*, December 25, 1915.

The Birth-rate in War Time.

In a letter published in the *Spectator* of November 13th a correspondent who signs himself "F." quotes some interesting statistics tending to show that in time of war many more males than females are born in belligerent countries. "F." writes from Lucknow in India, and draws his figures from the births recorded in the *Times*. He finds that for one period in 1914 there were 353 male and 352 female births recorded in this daily paper, whereas for a longer period in 1915 the figures were 1,292 male children and 1,091 female. As "F." himself suggests, his figures are so arbitrary, as indeed is inevitable considering the method of their collection, that they cannot serve as a basis for any general conclusions as to the relative proportions of male and female births. But Dr. Peck writing to the *Spectator* a fortnight later, is able to bring forward some interesting figures relating, to the birth recorded in the Chesterfield district, of which he is medical officer of health, that possess a distinctly greater value for the determination of the point at issue. At the census of 1911 the district contained over 38,000 male and 34,000 female inhabitants. During the five years 1909 to 1913 there were born 6,010 male and 5,773 female children, giving the male sex an average preponderance of just over 4 per cent. But during the period May to November 20th, 1915, the male births were 10 per cent. more than the female. Naturally these statistical results would require confirmation and great extension before they could be taken as proving that war is a factor in the increase of the proportion of male births.—The *British Medical Journal*, December 25, 1915.

The Dog as a Carrier of Disease.

Of the diseases carried by dogs, the foot and mouth disease is probably of the greatest interest at this time. In this case the dog acts as a mechanical carrier of infection. The dog which runs across an infected farm easily may carry in the dirt on his feet the virus of the most contagious of animal diseases to other farms and thus spread the disease to the neighboring herds.

There are, however, many other maladies in the spread of which the dog takes an active part: Rabies, hydatid, ringworm, favus, tapeworm, roundworm, and tongueworm are often conveyed to human beings in this way. It occasionally happens also that the dog carries fleas and ticks, transmitting bubonic plague or the deadly spotted fever in this way. Hydatid disease is caused by the presence in the liver, kidneys, brain, lungs, and other organs, of a bladder worm or larval tapeworm. A dog which is allowed to feed on carrion or the raw viscera of slaughtered animals may eat a bladder worm containing numerous tapeworm heads. These tapeworm heads develop into small segmented tapeworms in the intestines of the dog. The tapeworms in turn deposit eggs which are passed out in the excrement of the dog, and spread broadcast on grass and in drinking water where animals can eat them and thus become infected. Tho hog is particularly liable to this disease because of its rooting habits.

Of the external parasites which dogs may carry to animals, fleas and the various kinds of ticks are both troublesome and dangerous. The remedy is clear. The owner must keep his dog clean, not merely for the comfort and happiness of the dog, but to prevent it from becoming a carrier of disagreeable and dangerous vermin. These reasonable measures, important to the stock farm, have a direct connection with the health of the family. Where ringworm or other skin diseases break out among the children, or the worm parasites develop, it is well to determine whether a dirty or uncared for dog may not be carrying infection on his skin or his hair, or conveying disease from carrion.—*New York Medical Journal*, January 29, 1916.

The Soldier's Diet.

Professor Filippo Rho has published recently an essay on the feeding of soldiers in peace and war. The two chief points in it are—first, the repeated statement that the ration is too rich in nitrogenous content; and, secondly, that alcohol should be prohibited, although it is admitted that it may be an occasional addition to the dietary, but only with meals and when work is done, not as a preliminary to work; tea and coffee, well sugared, are, Professor Rho considers, much more useful in this respect. Although alcohol provides some calories, it is always rather an anarchic element—"consuming like a burning faggot, and not like charcoal, in a slow and lasting fashion." Like many writers on dietetics, he is much influenced by Chittenden's results; for the soldier, who is often still growing, he would allow 100 grams of nitrogenous food, 70 grams of fat, and from 300 to 600 grams of carbohydrates, according to the work required, the minimum diet giving 1,934 calories. He considers that the diets of practically all armies err on the side of providing an excessive amount of nitrogenous food, and the English are, he thinks, amongst the worst. It is even suggested that some of the so-called trench diarrhœa is due to excess in nitrogenous food. Professor Rho realizes that the modern scientific results seem to suggest a reduction in the nitrogenous content of the diet as advisable, yet it is necessary to proceed slowly in making radical alterations when dealing with masses of men, for the majority are still believers that to be strong plenty of strengthening things such as meat must be taken. He gives this as a reason for not making detailed recommendations, but contents himself with explaining the results of recent work in dietetics, and how far practical experience has borne them out. It is interesting to read that according to calculations recently made, the rations of the old Roman legionary worked out at 123·57 grams albuminoids, 25·22 fats, 429 hydrocarbons and 25 alcohol, giving a total of 2,482 calories.—*The British Medical Journal*, December 11, 1915.

Rancid Butter.

It seems logical to conclude that when a food becomes unpleasant to the taste and develops a disagreeable smell it is no longer fit for consumption. That view, at all events, will surely be accepted in the case of the evil-smelling egg and probably of rancid butter also. The rancidity of butter is due to a change in the composition of the fat, brought about probably by bacterial agencies stimulated by air and light, and likely enough the products are unwholesome. The removal of these products by washing, perhaps with the addition of a little carbonate of soda or other neutraliser, renders the fat sweet and non-acid again. Some months ago a consignment of rancid butter was seized in the metropolitan borough of Bermondsey by the food inspector, who gave it as his opinion that the butter was rancid and unfit for human consumption. This opinion was confirmed by the medical officer of health, Dr. R. King Brown, and also samples of cake and shortbread which had been made with this butter. A stop order had been placed on the butter in accordance with the Unsound Food Regulations of the Local Government Board, and eventually a summons was applied for at the Tower Bridge police-court in order that the magistrate should decide whether the butter was unfit for consumption. There could be little doubt of its rancidity since the analyst reported that it contained 3·16 per cent. of fatty acids compared with a figure for fresh butter of well under 0·5 per cent. The magistrate, after hearing chiefly chemical and practically no physiological evidence, decided that the butter was fit for human consumption, and so no order was made under the regulation and the consigment was released. It does not appear to be disputed that the butter was rancid the question to decide being whether in that case it was unfit for food. Its destiny was presumably cooking purposes, in which its rancidity would become more or less obscured. Having regard to the nature of the process of rancidity, we may be wise in entertaining a suspicion that rancid butter is not a wholesome food. It appears that though air plays a part in this process the change is due not directly to air, but to the stimulus of oxygen given to certain micro-organisms, amongst which are included oidium lactis, B. fluorescens liquefaciens, and cladosporium butyri. The fact that such a butter would be objectionable and unpalatable in the ordinary way self-condemns it.

Any food, generally speaking, that excites nausea must be regarded as unwholesome.—The *Lancet*, October 9, 1915.

Limitations of the X-ray.

Cotton Discusses the limitations of the x-ray in the diagnosis of certain bone and joint diseases. While the x-ray is invaluable as an aid in the diagnosis of many bone and joint conditions, and the roentgenogram is pathognomonic of some diseases, there are different diseases in which the roentgenograms are similar, and the diagnosis must therefore be made with the aid of clinical data. In the early diagnosis of certain pathological conditions of bones and joints—for example, tuberculosis and acute infectious osteomyelitis—the x-ray is not of great value, because of the fact that changes in the structure and in the density of the bone have not been produced, and further the x-ray cannot be relied upon always to give a true picture of the nature and extent of the pathological process. These limitations of the x-ray in the diagnosis of diseases and extent of pathological processes are due to the fact that the roentgenogram does not show differences in the composition of substances of the same density.—*The British Medical Journal*, January 15, 1916.

Proportion of Recoveries among Wounded.

THE *Times* published on December 20th a paragraph to the effect that the German newspapers had been supplied "with extraordinary figures concerning the low rate of mortality and the high rate of recoveries among German wounded." The figures for the first month of the war are the same as those given in an article on the proportion of recoveries among the wounded in the German and British armies published in the BRITISH MEDICAL JOURNAL of September 11th. So far as the German army was concerned, the statistics dealt with the first eight months of the war, and were taken from an article contributed to the journal of the Danish Medical Society (*Ugeskrift for Laeger*) by Louis Fraenkel. The paragraph in the *Times* states that "the monthly average for the the first year of war was in the German army," for every 100 wounded, 89.5 fit for service, 8.8 discharged or sent on leave, and only 1.7 deaths. It is added that the German comment on the figures is that "no army in the world can show such favourable returns," and our contemporary's comment is that "if the figures are even approximately accurate, they certainly very greatly impair the value of most of the rough calculations of German casualties." The claim that no army in the world can show such favourable returns is a boast which cannot be accepted without fuller information and more detailed examination. When considering the figures published by the Germans for the first eight months of the war we were able to state that the percentage of wounded who had died in British military hospitals in Great Britain and Ireland during the first year of war was 0.86, the percentage permanently unfit 4.14, and the percentage discharged to duty, on furlough, or sent to convalescent homes, 95. In the German returns originally published the percentages now given as "discharged or sent on leave" were returned as "rejected." This either corresponds to or must include the percentage returned from the British military hospitals as "permanently unfit." Such statistics, however, though they possess a certain interest, do not render it possible to draw any conclusions as to the ratio of men who have died of wounds to those who have recovered more or less completely, much less do they warrant any conclusions as to the number of those who can again take their

place in fighting units. With regard to the first point the figures refer to soldiers treated in the military hospitals in Germany and in Great Britain and Ireland respectively, and it cannot be doubted that a large number of men treated in the most advanced medical units, and on the lines of communication must have died before they reached the hospitals in Germany or the United Kingdom. As to the second point, it is obvious that much depends on the definition of the terms "fit for service" and discharged to duty." It is certain that a large proportion of the men in both cases, though they return to the army, will only be fit for light duty in the auxiliary service. In connexion with this subject, we note that in a communication to the Academy of Moral Sciences on December 18th, M. Jacques Bertillon, Director of medico-surgical statistics of the French Army, stated that the mortality among the French wounded is now 2.3 per cent. as compared with 5.8 per cent., the rate at the beginning of the war.—The *British Medical Journal*, December, 25, 1915.

Garlic Juice in Wound Treatment.

By A. D. Serrell Cooke—In a recent issue of the *Lancet*, September 11, 1915, Mr. V. Gabriel and the author recorded their experience with garlic in suppurating wounds in twenty cases and gave details of six of the cases treated. It was stated that after establishing efficient drainage and washing out carefully the infected wound twice daily with a lotion of garlic juice and distilled water, in a strength of one to three or one to four, a noticeable improvement occurred in twenty-four hours and a decided improvement within forty-eight hours. During this period of time the purulent discharge not only became markedly diminished, but also the pain and surrounding inflammation were either much relieved or had disappeared. Since the publication of the article referred to above, there have been treated at Paddington Infirmary more than a hundred cases of wounds of all kinds, and the results, provided that efficient drainage has been maintained, continue to be very satisfactory. The kind of wounds treated have been recent dirty wounds, in which suppuration had not occurred; foul, lacerated suppurating wounds of the face, scalp, thigh, etc.;

extensive superficial burns of the face, scalp, chest, limbs and abdomen in children; suppurating bursæ about the knee; cases of empyema; foul ulcers of the leg; infected and suppurating wounds in connection with compound fractures; carbuncle; one particularly interesting case of moist spreading gangrene of the leg in an old woman of seventy-one years. In many cases in addition to washing out the wounds twice daily with garlic juice lotion, compresses formed by soaking gauze in a weak lotion, from one to six up to one to ten, have also been applied continuously at the outset. The object of the present paper is to give the result of observations of the action of garlic juice both on the skin and a few notes in further relation to the wounds already referred to. The good effects of garlic juice have been ascribed to the active principles contained in the essential oil derived from it; and oleum albi is stated to contain allyl sulphide, in addition to certain volatile terebenes. As the red skinned varieties of allium sativum are said to contain more of the essential oil than the white skinned, the juice derived from the red skinned varieties has consequently been employed. With regard to oleum allii, the action on the skin is that of an intense rubefacient which may go on to vesiccation. Its carbolic acid coefficient is nearly two. With regard to the succus allii, the appearance and smell are striking according as to whether the juice has been treated or not, soon after extraction, with alcohol or other preservative. The fresh untreated juice is of a pale straw color, having a flocculent deposit, which when stirred up gives a clouded appearance to the fluid; while the odor is very strong and characteristic. The treated juice, on the other hand, is a clear fluid, pale straw in color, and the odor is distinctly masked. While the fresh untreated juice may be kept indefinitely under proper conditions. Recently wounds have been treated with some juice which had been kept in a cellar for more than a year, and the results have been quite as effective as when the more recently expressed garlic juice has been employed. Within wounds a lotion of one of garlic juice to two of distilled water often causes decided pain. While lotions of one to three and one to four have usually sedative effects.—*New York Medical Journal*, December 4, 1915.

Profession or Trade?

Were one to trace step by step from its beginning the profession of medicine, he would find that first of all the physician was a priest and his calling part of the sacred rites. Indeed, one has only to go back to the medicine man of the Indians and of the African savage tribes to find in modern times the type from which the physician sprung; and his position set him apart and marked him as different from other men. Something of the priestly character adhered to the calling so long as the physician dealt directly with his patient, but with the advent of biological investigation and the rapid advance of laboratory methods, there has come a distinction. The personal touch has suffered as the patient has become more and more a subject for investigation rather than a human being needing comfort as well as treatment. The family physician is becoming largely a pleasant memory as his functions are being more and more sub-divided and delegated to this specialist and the other. Whether this is altogether a gain for the patient is a question that is by no means decided. The loss of personal touch, the affection that grew fully as much from confidence in the man as from faith in his remedies, were a distinct asset to the patient that is not altogether compensated for by increased skill; and the loss to the physician himself is measurable in terms of character which, we are told, is better than much fine gold; for in the final balance it is the things of the spirit that count and not worldly possessions.

"That which a man makes or produces is his own, as against all the world—to enjoy or to destroy, to exchange, or to give; no one else can rightfully claim it, and his exclusive right to it involves no wrong to any one else." This quotation from the letterhead of the American Economic League makes one wonder whether a leaven of pure selfishness has not crept into the profession of medicine that bodes ill for its better ideals. Are we to accept without reservation this purely materialistic interpretation? Can we truthfully say that the inheritance of service is only measurable in terms of cold cash? Do we practice the art of healing only for the money which it brings us? Is it true that we no longer do for the joy of the doing? In its ultimate analysis the sentiment that no one else can rightfully claim the product of a man's best thought and that it is his alone to use as he pleases is too distinctly materialistic to stand the light. It is essentially part of the doctrine of the Scribes and Pharisees. Service and self-sacrifice have been the well-spring that inspired such souls

as Washington, St. Augustine, Rafael, Florence Nightingale, Pasteur, as well as that host of humble followers of the light whose only record is the loving remembrance of those to whom they consecrated their lives.

It is indeed hard in these times when wealth is so abundant, when fortunes are so quickly made, when the glamour of success is so ever present before the eye, to convince oneself that the ideal of making men better stands for more in the long run in its power to develop and build up character than any other employment; and yet there is in the land today an ever increasing and ever swelling tide of service. Day by day one reads of the efforts to better the social and physical condition of the poor, and public thought leans more and more toward providing for the unemployed. Honesty in public employ is demanded more and more loudly. It would seem that never has the profession of medicine had a more golden opportunity to demonstrate its boasted ideal of service to mankind. Are we to accept the teaching that the ideals we have inherited shall be made subsidiary to and regulated by our ability to make them pay? Shall we consciously lower the standard of the past? Faith in the men who make up the profession forbids the belief that such a thing can be. It must be that those who have professed such articles of faith have not as yet awakened to the fullness of their responsibility and that the time will come when a full realization of what the physician owes to himslf and to his profession will teach him the difference between a profession and a trade.—*Long Island Medical Journal*, January, 1916.

A Reply to A. C. Jacobson, M. D.

Dr. Jacobson's article, "Hahnemann's One Experimental 'Proof'", appearing in the August number, shows a profound lack of knowledge concerning the real facts of Homœopathic history. He bases his inferences upon the most superficial examination into the truth. If he would carefully read Hahnemann's "Organon," "Materia Medica Pura," "Chronic Diseases" and "Lesser Writings," along with the "Life of Dr. Samuel Hahnemann" by Dr. Lindsley Bradford, he would become conscious of the gross injustice he has done by publishing an article founded upon insufficient data. *Hahnemann did not base his entire platform of similia upon his experiment with cinchona.* Such an assertion is absurd and *untrue.* That experiment was only the faint ray of dawn leading to monumental achievements. He had no thought of similia when starting

his experiment with cinchona any more than Columbus had an idea of disconvering America when he set out upon his eventful voyage. The greatest country the world has ever known sprang from the discovery of Columbus, and the greatest system of curative medicine was developed from the discovery of Hahnemann.

After his experiment with cinchona bark in 1790, Hahemann did not immediately rush into print, as the modern doctor is so apt to do, expounding a discovery which had no verification. His first article entitled "A New Principle of Ascertaining the Curative Power of Drugs" appeared in Hufeland's Journal in 1796, after six years of the most constant and painstaking research and experiment. Let me quote from Bradford's "Life and Letters of Hahnemann," page 37:

"A very graphic description of these experiments of Hahnemann is given in Samuel Hahnemann, A Biographical study,' as follows: 'To judge of the physiological effect of bark he took several doses as prescribed by the profession for ague. The result was that in his previously healthy system there occurred decided paroxysms resembling those of ague. The experiment had carried him farther than he anticipated. It had taught him not only the exact physiological effects of bark: it had shown him that those effects were apparently the same as the symptoms of the disease it was given with undeniable success to cure. Does bark, then, he asked, produce the same symptoms as it removes? Does it alike produce and cure ague? It is called a specific. Is the specific curing power of drugs founded on such a principle? Do they all uniformly excite a counterfeit disease to that which they remedy? Drug after drug, specific after specific, was tested on himself and on healthy friends with one varying result—each remedy of recognized specific power excited a spurious disease resembling that for which it was considered specific. But many more symptoms than those diagnostic of any one disease resulted from almost every medicine, and aroused a hope in the experimenter's mind of specifically treating a greater number of diseases than had ever been so treated before. Besides discovering many valuable medicinal phenomena undreamt of, he verified his discoveries and observations by ransacking the volumes of recorded experiments on materia medica and the whole history of poisoning. The effect of his investigations was not, therefore, a blind leap from one false theory to another which might be equally fallacious and more mischievous than the former one. Six years

were expended in proving drugs and verifying his principle before proclaiming it to the world."

"Regarding these first experiments in proving drugs on the health, Everest says - 'Inasmuch as the action of the same substance varied according to the age, sex, and idiosyncrasy of the subject to whom it was administered, it was not considered sufficient to experiment on a few individuals. His own family were all pressed into the service, and each substance was tried in various doses on many different persons, under every possible variety of circumstances, and beneath the immediate inspection of Hahnemann himself.'"

If he based his entire platform of similia upon his experiment with cinchona, why did he find it necessary to spend six years' most scrupulous application before he wrote one line about his new method?

It is a noteworthy fact that Hahnemann antedated Pinel in establishing the humane treatment of the insane in 1792, when he began the cure of Klockenburg and others with remedies based on the principle of similars. It was later in 1792 that Pinel independently unchained the maniacs of the Bicetre. My remarks are intended in no way to detract from the honor of the great Frenchman; let him divide such with Hahnemann.

Hahnemann did not mention the word "homœopathy" until the publication of the "Organon" in 1810, twenty years after his experiment. These years were spent in the most stupendous undertaking and research the medical world has ever known.

The records of provings of the numerous remedies made by Hahnemann and his followers are contained in his Materia Medica Pura. Of course, many more provings and new drugs have been added since his time.

Dr. Jacobson, by some extraordinary reasoning, concludes that Hahnemann had malaria because quinine is capable of re-establishing latent symptoms in those who harbor the plasmodia. His syllogism cannot stand. He does not conceive that cinchona can produce symptoms simulating certain cases of malaria in healthy individuals. But such is the fact. During the years I taught the History and Principles of Homœopathy I found no records to lead me to suppose that Hahnemann suffered from malaria, and I deny such a statement. Prove it Dr. Jacobson. Again, Hahnemann was not the only prover of cinchona; many others took part and new provings have been made since his time. A complete record can be found in Allen's

Encyclopedia of pure Meteria Medica. Many of the smaller works contain sufficient data, however, if Dr. Jacobson cares to examine them. Space does not permit me to mention them. The New York Homœopathic Medical College and Flower Hospital library is open to him. This he may know: workmen who manufacture quinine from the bark and are exposed to the dust suffer from so-called "quinine-fever", the manifestations of which are similar to certain forms of intermittent fever.

It must be remembered that cinchona is only one of a great number of drugs used by the homœopathic school in the treatment of intermittents, and there are many which are much more frequently indicated. The choice depends upon the symptoms present in the individual case. Cinchona put Hahnemann upon the right road, but only at its beginning.—*Medical Times*, November, 1915.

A Habitual Criminal.

"You will undergo three year's penasl ervitude," Mr. Wallace, C.C. said to William Saunders, a prisoner at the London sessions recently, "and probably you will spend the time in the prison infimary." The man upon whom he was passing sentence was 69 years of age, and since 1861 had been condemned to 23 periods of imprisonment, including ten years' penal servitude meted out to him in 1881, when he was convicted for stealing boots. He must then have been out of prison for some time, as the sentence which immediately preceded was one of seven years passed in 1867. Since 1890, however, when he was sent to prison for 21 days, he had undergone 14 perions of incarceration, including one of five years. The chairman's prophecy that he would spend the next three years in the prison infirmary may have been prompted by his obvious physical incapacity, but 't is to be hoped that the mental as well as the physical condition of the convict will receive serious consideration, and that means may be found, if he survives, to prevent his release. Whether mentally defective or not, he is not likely to remain honest if turned loose again when over 70 years of age, and it must be remembered that on 24 occasions honest citizens have had to undergo robbery at his hands and to face the trouble and inconvenience of appearing to prosecute.—The *Lancet*, October 9, 1915.

The Physics of Roentgen Radiation.

It is a great pleasure to have an opportunity to write in appreciation of a genius. As a humble representative of the science enriched by Röentgen's labors I may safely assert that no discovery of modern times has had such far reaching effects in physical and chemical science as the one under discussion.

Yet, as in the case of many other discoveries, not even Röentgen realized the full importance of his observations or the extent of their application. Many valuable suggestions were embodied in the original memoirs of Röentgen, which I trust may be read as an inspiration by all, either in the original or in translation, yet I do not recall any mention of the probable effect of this radiation on vital processes. It was already well known that radiant light and heat, and even ultraviolet radiation, modified cell production or repair, and it was only natural that the physician should expect aid from this new source in his struggle for the mastery of disease. It might also have been expected that such a study would be attended by great difficulties, and that the results would be variable and in some degree uncertain so long as no method of measurement for such radiation was forthcoming.

Doctor Coolidge has mentioned the possibility of building up molecules or atoms by a reversal of the forces now used to disintegrate or tear down such natural structures. In brief he intimates that the dream of the Philosopher's Stone may not be so remote as we have been wont to believe. Although cell structure is ever changing and in the highest degree complex, controlled by forces not as yet known, why may we not add to our modified or scientific dreams one of control over cell growth? What might we not accomplish if we could not only transmute the elements, but *ungrow* animal and vegetable life? Verily we should have the Elixir of Life.

Turning from such iridescent dreams to things more certain of realization, we may well ask what part the physicist and the engineer are expected to take in the development of therapeutics. In order that rational information may be available in the study of the physiological effects of this radiation, we must know how

to produce the exact quality of radiation required and how it is to be measured. The mode of production and its control has been greatly improved by the work of Coolidge, and it remains to study with unusual care the phenomena of absorption, of transformation, of scattering, and of secondary radiation in the tissues and cells. The medical profession have a right to expect the same attention to this problem that has given to the study of light production, distribution, and quality.

There has hardly been time since the advent of the new tube to clear up the many points of physical difficulty in the study of this radiation. Yet we should by no means be discouraged, as all progress in radiation measurement has been slow. We still find the measurement of light a troublesome matter.

I am sure that we may in the near future be able specifically to direct the röntgenologist in the production of the desired quantity and quality of radiation and to measure it in a rational manner. Only when this is done, can the results by one man be compared with those of others, or can any one be sure of repetition of results from day to day.

It seems to me that it is time to use the methods of the great commercial laboratories where *all* the known sciences are utilized in the solution of their problems. We must ignore those accidental boundaries which separate one science from another, and give each to the other our best efforts and thoughts.

In conclusion, may I express the hope that all consider well the work of the investigator in every field of natural phenomena. Röentgen was not consciously striving to cure disease; he was anxious to know more of radiation, and all of these wonderful advances were by-products. Had he started out with the practical problem of looking through flesh and bone, I greatly fear he would never have made this great discovery. May not then all investigators expect, not simply tolerance, but active support, to the end that through our more complete knowledge, disease and suffering may be banished from our midst? Surely no problem is more worthy, nor should any receive a greater share of scientific attention.—*New York Medical Journal*, December 25, 1915.

Roentgen's Discovery.

There seem to be two classes of investigators, one comprising those who delight in very accurate measurements with refined apparatus, and another made up of those who get new results with crude and sometimes old apparatus. Roentgen certainly belongs to the latter class. His great discovery was made with a device which had attracted the attention of the physicist ever since 1859, when Plucker was studying the green fluorescence of the glass of an evacuated tube through which a discharge was passing.

We see it generally stated that Roentgen's discovery was an accidental one. But a knowledge of the German university professor and his ideals and of the unflagging zeal and devotion which he displays in his life work—the search for truth without regard to material reward—shows the unfairness of this statement. It is furthermore not borne out by the facts. For Roentgen found exactly what he set out to find—invisible light. He had connected an induction coil to a Crookes tube. To eliminate visible rays he had entirely enclosed the tube in black paper and had darkened the room. For the purpose of transforming the invisible into visible radiations he had a platinocyanide of barium screen lying on the table. The combination of circumstances was of his own choosing, and the result was exactly what he was looking for.

It is reported that others had noticed the fogging of plates kept where discharge tubes were being operated, but it is to Rontgen that the world owes its great debt of gratitude. He was the one who saw in the fogging of the plates an important phenomenon calling for painstaking investigation. He knew the previous work which had been done with vacuum tubes, and knew of the easy absorbability of the cathode rays. If the discovery had been made with a Lenard tube, which was known to let cathode rays escape through its window of thin aluminium foil out into the air, it would have called for much less imagination and initiative. As it was everything that he knew, with the exception of the one fact of the fogging of the plates, must

have told him of the absurdity of looking for any invisible radiations outside of that tube. No ultraviolet light and no cathode rays could get out through the glass. Very few men will so far leave the beaten path as did Rontgen when he tried his experiment. That is the one common characteristic of all of our great pioneers, in all of the various walks of life—they have had the courage to leave the beaten path.

It should be a great satisfaction to Professor Roentgen to sit down now in the light of our present knowledge and read his original publications, and their careful perusal will well repay any worker in the field today.

RECENT DEVELOPMENTS.

Early attempts to show diffraction, refraction, and reflection had all failed. In 1912, Lane predicted that if the x-rays were passed through a crystal, interference effects would be produced just as they are when ordinary light falls on a Rowland grating. The experiment was tried by Friedrich and Knipping and proved completely successful.

Bragg later showed that regular reflection of x-rays can be made to take place from the cleavage surfaces of crystals. A secondary wavelet spreads out from each atom as a primary wave passes over it.

The work of Lane and Bragg has made it possible to measure the wave length of the x-rays, and shows them to be a transverse vibration travelling with the velocity of light and with a wave length about one ten thousandth that of ordinary light.

Mosely and Darwin have found that each element, when placed in the path of x-rays of sufficiently high penetration, gives off secondary rays with a wave length characteristic of the particular substance in question. This serves, not only as a useful method of analysis, but also as the basis of a logical method for grouping the elements.

FUTURE POSSIBILITIES.

1. As our sources of x-rays become more and more intense, new fields of usefulness are opening up. The germicidal and sterilizing action may be commercially useful in connection with food products, etc.

2. They may be useful as an ionizing agent to bring about chemical reactions.

3. It is now possible to produce cathode rays having a velocity comparable with that of the most rapidly moving beta rays from the radioactive substances, and, at the same time, we get x-rays comparable in penetrating power with the most penetrating gamma rays. We are also able to produce canal rays which are like the alpha rays, except that they have lower velocity. These three, together with metallic lead, constitute the decomposition products of radioactive substances and it therefore seems possible that we may some day be able to produce these radioactive substances synthetically.

4. As we are now able to put energy into the atom, and as we are now getting more and more of an insight into the structure of the atom, it does not seem too much to hope that we shall some day be able to transmute the elements at will and to store up large quantities of available energy in small masses.

5. It seems probable that such work as that now being done by the physicist, on alpha ray scattering and with the x-ray spectrometer, will lead to much higher efficiency of x-ray production. The desirability of this is obvious when we think that at present we are able to utilize only about 0·2 per cent. of the energy which is put into the tube.

This means that if we could raise this efficiency to 100 per cent. and could suitably direct the rays, we should put into the tube, for say a stomach plate, not four kilowatts, but only eight watts. In other words, we should then need in the tube much less energy than we now consume in the ordinary hand battery flash lamp. I do not mean to give impression that the work of the physicist has yet revealed a method for making the transformation of electrical into x-ray energy much more efficient than it is now; but it does seem probable that with mere detailed knowledge of the mechanism of x-ray prouction, and this means more knowledge of the structure of the atom, that we shall some day be able to help ourselves in this direction.

6. Another dream which should come true some day, is the production of a substance capable of making a screen say a thousand times more sensitive than anything we have now. For relatively little is known about the mechanism of fluorescence. The whole subject is one of the greatest interest and undoubtedly stands in very close relation to the production of secondary x-rays. Seeing, as we now do, the widest range in the flourescent power shown by different substances, and with the mechanism so little understood, it does not seem too much to hope that the efficiency of this energy transformation may also be tremendously increased. Most, if not all the energy absorbed by the screen is now transformed, but the amount absorbed is very small.

7. Similarly, it deos not seem too much to hope that, with our rapidly increasing knowledge of characteristic radiations, we shall some day see a photographic plate in which a much large fraction of the x-ray energy is absorbed with a corresponding increase in speed. From the diagnostic standpoint, an increase in screen and plate sensitiveness is perhaps much more to be desired than is a more powerful or more efficient sources of x-rays for the former would reduce the danger, while the main effect of the latter would be on the pocket book.

8. With the ability to get, as we now can, characteristic radiations of definite wave length the germicidal and physiological actions can be scientifically studied, with the possibility of finding out whether there is, for a definite purpose, any specificity of action so that a certain cell responds more strongly to a certain wave length than to any other.—*New York Medical Journal*, December 25. 1915.

Gleanings from Contemporary Literature.

GAS POISONING.

LEONARD HILL, M.B., F.R.S.

The reprobation of the use of poison gases by the Germans in war does not lie so much in their actual use as in the fact that the German Government broke, in this as in so many other respects, their word, and secretly prepared before the war this method of offence.

All the propellants now in use set free enormous volumes of gases. The late Professor Vivian Lewes calculated that one of the 15 inch. guns on a super-dreadnought, with its charge of 400 lb. of cordite, gives off about 2,500 cubic feet of carbon monoxide gas each time the big gun is fired. In every battle hundreds of thousands of cubic feet of this gas must be produced, and yet so great is the diffusive power of the atmosphere that no poisoning from it can be traced. Nevertheless, carbon monoxide is a gas so poisonous that the breathing of 1 per cent. quickly renders a man unconscious. The high explosives nitre compounds such as picric acid and tri-nitro-toluol set free, when exploded, not only carbon monoxide but nitric oxide gas, and the latter when breathed has an irritative effect on the lungs closely comparable to that of chlorine.

The fumes of high explosives set in close spaces, such as cellars and the interior of warships, where the ventilating power of the atmosphere is absent, may poison those who are not actually put out of action by explosive violence.

Gas poisoning, then, to a limited extent, occurred in modern warfare before drift gases and asphyxiating shells were introduced by the Germans. Much has been said of the suffering produced by gas poisoning, and truly dreadful to behold is the fight for breath of the strong man poisoned by chlorine; but we cannot suppose that the sum of suffering produced by gas is greater than that inflicted by shell wounds with the attendant sepsis, lockjaw, and permanent maiming of individuals.

There are poison gases which kill by cutting off the supply of oxygen—for example, nitrogen, hydrogen; these dilute the atmospheric oxygen below a viable amount—and carbon monoxide, which by combining with haemoglobin prevents the carriage of oxygen to

the tissues. There are other gases like cyanogen, hydrogen sulphide, and hydrocyanic acid, which when breathed become absorbed into the blood and paralyse the respiratory centre. There is still another set of poison gases which acutely irritate the respiratory passages, causing exudation of lymph therein, which drowns the subject. This last set of gases the Germans have made use of, and for two reasons —first, because they put a man out of action when breathed for a shorter time and in greater dilution than any other poison gas: secondly, because they are heavier than air, and so suitable for drifting with the wind.

Diffusion in the Air.

The molecules of gases, unrestrained by cohesion, are able to intermingle freely, and this diffusive process is very greatly quickened by convection currents set up by differences between the soil and air temperature, by currents due to evaporation of moisture, and still more so by winds and the eddies produced by the friction of wind against the soil. Owing to the immense ventilating power of the atmosphere, and the concentration of the poison gas required, the problem of effective use is very difficult. The drift gas must be considerably heavier than air, or diffusion will disperse it—gases intermingle at a rate which is inversely proportional to the square roots of their densities; it must not be too heavy or it will sink to the foot level; the wind must be of the right strength and direction; the gas must poison in a concentration of at least 1 in 10,000, or the quantities required will be unmanageable. It must be borne in mind that a man can hold his breath for at least half a minute, and that the poison gas cloud must therefore last long enough to enforce breathing, and this breathing must continue long enough to put the man out of action. Owing fortunately to the enormous ventilating power of the atmosphere there is no reason to fear that Zeppelins will drop poison bombs on London. The German High Staff know perfectly well that no real frightfulness can be effected in this way. The scare about poison bombs which was prevalent in London some months back was unreasonable, and the public ought to have been warned against the purchase of respirators constructed to be worse than useless in a real emergency.

German Experiments before the War.

Examination of the back volumes of the *Archiv für Hygiene* shows that poison gases were investigated in Germany for years by Lehmann and his pupils from ostensible point of view of making

safe dangerous trades. From a critical survey of these papers the conclusion is inevitable that if any gases were used in warfare they would be chlorine or bromine. They alone come up to the requirements, namely, (1) that a 1 in 10,000 concentration rapidly puts a man out of action—by asphyxiating him, owing to its intense irritative property; (2) they are much heavier than air; (3) they are manufactured in huge quantities in trade processes; (4) they are easily compressible into cylinders for convenience of transport and handling. Moreover, a respirator is easily contrivable to protect the person who manipulates the brigade gas attack. It is obvious that no drift gas can be used offensively from which the users are unprotected. The density of the various asphyxiating gases which at first were suspected of being used are: sulphur dioxide, 3.21 times heavier than air; nitrogen peroxide, 3.17; chlorine, 2.45; phosgene, 3.49; bromine vapour, 5 53. The power of liquefying a gas by cold or pressure, or a combination of the two, enables the chemist to get into a convenient form large quantities of these asphyxiating gases, but the turning of these liquids back into gases may be troublesome the heat withdrawn during volatilization may be so great as to freeze the nozzle and stop the outflow.

Special devices are required to produce the expulsion of the gas some distance in front of the trench and to prevent the retardation of flow by freezing. Sulphur dioxide irritates the eyes and air tubes in concentrations of 1 in 2,500; it is liquefied by a pressure of three atmospheres, chlorine by six atmospheres. Of the two, chlorine is a far more powerful asphyxiant, being unbearable in a concentration of 1 in 10,000. Nitrogen peroxide can be liquefied below 26°C. In comparison with chlorine, used in weak concentrations, it has a delayed irritative action on the lungs, and therefore, owing to its want of stopping power, is far less suitable for use. Firemen are sometimes exposed to fumes of nitric acid—for example, after the bursting of carboys; they are unaffected at the time but develop a fatal inflammation of the lungs during the next twelve hours. As the oxides of nitrogen play so important a part in the manufacture of explosives, it is unlikely that the peroxide should be used as a drift poison gas.

Bromine.

Bromine vaporizes at atmospheric pressures and boils at 59°C. It is far heavier than and as powerful an asphyxiant as chlorine. Germany produces almost the whole of the European supply. It

has been said that certain bromine organic compounds have been extensively used by the Germans in asphyxiating and lacrymating shells. The vapours of these substances in concentration as little as one part in several millions of air are said to put a man out of effective action by causing watering of the eyes and inability to open the eyes, so specifically irritating are they to the conjunctiva. They are said also to cause in greater concentrations irritation of the respiratory mucous membrane.

Chlorine.

Chlorine can be made very easily by heating a mixture of hydrochloric acid and black oxide of manganese, or by electrolytic processes. It can be stored in lead-lined cylinders. The gas above the liquid chlorine exerts a pressure of at least 90 lb. per square inch, so that all that the Germans required to project chlorine was a long tube projecting in front of the trench parapet and a valve. The spray turns into a yellowy-greenish vapour, and owing to its weight drifts with the wind along the ground. Any one who has watched smoke from a weed bonfire drift over a field will see how far the chlorine vapour may be carried in poisonous concentration. It will sink into trenches, shell-pits, mine-craters, cellars, and dug-outs. To produce a concentration extending 10 ft. up of 1 in 10,000 during a period of ten minutes in a wind moving uniformly four miles an hour, over 1,000 cubic feet of gas are required for each hundred yards of front. This is leaving out of account diffusion and the ventilating power of the atmosphere. It is clear, then, how large a volume of gas is required for an attack, and how any gas which does not come up to the 1 in 10,000 standard must be ruled out.

Lethal Doses.

To estimate the lethal dose of chlorine or bromine special methods have to be devised because these gases combine very readily with the hair of an animal, turning this into a gummy substance. My fellow worker, Dr. Benjamin Moore, found that hair dissolved in bromine into a gummy red-black mass, from which bromine could be washed away, leaving a white friable substance. This bromo-protein compound gave an intense violet biuret reaction, and on addition of strong nitric acid yielded up its bromine. The effect of 1 in 10,000 chlorine is such that no man would endure breathing it who could escape from its influence. The eyes and the mucous membranes of the respiratory tract are intensely irritated and a

watery exudation takes place, the inevitable effort which the living tissues make to dilute so irritant a poison.

Effect on the Lung Structure.

Just as lymph is poured out after a superficial burn of the skin, or the application of a blistering fluid, or in a septic wound under the influence of bacterial toxins or antiseptics, so does chlorine produce an exudation of lymph in the lungs. The epithelial lining, both that of the mucous membrane and of the capillary wall, is damaged by the poison. The osmotic pressure of the damaged tissue is raised—the colloidal lining complex becoming killed and disintegrated with the setting free of crystalloidal substance. Thus fluid is pulled out by osmotic forces, while through the damaged capillary wall, too, the plasma may actually leak away. The classical first symptoms of inflammation thus appear, ending in stasis of the corpuscles in the capillaries owing to exudation of the plasma. In the earliest stage the salivary glands in the mouth and the mucous glands in the air tubes are stimulated to secrete, just as the tear glands flood the eyes. It is this pouring out of the fluid in a vain effort to ward off the poison which causes the asphyxial symptoms of chlorine poisoning and finally drowns the man. He is as surely drowned by the exudation as he when he breathes water into his air tubes. The mucous membranes of the nose and mouth, wet with secration, at first act as a protective respirator catching much of the poison and preventing it entering the lungs. That this is so is seen by the greater celerity with which serious symptoms arise in an animal when chlorine is administered through a tracheal cannula instead of through the nose and mouth. It is a remarkable fact that while 1 in 10,000 is unbearable to breathe, and 1 in 100,000 is distinctly irritative, yet we find it takes a concentration of as much as 1 in 3,000 of chlorine dissolved in water to stop the movement of the cilia in a preparation of ciliated epithelium observed microscopically. Chlorine is much more toxic when it comes in contact with the moist living membrane in a gaseous state than when in watery solution.

Sir Edward Schafer has drawn attention to this. "From the chemical nature of chlorine," he writes, "it seems evident that its immediate action must be local. For it is scarcely possible to imagine that it can exist in the free state in such a fluid as blood, which contains many bodies with which it would immediately combine, and which would—unless it were introduced in immense quantities—at once render it innocuous." When 10 c.cm. of Ringer's

solution saturated with the gas were injected by Schafer into the jugular vein of a rabbit, in a period of 20 soconds there occurred a quite temporary fall of blood pressure and increased depth of respiration. Only in one case when the same amount was injected rapidly and with, therefore, less perfect admixture of blood, did oedema of the lungs and congestion result in the pulmonary vessels, producing a fatal result. The irritative effect of the dissolved chlorine is spent on the blood or the lung, the first tissue it comes in contact with. When inhaled the chlorine spends its effect on the air passages and lungs, and we have no evidence that free chlorine or any poisonous chloro-protein complex is formed, which conveyed by the blood, poison other tissues. Major Walter, Broadbent, in a note concerning nephritis following chlorine poisoning, says: "It looks as if in some cases the chlorine or bromine damages the lung epithelium so severely that it does not allow absorption into the general circulation, while in others the gas passes through the lungs. without affecting them permanently, but then sets up an acute nephritis."

It is not possible to uphold this theory. Chlorine gas in every case expends its fury on the lungs. The nephritis, I believe, is due to the intense and prolonged dyspnoea and the struggles for breath. Albuminuria is a common result of the very temporary dyspnoea which athletss suffer in a race. It results in such case from the want of oxygen in the kidney, just as it does when the renal artery is temporarily occluded. It is, I believe, the want of oxygen which produces the increased acidity of the blood observed by Mr. Barcroft in a few cases of chlorine poisoning, including a dog experimentally poisoned by us. No doubt the products of the the damaged pulmonary tissue, absorbed during the days subsequent to the poisoning, have a toxic effect, particularly as the damaged lung becomes infected.

Symptoms.

We are told that a typical case on admission is cold with a temperature, conscious but restless, with pulse slow and full (except in the collapsed cases). The face is cyanosed, intensely so in many cases, and the expression strained and anxious. The posture varies. In some cases the patient sits propped up, with head thrown back gasping for breath; in others, he lies on his side, with his head over the edge of the stretcher in an attempt to aid expectoration. The respirations are jerky and hurried, often numbering 40 a minute,

and are associated with a choking cough, accompanied by a varying amount of frothy expectoration. With each inspiration the chest is expanded to its fullest, all the auxiliary muscles being brought into play just as in an asthmatical paroxysm.

This is the first or asphyxial stage, which, if the patient survives, gradually passes off after some thirty-six hours. Can we wonder that such long-lasting intense dyspnoea should produce nephritis, accompanied as it is with convulsive breathing which just maintains the cerebral circulation within viable conditions at the expense of the abdominal circulation? Major Broadbent records a case in which he believes a cusp of the aortic valve was ruptured in the struggles for breath.

"After the first stage the patient falls into a sleep, and awakes feeling much better. But after a few hours of comparative quiet symptoms of bronchitis begin to manifest themselves. In the majority of cases these are not severe"—because, no doubt, nearly all the severe cases die in the first stage. "In the cases which are kept alive with difficulty there is a short quiescent stage followed by intense bronchitis. The frothing gives place to greenish muco-purulent expectoration, consciousness to delirium, the temperature rises from subnormal up to 104° F., the pulse becomes of small volume, with its rate increased perhaps to 160, the respirations are less choking but more shallow, and number up to 70 per minute before death."

Pathology.

Post-mortem examination in the acute cases shows an intense congestion of the mucosa of the trachea and larger bronchi. These tubes are filled with a thin, light yellow frothy secretion, some of which escapes from the mouth and nose when the cases are first laid on the table. The fluid is highly albuminous, solidifying on heating. The larger bronchi only can be traced, the smaller being lost in a condition of intense congestion and oedema which affects the lungs as a whole. The lungs do not collapse in these acute cases, but appear like a solid cast of the thoracic cavity, and are greatly increased in weight. On incision, the lung tissue appears of a deep maroon red colour, and the exudation flows from the cut surfaces in abundance. Light grey patches are to be seen on the surface of the lungs amidst the congested areas. They were found to be due to emphysema. So intense is the obstruction to the entry of air, and so violent the efforts of respiration, that emphysema is produced in these least poisoned parts where air can still enter. We can picture

how the violence of the respiratory efforts, brought to bear on a relatively few small parts of the lungs, distends and breaks down the walls of the alveoli, expelling the blood into surrounding congested areas.

The parts of the lung tissue not affected by emphysema show the intense congestion of the capillaries, and many of the alveoli are seen filled with exudate which takes on the eosin stain. Into some alveoli red corpuscles escape; larger patches of hæmorrhage may occur. The heart in these acute cases is congested, particularly on the right side. The stomach shows a condition of catarrh, the mucosa being covered with a thick yellowish mucus and hæmorrhages being visible in the submucosa. These changes may conceivably be due to the swallowing of saliva and exudate from the nose and expectorated fluid in which chlorine is dissolved. The venous congestion of the stomach and other abdominal organs and of the brain is due to the asphyxial character of the death.

Experiments made on animals make quite clear the stages of toxic effect. Using bromine in concentration of 1 in 1,000 approximately we find that the mucous membrane of the windpipe, killed by the poison, may be stripped off by the violence of the respiratory efforts, so that drawn down into the large bronchi it forms a tree-like cast therein, suffocating the animal. Chlorine, in our experience, causes a greater exudation of fluid than bromine. Chlorine (1 in 1,000) breathed through a tracheal cannula may shortly cause in a cat such an exudation of fluid that it fills up the trachea. By compressing the chest many cubic centimetres of the fluid can be squeezed out of the lungs into a basin. It is a clear serous liquid, containing plenty of coagulable protein. That this fluid drowns the animal may be seen by the relief which is given after squeezing it out.

Professor Schafer, experimenting with very high concentrations of chlorine gas—for example, 1 to 2 per cent.—has concluded that death is brought about by stasis in the pulmonary vessels. If this be so for the high concentrations used by Sir Edward, it is not so in the case of the weaker concentrations such as are breathed on the battlefield.

We have put the matter to the test in two ways: (1) We manipulated the animal so that we could artificially respirate one lung with pure air, the other with air containing chlorine. Recording the blood pressure we first of all proved that artificial respiration of either lung sufficed to maintain the circulation in undiminished vigour. We then gave air *plus* chlorine to the one lung, and

observed the gradual production of congestion, oedema and lessened expansion of that lung, leading to symptoms of asphyxia and failure of the circulation. On carrying out the respiration of the other lung with pure air we observed the complete and immediate recovery of the circulation. On now squeezing the fluid out of the first lung and changing the respiration to that we see that the circulation may continue, the asphyxia no longer being complete.

In the other set of experiments we had the co-operation of Dr. Kuno, of the Physiological Institute, University College, one skilled in the particular technique required. The circulation was confined by Dr. Kuno to the heart and lung preparation and the technical arrangements made so that the output of the heart could be measured at any period of the experiment. The thorax was widely open and the lungs exposed to view. On giving chlorine the first and immediate effect was a very evident diminished expansion, due, we thought, to contraction of the bronchial tubes. Congestion and oedema followed, appearing first in patches on the surface and then spreading; as these grew marked the blood became more and more venus; the output, it is true, was then diminished, but whatever stasis there was in the pulmonary vessels did not markedly affect it.

It is well known that a very large part of the pulmonary vessels can be ligatured and yet an adequate circulation be maintained through the remainder. A very small portion of lung suffices, too, to keep up the oxygen supply to the heart.

These experiments made clear to us how artificial respiration keeps alive the gas-poisoned animal. If fluid be forcibly squeezed out of the lungs of a chlorined cat, struggling for breath, its condition is greatly improved. If air is forced by artificial respiration into the lungs emphysema in places may be produced, but the heart is kept going.

Symptoms and Lesions of the Lungs in Experimental Animals.

Animals exposed to chlorine exhibit first of all profuse watering of the eyes and salivation; they make efforts to escape, and if the chlorine in the chamber is not mixed by a fan but sinks to the lower parts, they hold up their heads as high as possible to escape breathing the more concentrated lower stratum. The respiration soon becomes quickened, and then as the oedema of the lungs and exudation into the air tubes increases, the respiration becomes

slower and laboured. The obstruction to the entry of air becomes great, and in consequene the lower ribs are drawn in with each inspiratory gasp. The mouth gapes open and a frothy secretion hangs round the orifices of nose and mouth. The whole effort of the animal is given up to breathing; finally, it falls over exhausted, the breathing becomes rarer and shallower, and it dies. If in the stage of laboured breathing the animal be removed from the poison, it generally dies during the next twenty-four hours but may live longer to die within the next few days. One of our animals died as late as a fortnight after the exposure.

Examination of the lungs of those which die in the first twenty-four hours shows an intense congestion of the lungs; they are dark red in colour; a more or less solid oedema prevents their collapse on opening the thorax. The air tubes contain frothy exudation which, on cutting the lungs, exudes in large quantities. When the lung of a rat was kept in a covered dish it shrank like a blood clot, exuding serous fluid, till it floated in it.

The animals which die in the later days show more or less extensive patches of red hepatization. Those parts of the lungs which were least poisoned appear relatively normal, but are more rosy in colour.

Microscopic examination was carried out on the animals poisoned by us by Professor William Bulluch. The sections show intense congestion and small hæmorrhages in places, and an oedema which fills the hardened alveoli with an eosin-stained homogeneous coagulum, reminding one of the appearance of the thyroid alveoli filled with colloidal secretion. The coats of the arteries are enormously distended with exudate, giving a most remarkable picture. The epithelium of the air tubes is in many places detached. The animals die in the early stages from asphyxia, and in the later stages from pneumonia with consequent absorption of toxins and exhaustion.

In those animals which are less severely poisoned the laboured breathing gradually passes away; those that recover appear quite normal at the end of a fornight. Their fur, was made sticky, and looked, so to speak, burnt at the ends, becomes glossy again, the damaged hairs being shed. These animals, if killed during the process of recovery, generally show small pneumonic patches. The lungs seem very sensitive to further injury during the period of recovery; inhalation of chloroform may cause acute oedema, and drown the animal.

There seems no reason why recovery of the lungs should be any less perfect after chlorine poisoning than it is after bronchopneumonia. The damaged and shed epithelium of the air tubes can be replaced, and the pneumonic patches resolved by the absorptive action of the phagocytes, repair is complete.

I have no evidence to offer as to the state of the lungs at any long period after the poisoning.

Irregular Distribution of Lesions.

The remarkable fact that some parts of the lungs are far more severely damaged than others requires an explanation. When chlorine of, say, 1 in 1,000 is driven into the lungs by artificial respiration, and the lungs are exposed and observed from the start, it is evident that the poison reaches and severely damages certain parts in the surface, while other points remain normal. In these experiments the current of air from the pump was driven through chlorine water and then passed into the windpipe. We must suppose either that the chlorine does not uniformly mix with the air, or that certain air tubes are shut up by contraction of the bronchial muscles, and so prevent the poison reaching the alveoli they supply.

There is no doubt that the first effect of concentration such as 1 in 1,000 is to cause contraction of the bronchial muscles and diminish the expansion of the lungs. Using enormously strong concentrations, Sir Edward Schäfer finds no evidence of such contraction—probably the concentrations he used rapidly killed the lining membrane of the air tubes, including the muscle. Some experiments conducted by F. J. Twort and myself on the oxygenation of the blood, in subjects breathing in a shallow way, suggested to us that parts of the lungs may then not be expanded, nor the blood oxygenated in these parts, and that the bronchial muscles may regulate to which part of the lungs the air goes on each inspiration. The results of our chlorine experiments seem to confirm this view.

TREATMENT.

Expulsion of Fluid.

For the severe cases of chlorine poisoning the one object of treatment must be that of getting rid of the exudation in the air tubes which is drowning the victims. Experiments on animals show that the frothy fluid can be easily squeezed out of the lungs and trachea by rhythmic compression of the thorax, and that the dyspnœa which is threatening life can be greatly, if only temporarily, eased by this

means. Artificial respiration is reported to have given good results in several of the cases on which it was tried. It must be repeated as often as the dyspnœa becomes excessive. The case is recorded of one man, almost moribund, who was treated in this way, on four successive occasions, and ultimately recovered. After squeezing out the fluid, air may be blown into the lungs by mouth to mouth artificial respiration to overcome the resistance of the froth in the smaller tubes and expand enough lung to keep the patient alive. It is true that emphysema may be caused by so doing, but if it is a question of just carrying a man through the threatened asphyxia, one cannot hesitate to get air into the lungs by these means.

I took over to Flanders an apparatus constructed by Messrs. Siebe Gorman called the "Vivator," in which there is a foot-pump which feeds a face-mask through a flexible tube. By each downstroke a measured volume of air or oxygen is pumped into the lungs, by each upstroke a valve is opened which allows the air to escape from the lungs by the elastic recoil of the thorax and lungs With this apparatus respiration can be kept going in the collapsed or unconscious cases, the fluid now and again being evacuated by squeezing the thorax and by posture.

The inverted posture will help to drain out the fluid. I was told that several of the patients of themselves hung their heads down over the side of the stretcher or table, in order to aid their expectoration.

Emetics.

Emetics have proved very useful in giving relief to the less critical cases. Half a pint of salt and water or 8 grains of copper sulphate, followed by large draughts of lukewarm water, are recomended. A brush or the patient's finger put to the back of the throat will initiate the vomiting without delay. The act of vomiting is reported to cause the expulsion of a large quantity of the frothy liquid.

Oxygen.

Administration of oxygen relieves the cyanosis and improves the condition of the subjects.

Not only does the percentage of carbonic acid in the blood rise in the suffocative condition, but other acids such as lactic acid increase in quantity owing to the lack of oxygen. When the blood is oxygenated by breathing of oxygen these other acids do not appear, and the acid intoxication is therefore so far eliminated. Tests of the power to hold the breath show that a higher percentage of carbon

dioxide can be borne when oxygen rather than air fills the lungs. To give oxygen to a man who is struggling for breath and needing to expectorate is no easy matter. It is difficult to get any kind of close fitting face-mask tolerated. The ordinary clinical method of administering oxygen through an open funnel held near the mouth and nose is of relatively small value; nearly all the oxygen is wasted by escaping into the atmosphere; just at the period of inspiration the stream which reaches the mouth and nose is not enough, so that the air drawn into the lungs is very slightly enriched. I have found the oxygen in my alveolar air increased by only 1 or 2 per cent., when oxygen was administered to me by a sister in a London hospital. If a loose kind of face-mask be made out of a towel, and the oxygen sent in sufficient stream to blow away the exhaled carbon dioxide, then 70 per cent. of oxygen can easily be obtained in the alveolar air. Down Bros. have made a transparent face-mask to my design, fitted with a curtain which drapes the face, by which oxygen can be effectively given on this plan, but not economically. A 20 ft. cylinder is shown blown away by these methods. To give oxygen economically a well-fitting face-mask, breathing bag, and cartridge for absorbing the exhaled carbon dioxide must be used. The subject breathes through the cartridge in and out of the breathing-bag, which is filled with oxygen from the cylinder as required. The cartridge is loosely packed with small pieces of caustic soda coke; to prepare these the coke pieces are heated red-hot and dipped into strong caustic soda. They offer a splendid absorbing surface and no appreciable resistance to the breathing. The apparatus—made by Messrs. Siebe Gorman—I took over for use in Flanders. The difficulty in using such lies in keeping the mask over the face of a man who wants to struggle and expectorate. Oxygen breathed between the periods of expectoration will undoubtedly give him relief, and with the above apparatus a 20-ft. cylinder will give a supply lasting many hours.

Compressed Air.

Experiments on animals have shown us that compressed air relieves the dyspnoea to the same extent as oxygen does. On placing a patient in a medical air-lock, such as is used in compressed-air tunnel works, and compressing him to two atmospheres, he would breathe double the concentration of oxygen and at the same time would be able to expectorate and struggle as he pleased. The compression of the air when first applied would halve the size of the air bubbles in the frothy liquid which obstructs the air tubes, and this should give relief by lessening obstruction. Artificial respiration could be applied

in the compressed-air chamber and the subject be kept in it for several hours, and then slowly decompressed. The medical locks are fitted with air-locks, through which the medical officer can enter or leave. The difficulty, of course, lies in the provision of such medical lock—heavy cylindrical boiler-like structures, each of which would hold only four or five patients, with the necessary oil-driven compressor engine. A small medical lock and engine would go on a 3-ton lorry, but it is a serious thing to hamper the transport of the army with such a provision. There is another way in which oxygen might be administered without the use of a mask, and that is by drawing over the stretcher containing the patient a cylindrical balloon, say 10 ft. by 4 ft., tying up the end, and then distending the balloon with oxygen.

Atropine, etc.

The giving of atropine has been extolled on the theory that it lessens secretion of fluid and dilutes the bronchial tubes. In severe cases of poisoning we have not found it of the least service.

It is claimed that the inhalation of stramonium vapour from cigarettes relaxes the bronchial muscles; this may afford relief in the mild cases, which recover whether so treated or not.

Conclusion.

The chlorine poisoning of the lungs is comparable to extensive burns of the skin, and the same general treatment to support strength and lessen shock is required. Just as septic infection of the skin is the sequel of the burn, so pneumonia and bronchitis follow chlorine poisoning. In our experimental animals severe poisoning has in every case had this end, and we know of no means of preventing it. Warmth and good nursing might pull a man through, these conditions are difficult to apply to animals.—*The British Medical Journal*, December 4, 1915.

THE

CALCUTTA JOURNAL

OF

MEDICINE.

Vol. xxxv.] April, 1916. [No. 4,

THE SCIENTIFIC METHOD OF DRUG PROVING.

By Ralph R. Mellon, M.D.

The subject matter of this paper assumes three things: that the old ways were good ways, but not of necessity the best; that the law of similars was not a truth presented by God to Samuel Hahnemann, and incapable of further development; that progress is the law of life.

As I understand it, our homœopathic materia medica is made up of symptoms culled from several sources: first, from the proving of drugs on healthy persons; second, from records of poisoning with these drugs; and third, reciprocally, by assuming that symptoms which disappeared during the course of the administration of a drug must, in susceptible individuals, have been produced by that drug.

Our materia medica was envolved during a period which precluded the possibility of obtaining reliable foundation for prescription from any other sources. Latterly, the advances in some of the important collateral branches of medicine have opened up avenues of approach to a drug's action not dreamed of in the earlier days. The development of physiology, bacterio-

logy, organic and physical chemistry and immunity are the principal subjects to which I refer.

Practically the old method of eliciting symptoms by the administration of drugs to healthy persons grows more difficult every day for several reasons. Homœopathic sentiment and conviction are not so strong as in the early days, and consequently, students are not desirous of becoming experimental animals. Guinea pigs cost from 50 to 75 cents. per, and rabbits can be bought for twelve cents per lb., and in some mysterious way, students have become apprised of these facts.

Under the most favourable conditions, students will not permit the proving to be carried to a point where much really could be learned. At the first approach of symptoms, the drug picture becomes vastly modified by the emotional reaction. In control cases, I have noted some remarkable symptoms develop from the use of distilled water, while some who were really taking a drug evinced no disturbances when assured that they were taking nothing but distilled water. My experience is limited to students at the University of Michigan. They may have more convictions in other places, more devotion to Homœopathy, and in such a case, the subjective symptoms would be of more value. In my proving of *Thymol* some years ago, I had at least two men who convinced me that they really suffered serious inconvenience from that drug. Clinical verification of their findings by Dr. Buck Carleton of New York was gratifying, to say the least.

Notwithstanding the fact that this methed is not so utilisable as formerly, it deserves priority when investigating a new substance. It is merely the method of going from the general to the particular and since the scope of the latter has expanded so greatly in past years, it behoves us to know at least what particular field of the drug's action we could investigate with the most profit. By the older method we could determine the spheres of activity of drug action, and minute investigation could be followed with the more detailed methods at our command. But in view of the facts that we have something over

400 drugs in our materia medica, the frame work of which has been worked out by our predecessors, I believe that there is little use in hunting new drugs unless one of the significance of radium appears.

There are enough drugs partially proven, and there are so many problems to be worked out regarding the administration of these that I believe we shall not suffer a great deal by discarding for the present the subjective method in drug investigation. The symptomatology of the drugs which we have, is in need of revision, and what objective findings are incorporated in the provings need expression in the terms of modern science.

For example: If a urine deposits a red sediment, we should know quite specifically what that sediment is. If there is an impoverishment of the blood, we should like to know the exact nature of it in accurate terms. If suppuration is procured, its grosser characteristics should be expressed in terms of the exudate that the student's knowledge of pathology enables him to appreciate. A sticky exudate may be due to several constituents. The organisms producing such exudates can often be inferred from an accurate description of their character. And after we have proved that *Echinacea* is a remedy *par excellence* in streptococcic infection, while *Hepar Sulphur* works better in staphylococcic, our formulation of such facts is more intelligible than to say that one drug works better in thin pus and another is indicated in the thick variety.

Medical terminology is vast enough without having a perfectly independent dictionary for our principal study. In case the subject matter overlaps, it is well that the terminology should be indentical in proportion.

This is no reflection on the older way of doing things. The men of one hundred years ago did the best they could with the tools they had, and if we do the same with the tools we have, it will require more effort than has been put forth yet. No one casts any reflection on a horse and buggy as a means of travel, even though he may prefer an automobile.

As I have insinuated, the newer working tools of bacteriology and immunity make possible the application of methods of great promise in our particular lines. To be concrete, *Phosphorus* is one of the drugs which we all prize in tuberculosis. The recent activity regarding lipoids and lipases and fatty metabolism gives wonderful opportunity for experimentation with this drug. No poison is more intimately connected with fatty change than *Phosphorus*. It has been conclusively demonstrated of late that one of the principal means of reaction of the body to tuberculosis lies in its production of lipolytic ferments by the lymphocytes. The solution of the protective wax-envelope of this again lays it open to destruction by the lymphocyte. Staining reactions of the lymphocytes bring out beautifully their ingestion of the waxy products. Most of the beneficial therapeutic agents against tuberculosis, including sunlight, fresh air, tuberculin, etc., are prominent stimulators of lymphocytic production. It would be an exceedingly interesting piece of information to know if *Phosphorus* acted in this way. Wheeler of London claims to have shown that it increases the opsonic index to the tubercle bacillus. If the lymphocyte is the real agent acting against this organism, and as lymphocytes are not usually phagocytic, and since Wright's opsonic estimations regarding this organism so often conflict with the clinical course of the disease, it would seem of much more promise to work with *Phosphorus* for the production of lipolytic activity.

The relation of *Phosphorus* to the anæmias is also interesting. Much work has been done recently with organic *Phosphorus* in anæmias with persons of a neurasthenic base. Russian experiments have worked much with *Phytin*, a form of plant *Phosphorus*, in the successful treatment of such conditions. They have always recorded in detail the morphological and hæmoglobin changes, etc., in the blood. In their own language, they attribute the change to a pharmacodynamic action of the *Phosphorus*. *Lecithin* has also been experimented with in this connection. It has long been known as an activator of ferments, and these changes have been shown to come about as the probable action of *Phosphorus* on the nervous system.

Rhus toxicodendron has long served as a prophylactic in rheumatism, and last year I had the pleasure of meeting a layman, who for years has protected himself from *Rhus* poisoning by chewing an occasional leaf of it. This procedure was made necessary by the fact that he had several fields in which the plant grew, and for years was subjected to attacks of poisoning, until he learned the secret of its prevention. I saw him eat a couple of leaves, which he did for my especial edification. Since septic sore throat and rheumatism and the multitudinous sequelæ of the streptococci have become apprehended, investigations of this drug might be exceedingly profitable in this connection.

And since the lymph-gland conditions, tonsillitis and the affections of the blood organs have become so prominent, the study of the baryta salts, *Ceanothus* and kindred remedies would bear systematic investigation. If one could discover the relation of *Baryta carbonica* to arterio-sclerosis it would be definite light on one of the most distressing problems of our day.

There has already been work done by the other school with *Rhus toxicodendron* regarding antibodies produced in the serum. The preliminary reports appeared some time ago, but conclusions have not been definitely reached, so far as I know. The work done by Dr. Hooker of Boston regarding the production of complement fixation bodies with *Bryonia*, *Baptisa*, *Bichloride of mercury* and other drugs against the organisms of the typhoid-dysentary group is commendable, and very suggestive if it can be confirmed. The work of Dr. Burrett and others in this line is well known to you all.

The Abderhalden test, as well as other ferment work, opens up possibilities that are perfectly stupendous. Anaphylactic phenomena have unexpectedly thrown light on the various food and drug idiosyncrasies, and we can at least begin to resolve them in terms of things about which we know a little.

I do not know that there is any need for further multiplication of examples. I have indicated in a general way how I

think drugs should be worked out, and it is not necessary to produce grave symptoms to learn their therapeutic action.

Processes of immunity go behind the microchemical staining reactions of pathology, and their phenomena are too delicate to be recognised by these grosser methods. It is in this fact, more than any other, that I justify the use of these methods in studying drug effects. Homœopathic therapeutics have always been at war with pathology, because the latter recognised changes too far advanced for curative drug action. Immunity eliminates all that, and this should be the most potent factor we have in apprehending drug action which formerly we have been pleased to call dynamic.

There is another aspect of this subject on which I should like to speak briefly, because it is so fundamental. One can scarcely think of this work without associating it with three things These are adequate clinical facilities, endowed laboratories, and experienced workers. These laboratories should be connected with hospitals. The day has passed when we study dead pathology alone. We shall in the future study a living pathology with, of course, a study of immunity.

We must have patients to work with as well as animals. The laboratory can be divorced in no sense from the bedside. Its findings for the most part are to be interpreted in the light of the clinical picture.

Unless we are willing seriously to go about obtaining ample endowment for our laboratory, facilities for the use of hospitals, particularly in connection with the schools, but also with the isolated institutions, nothing can be more fatuous than to talk about drug proving. The entire matter becomes a travesty unless we apply scientific methods to its investigation. Any laboratory of the kind connected with a first-class teaching institution should have a working endowment of at least $250,000.

And, naturally, the men working in such an institution must have the aptitude and training for work of this kind. A man who devotes himself to this work can seldom practice medicine

and politics on the side, in addition to spending half of his time chasing a golf ball. And competent research men should receive something of an adequate compensation for their services. The opportunities in this line are getting plentiful enough, so that the only consideration under which efficient men can be obtained is by adequate remuneration.

Naturally, such organisation must have logical division. No one man can be an expert pathologist, bacteriologist, and biological chemist all in one. That day, like many others, is past.

It is a discouraging thing to attempt to raise money for a project of this sort even among men with a rich *clientele*. Many of them are so persistent in asking one why he does not accomplish this, that and the other thing, that while one cannot censure them, he often questions just how serious they are. So, unless institutions can furnish the essentials in men and money to carry out work in drug proving that will be at least semi-intelligent, they can never be expected to be taken seriously, at least in this very important respect.

Vague ramblings and dreams, and ruminations about drug proving never accomplished anything, and although this aspect of my paper has been placed last, it must be practically the *alpha*. Otherwise all the papers we read and all the talk we do, and all the beating of the air about the law of similars, will scarcely repay us for the energy we spend.—*The Homœopathic World*, February 1, 1916.

THE PROSTATE.

By William Clowes Pritchard, B.A., M.R.C.S., Eng.

I.—Anatomy.

The prostate is a somewhat pyramidal organ, and may, be compared with a horse-chestnut that is flattened on one side. It may be described as possessing an apex, a base, an anterior, a posterior, and two antero-lateral surfaces, and also two postero-lateral borders, where the postero- and antero-lateral surfaces meet. The measurements are: urethral axis, 1¼ in.—1½ in.; a.p., ¾ in.; weight, 4½ drachms.

(a) *The Apex.*—This forms the lowest part of the organ and rests on the deeper layers of the triangular ligament, to which it is firmly bound. It surrounds the urethra at the beginning of the membranous portion. A section of this part of the prostate taken at right angles to the urethra has a rounded outline.

(b) *The Base* is attached to the bladder, which is so intimately adherent anteriorly and laterally that no definite line of demarcation can be made out without dissection. Posteriorly the base is well removed from the bladder, and possesses a very definite border. This free margin is divided into two by the entrance of the *vasa deferentia* and the vesiculæ seminales. Thus it is seen to be the base of the organ which gives entrance to these ducts and not the posterior surface, as was formerly taught.

(c) *The Anterior Surface* is bounded above by the base and below by the apex. It is almost vertical from above downwards, is convex from side to side, and merges into the antero-lateral surfaces without any sharp line of demarcation.

(d) *The Posterior Surface* is in close contact with the rectum, is slightly concave from side to side, and almost flat from above downwards. It is somewhat triangular in shape (triangle with rounded corners), the base being uppermost. According to some writers there is a notch in the upper border which they say marks the division between the two lobes. Others, however,

declare this notch to be non-existent, and I must agree with the latter, as I have failed yet to find it.

(e) *The Antero-lateral Surfaces* look forwards and outwards, and have the narrow anterior surface between them. It is somewhat of an arbitrary nomenclature, as the antero-lateral and anterior surfaces merge into each other without any sharp line of identification. The whole of these three surfaces present a uniform convexity forwards. For the most part these surfaces are in contact with the levator ani muscle.

This gives you in brief seme little idea of the prostate without going into any eleborate descriptions and cutting out a lot of anatomy which I do not consider necessary to this short paper, and all of which can be found in the various text-books. As I have so frequently been asked about the "capsule" of this important gland, I may perhaps be excused if I take up a minute or two more of your valuable time and try to give some vague idea of this covering of the gland; but please stop me if I become dry or "booky."

The Capsule.—The investing membranes of the prostate are usually described as being composed of two parts, the "Capsule" and the "Sheath." These, however, are not well-defined and separate structures, but over much of the surface are intimately blended and can only be separated with great difficulty. In animals the distinction is easier, but in man, owing to his erect position and consequent extra strain placed on the pelvic floor, the union of the "capsule" of the prostate and the surrounding fascias is so close that in places only by following the venous plexus as a guide can the fascia (which contains the plexus) be separated from the capsule beneath. The capsule then appears as a rough membrane except upon part of the lateral and posterior surfaces where the separation of fascia and capsule is easily accomplished. The capsule covers the entire prostate, but is very firmly attached and cannot be stripped off, except by bringing with it portions of the gland tissue. It is composed of fibrous tissue and involuntary muscle which are continuous with the glandular stroma.

II.—Functions of the Prostate.

This organ is found in most mammals but not in all, hence it cannot be regarded as essential to generation. There are two main theories as to its function: (*a*) it acts as a sphincter to the bladder; (*b*) that it is a secondary sexual gland. The theory that it is really a sphincter to the bladder has practically been abandoned, because that in many animals it is of such a shape that it could not possibly act in the manner suggested, and moreover we find it is absent in the female. The theory that it is a secondary sexual organ is confirmed by the following facts:—

(1) It is confined to males.

(2) It enlarges very rapidly at puberty.

(3) In certain animals, such as the mole and the hedge-hog, which pair only at certain times of the year, it presents a corresponding seasonal activity.

(4) It does not grow in eunuchs, and after castration in the adult it atrophies.

No evidence, however, can be given at present as to its actual function, but it is probable that it secretes an alkaline fluid in which the spermatozoa can live.

Various experiments have been carried out with prostatic fluid, and animals have been found to be sterile after prostatectomy, despite the fact that the testicular fluid contained spermatozoa. If, however, spermatozoa be obtained from the epididymis and are mixed with a 0·5 per cent. solution of sodium carbonate and be then injected into the vagina—impregnation has followed, as was proved by Ivanoff, the alkaline sodium carbonate appearing to take the place of the alkaline prostatic fluid.

III.—Diseases of the Prostate.

Under this heading we may include: (*a*) Growths, malignant and benign; (*b*) cysts; (*c*) calculi; (*d*) tubercular disease; (*e*) acute and (*f*) chronic prostatitis, and (*g*) hypertrophy of the prostate.

(*a*) *Cancer of the Prostate.*—This is usually of the carcinomatous variety, although sarcoma of the prostate does very occasionally occur. This latter condition produces a very large, soft, smooth tumour, which may develop until it occupies a large part of the pelvis.

Carcinoma of the prostate in the early stages is often difficult to diagnose, and yet this is *the* time for operation, for if left late it involves the seminal vesicles, the glands, perirectal and other pelvic structures and operation is too late. In the early stage a prostate affected with carcinoma is usually markedly indurated, and if it be of a stony hardness a positive diagnosis can usually be made, and no time should be lost before it is removed.

The benign growths are of the adenomatous variety, and include cystic adenomata, fibro-adenomata and adeno-myo-fibromata.

(*b*) *Cysts.*—Retention cysts due to blocking of the gland ducts and echinococcus cysts are met with.

(*c*) *Calculi.*—These may be divided into two groups: (1) Calculi which lodge in the prostatic urethra, having escaped from the kidney, the bladder, or the seminal vesicles, or those rare cases in which the stone is primarily formed in the posterior urethra. (2) Calculi which are formed in the substance of the prostate gland itself—the true prostatic calculi.

(*d*) *Tubercular Disease.*—This may be either primary or secondary, the latter being by far the commoner form, and all stages of the disease are occasionally met with. The symptoms vary very decidedly according to the extent and position of the disease.

(*e*) *Acute Prostatitis* may be either (1) glandular, or (2) parenchymatous. By the glandular form is meant the simplest form of acute prostatitis in which there is merely a proliferation of epithelium with disquamation and marked diapedesis. In most cases this is due to invasion by the gonococcus. By the parenchymatous form is meant a more severe form of inflammation

which involves the glandular and interstitial substances of the tissues of the prostate, and this form is more frequent than the purely glandular. This so-called parenchymatous form may be divided into (*a*) non-suppurative, (*b*) abscess, and (*c*) periprostatic phlegmon.

(f) Chronic Prostatitis is one of the most frequent of diseases and is a great factor in the production of various painful maladies and neuroses. In a series of 358 cases taken, 73 per cent. were caused by the gonococcus; in one-seventh of the total, no etiology could be obtained. In 65 per cent. of the cases the symptoms appeared under 40 years of age, 23 per cent. between 40 and 50 years of age, and 12 per cent. over 50 years of age. In most cases the disease appears to come on quite insidiously. Northaft found, in a series of 120 cases, that within one year after infection by the gonococcus it was still present in 73 per cent.; in 50 per cent. from twelve to eighteen months; in 18 per cent. from eighteen to twenty-four mouths, and in 6 per cent. from twenty-four to thirty-six months. No gonococci were found after the third year. In this affection we find considerable changes in the prostatic fluid, pus being nearly always present in greater or lesser amount, and the proportion of normal elements present varies inversely with the amount of pus present. The cells which are characteristic of chronic prostatitis are leucocytes which are mostly neutrophile. Whatever changes are produced the alkalinity of the fluid remains persistent. The symptoms produced may be classed under three heads—(1) sexual, (2) urinary, (3) referred. These however I had better not go into in this short paper.

(g) Hypertrophy of the Prostate.—This also opens up such a big field that a paper may well be given on this subject alone, so we will pass on to briefly mention.

IV.—Traumatisms of the Prostate.

These include contusions, injuries and false routes, and are produced in times of war from bullets, spears, shrapnel, shell, &c., and may at all times be caused by passing instruments, or from fractures of the pelvis.

V.—Bacteriology.

The most frequent organism found is the *Staphylo coccus albus*, and next in order the *Bacillus coli*. A new organism has also been found which partially resembles the ordinary type of *B. coli*, and partially the *B. typhosus*, but its exact significance I cannot explain. The *Micro-coccus neoformans* of Doyen is also found.

VI.—Symptoms of Enlarged Prostate.

The onset of this trouble is very insidious and the patient can seldom tell the exact date when first he noticed the trouble. A very usual picture is the following: At first the patient begins to pass his urine at more frequent intervals and gradually finds he has to make arrangements for this increased desire. If travelling he chooses a lavatory compartment, and finds he cannot comfortably sit through a long service or theatrical performance. Then after a time he finds a difficulty in starting the act. Soon he is compelled to get up at night to empty the bladder, at first only occasionally, but soon every night, and then more than once during the night. Further he finds the desire becomes more urgent and the call must be quickly obeyed. The stream of urine becomes smaller and weaker, may be subject to intermissions, and straining does not help to increase the flow. Dribbling after the act has been accomplished takes place, and after a while it occurs even some time after finishing micturating. Finally retention comes on and resort to catheters. This picture of course does not apply to all cases, but it may serve as a general rule. Sometimes, *e.g.*, retention is one of the first symptoms.

We may now, perhaps, be permitted first to enumerate most of the symptoms: (1) Increased frequency of micturition, (2) loss of power of propulsion, (3) intermittent micturition, (4) difficulty in starting micturition, (5) dribbling at the end of micturition, (6) inability to completely empty the bladder, (7) retention, (8) incontinence, (9) hæmorrhage.

In addition to these urinary symptoms there are those affecting the sexual department, such as too early emissions on coitus, too frequent erections, incomplete erections, inability to perform the act of copulation, and then the accompanying mental and nervous prostration.

VII.—TREATMENT OF HYPERTROPHY OF THE PROSTATE.

This may be divided into (*a*) Hygienic, (*b*) Palliative and (*c*) Radical.

(*a*) The *hygienic* treatment entails the following of every measure conducive to the improvement of the general health, such as a very moderate gratification of the sexual desire; the patient should avoid alcohol and a stimulating dietary, should not allow the bladder to become overdistended, and avoid constipation. Diuretic mineral waters and other diuretic remedies should be taken.

(*b*) *Palliative.*—These include prostatic massage and catheterism. In early cases, and especially in those associated with chronic prostatitis, vigorous massage of the enlarged organ once or twice a week may be of great help, but in most cases other more radical steps have to be taken. Catheterization by means of a Coude gum elastic catheter is of great service to many for a time, but it requires to be most carefully done, and even then as a rule leads to serious results. Of course, in a great number of cases catheterization is very painful and in others is impossible.

(*c*) *Radical Treatment.*—In 1876, Bothini introduced a galvano-caustic operation in which a catheter-like instrument fitted with a platinum blade and heated by an electric current, was passed into the prostate, the current turned on, and then the platinum blade drawn through the prostate slowly, cauterizing as it was withdrawn. Several days after the operation a slough was passed and this is stated to have improved matters. This operation, however, I believe, is now a thing of the past.

Radium, a little bird whispered to me, is now being successfully used and is going to do away with the suprapubic or perineal operations—*nous verrons!*

Perineal prostatectomy was introduced by Corillard in 1639, and he is reported to have operated on two cases in this way. Then there is a lapse of only two centuries (!) before we find any other references to that operation. In 1848, Sir William Fergusson exhibited specimens of hypertrophied prostates that he had removed by this route. It was not, however, until 1891, when Goodfellow devised the operation which is practically still employed to-day, that this operation may be described as being a success.

Suprapubic Prostatectomy.—This is the operation advocated by Freyer, and to him belongs the credit for the revival of prostatectomy in England. The publication of his results caused quite a sensation in the surgical world, and gave a great impetus to the successful treatment of this most distressing malady.

As the suprapubic prostatectomy is the operation which appears to me to be far and away the best, and the one which I have always employed, I will in brief describe it. When possible it is advisable to have the patient for a few days in bed and to administer urotropine or sodium acid phosph. and to wash out the bladder with boracic lotion. At the operation the bladder is again washed out, sufficient lotion being left in the organ to distend it. Then the usual median incision is made just above the pubes—the length of which varies with the depth of the abdominal wall, from 2½ in to 3½ inch. The bladder is opened by a vertical incision about 1 inch in length, and the lotion immediately begins to flow out. The left forefinger is then passed into the rectum and the prostate well pushed up into the bladder. The right forefinger is now introduced into the bladder and searches for the most prominent part of the prostate. This is now scratched firmly with the nail and a line of cleavage sought and the mucous membrane and sheath torn through until the capsule proper is found. Then keeping as close as possible to the capsule the finger tip is gradually worked round and by greater or lesser sweeping movements one lobe is freed. The finger then passes to the opposite side and the remaining lobe freed in a similar manner. Finally the urethra

is torn through and the gland lies free in the bladder. A pair of long forceps is then introduced and then prostate is delivered. This, gentlemen, sounds so easy, and in a number of cases it is so, and from the time of first tearing through the mucous membrane until the delivery of the gland only three or four minutes have elapsed. But, and there is a big "but," at times it is a most tedious and trying operation and I have been as long as a solid hour in taking out a retractory organ piecemeal.

After the delivery of the gland the bladder is thoroughly washed out and clots removed, and then a large drainage tube is inserted, and the skin and abdominal wall are closed on to the drainage tube by two or three sutures. Personally, I never put any sutures into the bladder.

After-Treatment.—The dressings must be changed when soaked with urine, the frequency depending upon the amount secreted, and will vary from four to six hours. For about twenty-four hours after the operation clots may be found in the drainage tube, and these should be removed. The bladder is carefully washed out daily, my choice being with warm boracic lotion. Great care and gentleness should be exercised so as not to have any pressure on the bladder wall or to excite any straining on the part of the patient, as naturally the site from which the prostate has been removed remains in a weakened condition for several days. I am careful to prevent the patient from endeavouring to pass urine *per urethram* for at least a fortnight. As the suprapubic wound closes the bladder may be irrigated *per urethram*. Any complications that may arise are suitably dealt with—shock by warm bottles, hypodermic injections of strychnine, and enemata of coffee and brandy or continuous proctoclysis; bleeding by raising the foot of the bed on blocks and hypodermic injections of ergot; pain or spasms of the bladder by injections of morphia; any bronchial trouble by raising shoulders of patient—and drugs suitable to the condition.

The bowels should be carefully regulated for days prior to the operation, and the lower bowel emptied on the morning of the operation by means of an enema. After the operation I leave

the bowels inactive for forty-eight hours, and then give merc. dulc. or liquorice powder. The bowels are then kept acting each day.

Attention to the bowels is very necessary after operation, as patients affected with enlarged prostate are liable to fæcal accumulations in the lower bowel—and if this is allowed to take place it produces much pain and spasm of the bladder.

One complication I have not yet mentioned, and that is secondary hæmorrhage. So far it is a complication that I have not seen, and it appears to me to be one that need not occur provided the suprapubic wound is not allowed to heal too soon.

VIII.—Results.

My experience of course is as yet strictly limited, having only performed the operation nineteen times, but I am pleased to say there have been nineteen cures and no failures, and in only one of the series has there been any real anxiety as to the recovery. This was in a poor, thin, weakly patient, aged 74, who had led a catheter life for years, and who came suddenly for operation as the result of retention, and consequently had no treatment prior to operation. He, however, ultimately did well, and is still very proud of himself!

This suprapubic operation cures the patient; he is able to retain and pass his water naturally; it does not take away his sexual power— in fact, in one of my cases the record is that the power seemed to have been increased, and the patient greatly delighted. There is no stricture and no fistula.

In the perineal operation one cannot promise a cure, and it is frequently followed by recto-vesical or recto-perineal fistula, by stricture, by frequency of micturition, and even by loss of sexual power.

Case 1.—E. B., aged 67. Operation January, 1911. Still going on splendidly. This was a typical case of enlarged prostate, beginning with the usual symptoms and running the usual course for about ten years, the last three of which began to be very irksome owing to the use of the catheter.

On examination, the prostate was found to be a very large one, fairly hard, and somewhat irregular. The urine was very foul and contained a large amount of pus. As catheterization caused bleeding and symptoms of retention were coming on, the operation was performed some days before anticipated. The operation was quite an easy one, the enucleation taking only seven minutes, although the prostate was very large— about the size of one's fist—which caused some difficulty in delivery. There was a fair amount of hæmorrhage, but it was soon controlled and the patient made an excellent recovery.

Case 2.—C. P., aged 52. Had noticed frequency of micturition, especially at night, for a few years, gradually getting worse. The sexual act was also unsatisfactory owing to emission taking place so very readily. These were apparently his only troubles, until suddenly acute retention came on. I saw him for the first time in this condition and as he had a large prostate and no catheter could be introduced, I made a suprapubic puncture and emptied his bladder which was almost up to the umbilicus. He was then taken to a Nursing Home and I operated upon him. This proved to be the most difficult enucleation I have yet had. The prostate was large, but appeared to be greatly flattened out and did not project very markedly into the bladder. The operation occupied exactly sixty-three minutes and the prostate was removed in pieces. He made an uninterrupted recovery and is now well—better than he has been for years, and is thoroughly enjoying his married life. He was operated on in March, 1912.

Case 3.—J. H, aged 74. Operated in February, 1913. When I saw the patient he was very feeble and I hesitated as to operating—but thought the risk was much less than leaving it. The man had been suffering for at least twenty years, gradually getting worse, so that for some time previously to my seeing him, life had been a burden. It was a case of living to "pump ship" as he called it. There was great difficulty in passing water, it took him so long to start the act, and when once he had started he thought he would never finish. The bladder was very large and had lost a lot of its propulsive force.

He had twice had retention which had been relieved by catheters. For years he had "spoiled" his trousers through so much dribbling of urine into them. The urine was very bad, but we were able to get this much better before operating. In this case the prostate was not very large, but was decidedly hard. At the operation it was found to budge well into the bladder, and was most easily enucleated in from four to five minutes. Apart from a little bronchial trouble he made an uninterrupted recovery, and the improvement in his general condition was really remarkable.—*The British Homœopathic Journal*, February, 1915.

EDITOR'S NOTES.

Use of Radium in the Treatment of Recent Local Fibrosis.

Laborde, at a meeting of the Societe de chirurgie, Paris, reported a case in which the well known property of radium of reducing fibrous tissues such as keloids was availed of for the removal of a band of recent cicatricial tissue in the forearm, coupled with neuritis of the median nerve. Gratifying results were obtained, the fibrous tissue disappearing completely in a few weeks, the extensor function of the fingers being restored, and the neuritis of the median, previously pressed upon by the scar tissue, being so reduced that the pre-existing pain was relieved.—*The New York Medical Journal*, February 5, 1916.

Recent Advances in the Treatment of Cancer.

Issac Levin states that a high estimate shows that about fifteen per cent. of all cases of cancer can be cured by surgical measures. On the other hand, there are two other methods which probably give even better results, particularly if used in combination with surgery; first, the destruction of the cancer cells specifically by thermal coagulation. Diathermy has the advantages of not opening up tissue spaces with the increase in the dangers of metastasis, and of destroying the cancer cells *in situ* without damaging the normal tissue cells. It is applicable in the treatment of inoperable cases. The second method is that of irradiation by radium or x-ray. This method has about the same advantages as diathermy, with the additional one of being able to reach and destroy the minute deposits of metastatic cancer cells not accessible to either the knife or diathermy. The best results seem to be obtained by a proper combination of those three methods, for each has its limitations and each is possessed of certain advantages over the others.—*The New York Medical Journal*, February 5, 1916.

The Treatment of Leprosy by Intravenous Injections of Chaulmoogra Oil.

M. Vahram, impressed by the fact that chaulmoogra oil prescribed by the mouth is often badly tolerated, has attempted to administer it intravenously. For this purpose he has evolved a preparation consisting of an oily emulsion in the presence of gum arabic which, after desiccation in vacuo, is submitted to a prolonged grinding, followed by a suspension in the initial volume of liquid, which is then sterilized at 110° C. This pseudo-solution presents granules of extreme fineness, recalling in their size those of the colloidal state. Injected into the vein this preparation does not produce any reaction, and the patient can rejoin his occupation immediately after the injection. The therapeutic results of this treatment have been most encouraging. From the first injection a return of sensibility has been noticed, attended by progressive diminution of the nodules and the disappearance of open lesions. The quantity of fluid to be injected is small: the initial dose is ¼ c.c., progressively increased up to 2 c.c.—*The Lancet*, February 19, 1916.

Deaths from Wild Animals and Snakes in British India.

The Government resolution on wild animals issued recently shows that during the past year 1745 persons were killed by wild animals in British India, an increase of about 9 per cent. on the previous year's casualties. As usual, tigers were chiefly responsible for a large proportion of the fatalities (289) in that district. The number of human lives lost by snake-bite amounted to 22,894, an increase of 1124 over the previous year's figures. The mortality in the Punjab was the highest for that province recorded in recent years. Here the echisviper was the greatest source of danger, and special measures to exterminate this reptile have been organised. The number of cattle killed by wild animals totals 94,746, a slight increase over the preceding year's

total, due chiefly to better registration. Of the total mortality from wild animals, leopards claimed over 50 per cent., tigers and wolves coming next. Some 10,909 cattle succumbed to snake-bite during the year under report, and 25,903 wild animals were destroyed, including 1484 tigers, 6557 leopards, 3076 bears, and and 3066 wolves. The total amount paid in rewards was Rs. 1,91,181. The number of snakes destroyed was 118,816. The number of fresh licences issued under the Arms Act of 1878 dropped to 23,016, the total number in force during the year being 176,779, a decrease of about 5700.—*The Lancet*, January 15, 1916.

Town Planning.

A plea for a "Greater Calcutta" was put forward at an exhibition of town-planning methods at Calcutta by Professor Geddes, who is spending a short time in that city. The efforts of the Calcutta Improvement Trust were illustrated by means of plans and diagrams. The Central Avenue scheme was characterised by Professor Geddes as an honest effort to deal with an extremely difficult problem. Of other cities of the world, he thought London should offer most interest to Calcutta which was itself a product of direct Indian and European influence, and had been largely determined by London, as London had been largely determined by Rome. Professor Geddes traced the Roman influence in the early development of London, and pointed that Cheapside, the main shopping street of Roman days, remained a popular shopping resort to-day, and a lasting illustration of the knowledge the Romans had of town-planning. The most interesting section of the exhibition deals with the Improvement Trust's plans for an improved Calcutta.—*The Lancet*, March 4, 1916.

The Regulation of Prostitution in Sweden.

The proposal in Sweden of a Royal Commission to abolish the regulation of prostitution by the police has been investigated by the Swedish "Medicinalstyrelse," or Board of Health, and this department has solicited the opinions of various authorities throughout Sweden with the result that widely divergent views as to the efficacy of regulation appear to be held. Although the proposals of the Commission, which are antagonistic to regulation, are endorsed by most of the authorities consulted, only a minority unequivocally urge the total abolition of regulation. The authorities in favour of abolition have, in many cases, had considerable experience of regulation in the large towns which still countenance regulation, or, after having permitted it for some years, have abandoned it. Stockholm, Gothenburg, Norrkopinp, Christianstad, and Sundsvall still retain regulation, while Malmo, Helsingborg, Uppsala, Lund, Jonkoping, Eskilstuna, and Falun have abandoned it. In Gothenburg, for example, the medical officer deputed to examine prostitutes, frankly states that he is unable to recommend the maintenance of regulation, whether it is made more stringent or more lenient. The many objections to regulation are, he says, certainly not outweighed by the relatively slight sanitary advantages of this measure. The sanitary authorities and the police of Malmo agree that the objections to regulation are so serious that abolition is practically inevitable. Regulation, it appears, was introduced in Malmo towards the end of the "eighties." Early in 1905 the police ceased to register new prostitutes, and early in 1908 the system was abolished, the vagrancy laws being applied in certain cases as a substitute. These changes were followed by a marked reduction of prostitution in the streets, but it is not possible exactly to estimate the extent to which the application of the vagrancy laws to prosti tutes was responsible for this reduction. It is, however, certain that the vagrancy laws were far more effective and awe-inspiring when applied as a substitute for regulation than when treated as subsidiary to regulation. It was found from a modified form of notification of venereal disease obtaining in Malmo that its inci-

dence fluctuated much from year to year in the period 1892-1913, but that the abolition of regulation was followed by an appreciable fall in the incidence of this disease. This fall may, it is admitted, have been due to other factors, but at any rate it shows that the abolition of regulation does not necessarily promote the spread of venereal disease, and that regulation, as far as Malmo is concerned, is far from necessary.—*The Lancet*, February 12, 1916.

Chemical Therapy of Pneumonia.

G. B. Cavazzutti, states that, apart from symptomatic and supportive treatment of pneumonia, there are now three other methods, serum therapy, vaccine therapy, and chemical therapy. The serums are the anti-pneumococcic and that from convalescents from pneumonia. Of the vaccines, the haptinogen of Mendez is giving good results in Argentina. Two new drugs are of value, of which the first, optochin, in doses of 0·25 gram six times daily by mouth is efficient before hepatization is established. This action sustains Roemer in his contention that the fibrin in the lung protects the pneumococcus from the antiseptic action of medication. The other drug is sozoiodalic acid, usually administered in the form of the salt of sodium or potossium, in daily doses of 0·05 gram hypodermically. It seems greatly to shorten the disease, frequently bringing about the crisis in twenty-four hours. Sozoiodalic acid is a white crystalline solid, soluble in water, containing iodine fifty-four per cent., phenol twenty per cent., and sulphur seven per cent., and combines readily with almost all metals to produce crystalline salts.—The *New York Medical Journal*, February 19, 1916.

Eye defects in School Children.

At the request of the department of health, the Public Health Committee of the New York Academy of Medicine has prepared a report on the relation of seating and lighting facilities in school rooms to the incidence of myopia in school children. The report shows that conditions in many of our public schools are unsatisfactory and conducive to the impairment of vision. The report has been submitted to the health department with a recommendation that a careful study of the question be made by the health department and the department of education.—*New York Medical Journal*, January 22, 1916.

President's Address: The Great Professional Problem of the Present Decade.

Dr. Bacon Saunders, of Fort Worth, Texas, said that many private sanatoriums were conducted on the highest scientific plane in the most healthy, efficient, and ethical manner, and were, therefore, beyond the pale of criticism. But, unfortunately, it was also true, be it said to the everlasting shame of men and women boasting of the insignia and parading in the habiliments of medicine, that probably somewhere from thirty to fifty per cent. of the privately owned and secretly operated pseudosanatoriums were hot-beds of dishonesty and veritable culture fields of immorality; in short, fit hibernating places for his satanic majesty and all his devilish hosts. He wondered if those in power realized what a travesty on public benefaction it was when in almost every State of this glorious Union of theirs, anybody, no matter who, so long as he went by the sobriquet of "doctor," could get a charter under the great seal of the State for anything, and no questions asked, provided that the bantling was called by the name of "sanatorium." In the fulness of time, when the great heart of medical men really and sincerely beat for human welfare and happiness, there would come some power whose duty it would be to see that, that disgraceful state of affairs was made impossible.—*New York Medical Journal*, January 22, 1916.

Prognosis of Incipient Senile Cataract.

Most incipient senile cataracts never advance far enough to need operation; therefore we should avoid using the term, cataract, and speak of it rather as an opacity in the lens, and give the most hopeful prognosis until it is evident that it is progressive. Then, if it does mature, operation offers a good prognosis. The statistics given by Knapp were: "In all cases as they come, failures five per cent., moderate results ten per cent., good results eighty-five per cent." If the sight of the better eye is insufficient for reading, the immature cataract of the more advanced eye may be removed safely, so there need be no years of partial blindness waiting for ripening. The patient is entitled to the most optimistic opinion which clinical history and experience warrant.—*New York Medical Journal*, January 22, 1916.

The Introduction of Cinchona Trees into India.

Sir Clements Markham, who died on January 30th in his 68th year as the result of accidental burns, succeeded in introducing cinchona trees into India after several other attempts had failed. In 1852, the year in which he retired from the Royal Navy, he paid a two years' visit to Peru, and published a book on his travels in 1856. A few years later he again went to Peru at the request of the Secretary of State for India, to superintend arrangements for the collection of cinchona plants to be introdueed into India, and we are very glad to have the opportunity of publishing the following interesting note by Sir George Birdwood, M.D., K.C.I.E., relating the story of the arrival of the plants in India and the early stage of the introduction of the cultivation of cinchona into that country. "I have," he writes, "none of the official documents by me for the verification of the following particulars of the introduction by Sir Clements Markham of the cbinchona trees of south America into India, but you may rely on their accuracy as a general statement, as I happened to be the official who, under the direction of Sir George Russell Clerk—'George Clerk of Umballa'—received Sir Clements, and

his large nursery of young chinchonas, on his arrival in Bombay in 1860, and assisted him in taking them on to the Nilghiri Hills in Southern India, where he placed them in charge of Mr. MacIvor, one of the most skilful arboriculturists then in India, to whom Sir Clements also entrusted the subsequent supplies of young chinchonas collected under his instructions in South America by Messrs. Spruce and Pritchot. They all flourished wonderfully under MacIvor, who was able within a few weeks to send out stocks and seeds for cultivation in Ceylon and Sikkim. Earlier attempts had been made by Boyle and Weddell and Falconer to naturalize the chinchonas in India, but all had failed; and it was Sir Clements Markham's choice of the species of chinchonas (in the which he was advised by Sir Joseph Hooker) and of the Nilghiris for their new habitation in which he was encouraged by Sir George Clerk while still Permanent Under Secretary of State for India, 1858-60) that secured the success of his arduous adventure—one of the greatest of the blessings conferred by 'the British Raj' on the malaria stricken peoples of India. The chichonas grown by MacIvor were *Chinchona Calisaya, C. micrantha, C. lancifolia, C. nitida, C. officinalis, C. Pahudiana, C. peruviana,* and *C. succirubra, C. Calisaya* has, I believe, proved the most successful on the Nilghiris.—*The British Medical Journal*, February 12, 1916.

Rat-bite Fever.

Rat-bite fever is a specific infectious disorder of rare occurrence following on the bite of a rat. It has been observed in Europe, Asia, and America, but it is commoner in Japan than elsewhere, being called "sokoda" in that country. It has been caused, also, by the bite of a ferret and of a South African squirrel. It was first brought into general notice by Miyake in 1899, when he reported eleven cases of his own; it appears that fifty-three cases were reported in 1915, with a single autopsy. In 1914 the bacterial cause of rat-bite fever was isolated for the first time, and named the *Streptothrix muris ratti* by its discover, Schottmüller. Quite recently Dr. F. G. Blake, of Boston,

has described a case, ending fatally, from which he isolated the organism described by Schottmüller. The disease is rarely fatal; not so, however, in Dr. Blake's case. The patient, a healthy woman of 67, was bitten on the tip of the right index finger while taking a rat out of a trap. The wound was not severe, and was washed in hydrogen peroxide solution. Two days later signs of lymphangitis appeared in the arm; the wound was opened and dressed, and in four days the inflammation and pain had entirely subsided. A fortnight later she had a severe rigor and was sent to hospital, where she sank and died in sixteen days. A blotchy macular and maculo-papular rash appeared on the limbs and thorax, as is common in this disease; a moderate leucocytosis was present, with irregular fever. The blood gave a pure culture of the streptothrix mentioned above, and Dr. Blake gives details of its cultural characteristics and several photomicrographs of its growth. The organism was only feebly pathogenic for rabbits and white rats, and not pathogenic for guinea-pigs. At the necropsy the streptothrix was again recovered from the blood; it had caused an acute ulcerative endocarditis of the mitral valve, with perforation; infarcts were found in the spleen and kidney, with local subacute inflammatory lesions in the myocardium and the abdominal viscera that appeared free from streptotriches, and were presumably toxic. The patient's serum developed a high power of agglutinating the streptothrix. As Dr. Blake points out, the mortality of the disease is about 10 per cent., though it often incapacitates the patient for a considerable time; death may occur early from profound toxæmia, or later from the development of severe nephritis. The organism is described as slender and filamentous, forming a mycelium, and, later, chains of cocci, bacilli, or rods, spindles, and clubs may appear. It stains readily, and is Gram-negative and a facultative anaërobe.—*The British Medical Journal*, February 19, 1916.

Gleanings from Contemporary Literature.

SOME PUZZLING FEATURES OF EMPYEMA.

By John H. Pryor, M.D.

My object is to present briefly some more or less puzzling problems associated with empyema, with a few suggestions relative to their possible solution. As a rule the disease is not difficult to recognize, and its clinical history may show little variation, unless the duration of illness and the influence of age considered. There is a marked difference in the behavior of empyema are when it occurs in the child and in the adult.

The symptomatology in the child may prove quite misleading at times, and too frequently the condition is overlooked and a diagnosis long delayed. Recently attention has been directed by many writers to the abdominal symptoms which divert observation from the chest. Some of the most serious septic and hopeless cases are attributed to this error. My experience supports those statements to a certain extent, and most of the cases have been falsely diagnosed as tuberculous peritonitis.

It is rather dangerous to say that any mistake is inexcusable, but the confession is forced that such blunders must be exceedingly rare, if carelessness is eliminated. If all the symptoms and signs were grouped and studied, and time taken to look at the child and examine it, this mistake should not occur, because the picture is distinctly not one of abdominal disease alone. It is the play of a reflex unless a subphrenic abscess exists or accompanies an empyema. Mention is made of this complication as a puzzling feature which may be met.

Five cases of empyema and subdiaphragmatic abscess have thus far come under observation. The empyema was detected in all of them, but in each instance the child continued very ill and did not show the expected improvement after evacuation of the pus from the chest. Two of the patients recovered after drainage of the abscess. One died because operative interference came too late, and was not radical enough. Two died because of timidity. Operation was postponed or refused because the diagnosis was not accepted and interference deemed unjustifiable. In all, the abdominal symptoms were present and confined largely to one side. The diaphragm on one

side was apparently immobile. There was tenderness over the upper half of the abdomen with muscular rigidity and resistance to pressure. Pain could be caused by pushing up against the diaphragm. Cough caused a catching of the breath and some spasm of the diaphragm. In one, hiccough with pain was suspicious The lower ribs did not move freely. On two other occasions the chest was explored without finding pus, and yet a conviction remained that empyema was present. The signs and symptoms seemed to exclude an empyema and pointed directly to subphrenic abscess. Both children died. In one case aspiration revealed pus, but operation was postponed. In the other case nothing was done. The introduction of a needle after death, proved the presence of pus where it was suspected.

There is room for the inference that the diaphragm may be forced up and produce confusing signs over the lower region of the chest, but the perplexity could have been eliminated by noting the change in the percussion sound during deep inspiration, altering the position of the child and observing the absence of Grocci's sign modified by position. Any comprehensive article devoted to empyema should lay strong stress upon the marked differences and exceptions which characterize the disease in the child. We must bear in mind the sudden onset, and the appearance of symptoms similar to those manifested in pneumonia, which are responsible for most of the mistakes. Again, the physical signs, usually so reliable in the adult, are frequently remarkably modified in the child.

The breath sounds and the conduction of the voice through a large accumulation of fluid, may be most deceptive when considered alone. The percussion note may be misleading in reference to the amount of fluid, and the heart may not be displaced in proportion to the amount of pressure. Most of our knowledge of the chest is largely theoretical, and there are factors in the thorax of the child which we do not fully understand and often forget. Yet in the vast majority of cases doubt can be removed by a few procedures.

1. Exclude other conditions, particularly pneumonia.

2. Remember the possibility of associated pneumonia.

3. Obey the cardinal rule of physical diagnosis; compare, always compare. The sounds on the affected side are practically always different in quality and degree to a trained ear. There is almost always a perceptible difference if the child's voice sounds can be elicited by palpation.

4. Employ the role of gravity by change of position, and mark the altered levels of the fluid. It takes longer for thick pus to gravitate to a new area than thin serum.

There are times when empyema in the child is masked, and the signs are modified by the presence of an extensive pneumonia, but often the suspected pneumonia does not exist. The needle may be employed to remove doubt and supply positive evidence. Unfortunately this procedure is not always successful or the result final. One or more punctures may be made in vain if the proper site is not selected, a favorable change in position secured, the method faulty in various ways, or an interlobar abscess or sacculation is present. The amount of pain caused by exploration can be decidedly diminished by finding a space between the ribs, if possible, where there is room for the needle, and by widening the space and preventing squeezing, by bending and twisting the body away from the operator, and bringing the hand well up over the head to pull away intervening musculature. There is something wrong when much strength is used. Whether a needle is really sharp or its point and edge dulled, may explain the difference between a nervous, frightened, howling child, and a quick merciful introduction, instead of pushing and jamming an entrance. No needle should be used repeatedly without sharpening. Slight contact with a rib easily dulls or bends the point. The needles occasionally furnished at hospitals are an abomination. We should have a number of various sizes, properly sharpened, and the one selected should be long enough to pass through a thickened pleura.

This reference to exploratory puncture may seem trifling, trite, and unnecessary. I have seen much clumsy bungling and needless infliction of pain from this procedure. The spray of ethyl chloride and the application of iodine in thick layers adds toughness to the skin. They can be quickly wiped off with alcohol or sterile water, the skin pulled up to tighten it, and then the quick, direct thrust made through the skin, always prepared to stop and change the course if a rib is touched.

Frequently the child, and sometimes the adult will be as much perturbed by the insertion of the hypodermic needle to induce local anesthesia, as by the passage of a larger one which will permit aspiration.

Now one or two more trite, cursory references, without apology: We really make more progress feeling the way between ribs, than

endeavoring to puncture the rib itself. The needle employed is often too small and will not allow thick pus to pass, and failure leads to a false conclusion or the necessity of another trial. The child dreads a second attempt to a pathetic degree. If the space between the ribs is very narrow, and a large calibre needle must be used, an anesthetic should be given, because some force and time may be necessary to push the ribs apart and avoid injury. If pus is found, there is a chance to make an opening immediately and without pain. There may be no pus visible in the barrel of the syringe, but a slight amount, a shred or drop in the needle. When no fluid appears in the barrel, do not let the piston slip back before withdrawal, and thus expel material in the needle. The needle should be emptied carefully for evidence about as valuable as the appearance of a larger amount. Some of my readers are silently remonstrating that everybody does these things, and the answer is that they don't.

If the site of the puncture is high, the character of the exudate may be misjudged. Thin pus, or scropurulent fluid, may be found in the upper layer, and a thick flocculent or cheesy pus present in the lower stratum. This point should be remembered also in selecting a spot too high for opening and drainage, as the evacuation may be incomplete and absorption is compelled to care for a remainder that might have been removed. This condition sometimes accounts for a delayed recovery and the formation of a pocket to encapsulate a deposit.

Symptoms indicative of profound toxemia, as rapid breathing, high fever, and rapid disturbed heart's action, are often due to the association of a pericarditis, frequently undiscovered. In the child as well as the adult, death in a large percentage of cases is caused by septic endocarditis, alone or combined with pericarditis. Its appearance should be watched for, as the prognosis becomes much more grave. We learn to fear the meaning of a cardiac murmur when developing suddenly in this condition, especially if the patient is septic and free drainage has been delayed.

Experience seems to prove that evacuation by incision is usually sufficient in the child, and more radical measures, while sometimes necessary, may be needlessly employed. Why the quick emptying of a large cavity containing pus is less dangerous than rapid removal of serum, I have never seen explained. We occasionally experience much difficulty in pushing a tube between the ribs of a child. This

can be obviated by a simple device. Quickly introduce the little finger into the pleural cavity and make a round hole to form a canal for the drainage tube.

During childhood the tube is often left in place too long and drainage encouraged indefinitely. There can be no fixed rule for guidance, but early removal can be risked much more than in the adult. When the drainage is slight and the amount little increased by cough, a gauze drain may be tried and withdrawn in a few days. The wise surgeon begins deep breathing exercises early, and does not always dismiss the patient as fully recovered when the opening has closed. In exceptional cases, unless patient, persistent effort aimed at repair is made, a crippled lung and diaphragm may last for years or life. The heart may be permanently displaced. I have seen a number of cases in which the heart remained far from its normal position indefinitely. One child, under observation for the last two years has a history of an attack of pneumonia and pleurisy with effusion two and a half years ago. The heart is entirely to the right of the sternum, and transposition of viscera has been excluded by physical signs and the electrocardiograph.

Recurrent empyema and undetected pockets of pus occur during childhood, as well as in adult life. I have met with three marked instances. A second opening became necessary three weeks, five weeks, and three months after the primary operation. There may be considerable difficulty in locating a site for the second exploration, because the thick adhesions obscure to a large extent the physical signs. The introduction of the perfected screen and the improved x-ray tube, permitting longer observation, is of enormous assistance.

Finally, if one is not an expert in physical diagnosis, it should be remembered that there is a type of breathing almost characteristic, and its occurrence should arouse strong suspicion of fluid in the chest. One shoulder is lifted and there is partial immobility of the affected side in the region of the abdomen near the diaphragm. This is accompanied by an increased distance between the spine and scapula, if the fluid exists in considerable amount.

EMPYEMA IN THE ADULT.

Now a few words concerning the unusual problems encountered in adults. This diagnosis should be easy, particularly if the needle is used when there is doubt. But altogether too often, when the operation is successful, much sepsis has developed, great displace-

ment and damage have occurred, and an important function has been crippled.

The diagnosis of empyema must be early and relief prompt, if a comparatively good result is expected. A deformed chest, a twisted spine, a displaced heart, a totally or partially useless lung, and a diaphragm with greatly diminished function, is certainly not a desirable or laudable result. When pronounced a recovery it becomes a grim travesty upon the word. The fact should be strongly emphasized that the ultimate result depends upon the conduct of the physician and very rarely upon the surgeon. The surgeon cannot repair, try as he will, the effects of a late diagnosis and a tardy summons. There exists a surprising tendency to assume that extensive consolidation of the lung or a large amount of fluid has formed in the chest, because respiration is rapid and difficult. Such an inference or conclusion may be true or false. The amount of fluid may be small with rapid breathing, and one may see repeatedly an effusion of one or more quarts with the breathing normal or slightly accelerated and slight elevation of temperature.

The rapidity of the breathing seems to depend very largely upon the effects of toxemia and involvement of the pericardium or diaphragm. We can form an estimate of the amount of fluid, by the extent of displacement of the heart the movement of the diaphragm, the area of flatness along the spine, the obliteration of resonant regions, and the movement of the fluid by change of position.

When the pus is sacculated or pocketed, then difficulties arise. The clinical history may prove obscure and confusing, and the temperature range and the blood examination particularly, may furnish little aid. Careful and often repeated physical examination is required to determine the spot for exploration and avoid many punctures of no avail except to deceive.

These cases call for skill, experience, and employment of some tricks in the art. The efficiency of the screen cannot be tested at times, because the patient cannot be moved to the office of the radiologist. Under the circumstances we must depend often upon fine changes in sounds and pitch of tones. Cough must be employed to bring out adventitious sounds and the effect of gravity studied as far as possible. Success depends largely upon the extent and thickness of pleural adhesions, the size of a pocket, and their number and distribution. So many pockets may exist that evacua-

tion of all is not accomplished, or may be impossible. The injection of bismuth solution followed by screening has proved an aid. The difficulties which may be encountered receive scarcely any attention in the textbooks, and therefore a brief description of a few typical cases will be presented as an illustration.

There are few, if any, conditions found in the chest more puzzling than recurrent empyema. The books, so far as I have searched, do not mention this as an occurrence or possibility. I have seen four cases in eight years, and the second attack on the same side occurred from three months to three years after the previous primary attack.

The recurrence three years after recovery in a young man, came under observation in 1907. He had had an attack of lobar pneumonia in 1904, followed by an empyema. A portion of one rib was resected and a large quantity of pus evacuated. In the course of two months, the opening closed and he apparently made a complete recovery. Three years later, malaise and loss of flesh were noted with evening rise of temperature. But the chief symptom was an annoying cough. He gradually became worse and left college to return to his home in this city. The temperature rose each evening to 102° F. with great regularity. The leucocyte count, made several times, was between 7,200 and 7,500.

The cough became so harrassing that anodynes were necessary. The breath sounds over the previously affected lung were suppressed or very indistinct. He expectorated almost exactly one and one half ounce of pus a day. The only sign which afforded any indication for localization was over a small region posteriorly where rales were elicited by cough. At different times ten punctures were made over this region without obtaining fluid. Finally it was decided to remove a portion of several ribs, if necessary, and explore the chest. While the patient was under the anesthetic, five more punctures were made over the region previously explored, and the fifth puncture revealed pus. The pleura was greatly thickened and displaced, and revealed a perfect picture of a honeycomb. Many of the interstices were filled with pus.

About two ounces of pus escaped from a half filled cavity deeply buried in firm adhesions. The opening communicating with the lung was plainly visible, and the pleura at that site bled so profusely that stitching was attempted to check it. The material tore through the spongy tissue and the chest was quickly packed. The patient

became unconscious, blue—almost pulseless, and the respirations dropped to eight a minute.

A few hours later he appeared to be dying from hemorrhage. A rubber bandage was tightly wound around the chest, and the breathing became extremely difficult. Then oxygen was given constantly. He made a good recovery.

There were other interesting features in this case, replete with new experience, but space will not allow a recital in detail. The object now is to deduce these facts :

1. Empyema may recur after years, and the presence of vastly thickened adhesions and the consequent obscuration or absence of physical signs, makes the diagnosis a hard task.

2. The screen as employed today, might have been of assistance or not, on account of the massive pleura and the honeycombed tissue change. Possibly the movements of the fluid during shaking would have shown.

3. The danger of pleural hemorrhage and its avoidance if possible.

4. The use in extremity of an untried procedure, *viz.*, tight bandaging with rubber to control movement of the thorax and lung, and the combined use of oxygen. Since the observation of this case, I have nearly lost by hemorrhage two patients, from exploration of the pleura by the finger or probe. In spite of the fact that this has been strongly recommended to discover sacculated areas, pleural adhesions should be torn apart with the greatest care. The pleura may be explored in most instances, without this risk.

In a recent case pneumonia was followed by an abscess of the lung, draining into a bronchial tube. It was located by examining when full in the evening, and partially emptied after cough with expectoration in the morning. Later on empyema developed. A rib was resected and the pus evacuated. The surgeon was warned to explore, but not to tear. The next morning he reported that he was called in my absence and that the patient nearly died from shock. I found that he was pale, with a weak pulse. The percussion note was flat where it should have been resonant from the presence of air in the pleura. A soft rubber catheter was introduced to that region, and in the course of a day one and a half pint of blood was discharged.

The resection of a part of one or more ribs is not only justifiable to promote and maintain free drainage, but it should afford an

opportunty for thorough exploration. It is one of the chief advantages to be derived from the operation. The finger can sweep over an area where pockets may be detected. They are usually to be found in the lower half of the thorax.

The interlobar regions should be examined particularly for fluctuation, and the diaphragm explored for unsuspected accumulations. A second and third operation for exploratory purposes has been made many times, because adhesions form new pockets. But they are occasionally present when the original opening is made and they are unobserved.

A few notes relative to these conditions are presented. An empyema was diagnosed after long detention of a large quantity of pus. After six months, the drainage continued in considerable amount. There was a daily rise of temperature, loss of flesh and strength, tenderness and distention over the upper quadrant of the abdomen. A sacculated empyema involving the diaphragm was suspected. The woman was brought to Buffalo for observation. A probe was introduced and the patient screened. It was found that the probe was free in a very large cavity with no appearance of fluid. The diaphragm was immovable, and its upper border could not be seen. In the region of the diaphragm a cavity about two thirds filled could be perceived and the fluid wave was made wonderfully clear by shaking the patient. The fluid did not move with full inspiration or expiration. A possibility that the fluid was below the diaphragm was removed by placing a metal button at the location of the diaphragmatic attachment and noting that it was four inches above it. Operation and exploration revealed dense old adhesions attached to the diaphragm, enveloping about six ounces of pus. A distinct tumor in the right upper region of the abdomen disappeared after drainage.

The diaphragm was greatly thickened and roughened. Large drainage tubes were introduced. Later there was much complaint of pain and discomfort upon breathing. This was referred to the abdomen. Advice was given that the tubes be pulled out and shortened so that they should not rest upon or touch the diaphragm, and the pain disappeared. The observations on this case are as follows:

1. A second operation should have been made earlier.

2. The symptoms pointed plainly to another accumulation of pus involving the diaphragm.

3. The pain from the tube irritating the diaphragm has occurred repeatedly in my experience, and can be avoided by a shorter tube and in some cases by not making an opening too low.

The chest may be invaded when entirely unnecessary, or result in failure because the wrong spot is selected from imperfect or incomplete preliminary examination. A girl with most obscure symptoms and confusing signs was seen twice in consultation. She had persistent fever, some cough, and pain in her chest. A diagnosis was finally ventured of sarcoma of the lung accompanied by fever. Others disagreed, and she was sent away as having a case of tuberculosis. At a health resort the assumption that empyema was present became so insistent, that rib was resected and no fluid obtained. A piece of the pleura was snipped and examined microscopically, and the diagnosis of sarcoma established. She returned with sarcoma and empyema.

A man had pneumonia, apparently recovered, but fever and cough persisted after he resumed work. The signs and symptoms pointed to empyema. Whether pus was discovered by the introduction of a needle I have never been able to learn. A low opening with a resection of one rib, was made, but no pus appeared. The operator just missed the diaphragm by a fraction of an inch.

Twelve days later, pus began to flow in small amount through the opening. It soon was almost closed, but a few drops of pus would exude. Then an abscess developed in the axillary region, broke, and considerable pus was discharged. This was soon followed by another.

When the third abscess was ripe he came to me to learn why they continued in such rapid succession. The temperature, blood count, and physical signs were plainly indicative of a localized empyema or an abscess of the lung. Just before the apparently superficial abscess broke, which accident occurred on a train, he began to expectorate pus. A probe was inserted into the opening of the abscess and took an upward and inward course for about four inches. Another probe introduced into the old sinus at the seat of the resection, took a course upward and inward for about six inches. The patient was then screened and a large abscess was perceptible about half filled with pus, and the wave was obtained. At the time of operation a needle was introduced at a point determined under the screen, and the needle and probe clicked.

After resection it became necessary to work carefully and slowly through at least two inches of thickened pleura, and a large abscess was evacuated. The old fistulous track was scraped and packed. He made a remarkably quick recovery.

The hints in this case are so plain that reference is made only to the immense value of screening, which will be considered more fully at a future time. The electric light was an aid in this case, but was of greater assistance in another with additional interesting features. All the evidence seemed conclusive that a sacculated empyema or abscess of the lung was present. The question was,—Where is the pus? Repeated punctures failed to find it. At last the physical signs could be interpreted and the site determined. It was found to be an interlobar abscess, and the use of an electric light of endoscopic type was of great assistance.

The symptoms did not subside as expected, and the probability of another focus had been explained. A few days later, the symptoms became pronounced and another exploration was made. After careful search the light revealed the oozing of pus from a small opening leading to the lung, and another abscess was discovered involving the pleura and lung.

There is still another way in which an empyema may behave. A college girl acquired an empyema, and the diagnosis was not made until she had come profoundly septic and very dangerously ill. She was removed to a neighboring city and a rib resection made. Two quarts of yellow, stinking pus were removed. The temperature dropped and she was better for five days, when suddenly the temperature rose to 105° F., the pulse became very rapid and feeble, and the outlook was extremely bad. It was agreed that exploration must be made the next morning after screening. During the night the dressings were soaked with green pus and a large amount was evacuated. The symptoms subsided and she made a tedious recovery. The yellow pus was sterile. No growth could be obtained on different culture media. The green pus contained bacteria, but I never learned their names. The surgeons believed that there were two distinct and dissimilar infections, and there is good ground for the deduction. Whether the other focus could have been found by the finger or a large sound which was employed, I do not know, but luck was mighty kind.

Infarcts of the lung following surgical operations, especially those of the upper right quadrant in the vicinity of the gallbladder, occur much more frequently than they are detected. They sometimes

account for an obscure rise of temperature after operation, and it may continue for an indefinite time. When septic, a slowly developing empyema may result while the cause of the disturbing symptoms is suspected elsewhere.

A recital of the suggestive features which appeared in an unusual case is included, to illustrate another perplexing problem. A man of middle age gave a history of having suffered from dysentery contracted in a tropical region. There was a slight diurnal rise of temperature, gradual loss of weight, and an obstinate cough with persistent expectoration. An abscess, or sacculated empyema, partially draining into a bronchus, was suspected. The signs pointed to involvement of the lower thoracic region posteriorly on the right side, but the pleura did not contain fluid. There was immobility of the diaphragm on that side. The sputum contained a pure culture of colon bacilli, and a decision was reached to open and explore with the needle through the diaphragm. Pus was found and evacuated. I did not see the operation or the method pursued. The man recovered and all symptoms disappeared with recovery.

I was asked to see a man because he was suffering from great dyspnea. It was explained that there was fluid in the chest in apparently small amount, but not enough to account for the breath hunger. The attack had come on suddenly and the symptoms indicated asthma. He was fairly gasping for breath and cyanosed.

The effort was typical of pneumothorax. There was a small amount of effusion, but great distention from escaped air. A large quantity of foul air was removed by aspiration, and the dyspnea almost immediately disappeared. No effort was made to remove the fluid. Later it became necessary to tap. The fluid was cloudy and contained a large number of leucocytes. The sputum did not contain tubercle bacilli, and there was no history of tuberculosis, but after the removal of the air from the pleura, a large tuberculous implantation was found in the upper lobe of the affected side. The chest was aspirated once more to relieve air pressure, and twice to lessen the the amount of seropurulent fluid. Since that time, the usual course of an active, progressive tuberculosis has ensued. The true condition could have been determined by several methods, and especially by the coin test which was exceptionally pronounced.

Tuberculous Empyema.

When an empyema is believed to be tuberculous by all attainable evidence, it calls for most conservative management, notably in

advanced victims of tuberculosis. An opening into the chest should be avoided if possible, and aspiration resorted to by preference. The danger of sepsis is not great in the vast majority of cases, for a considerable period. The complication is more benign and the course characterized by mild manifestations. Contrary to erroneous belief, a tuberculous empyema often subsides without free drainage by incision.

There have been altogether too many pitiable sufferers from resected ribs, where the affliction of an opening which never heals and drainage that never ceases until death, have been added to the ravages of tuberculosis. It is sometimes easier to make an openining than to close it. A valued acquaintance, who was lately released from prolonged misery, was slowly dying from pulmonary tuberculosis. He was an improper subject, from any standpoint, for an artificial pneumothorax or any other hazardous, meddlesome interference. However, an artifiicial pneumothorax was produced, and was followed by an empyema, an aspiration, a tube, dressing several times a day, and a harrowing cough, with a hissing, spluttering hole in the side. The ghastly picture of pathetic woe and heroic resignation, will long abide in memory. In other cases recently observed, openings in the chest had been made long before and patience and surmise were exhausted because the flow was so reminiscent of Tennyson's Brook. There were patients suffering from a focus of tuberculosis in a part of the spinal column, and cold abscesses had drained into the pleural cavity.

Dr. A. H. Garvin, of Ray Brook, has described to me a very interesting form of treatment which he has employed in tuberculous empyema. It seems rational and meritorious, particularly when tubercle bacilli can be found in the exudate. Thus far no proper opportunity has been offered to try it. Doctor Garvin has employed the treatment in four cases successfully, and by careful selection has had no untoward results. I include his brief report kindly sent to me:

Patient, physician; advanced tuberculosis. Year previously, had suffered from spontaneous right pneumothorax, which slowly healed and disappeared after about six month. Patient continued for the next six months in very satisfactory general condition, although not able to do much. No rise in temperature, no cough, or expectoration. Lesion quiescent, although dyspnea marked.

In the winter, patient slipped and fell on the sidewalk, bruising his right side. There promptly developed, in the course of two

weeks, a complete chest fluid. Aspiration of this showed it turbid, whitish in color, consisting of cell detrius and innumberable tubercle bacilli. No secondary organism discovered.

Through two needles, one for aspiration and one for the inflow of normal saline, seventeen quarts of fluid were introduced and withdrawn, keeping the patient in perfect balance during the entire procedure. A stoppered washed bottle was used on the introduction of the fluid, and a similar bottle at the exit of the fluid, so the quantity relations were always the same.

As a result, there was obtained about 1,000 c. c. of wet sediment, consisting entirely of cell detritus and innumerable tubercle bacilli. Three weeks later, the procedure was repeated, using a lesser quantity, about 800 c. c. The sediment in this instance was slight and the fluid slowly absorbed, and the patient returned to his previous state, with the disappearance of the tuberculous empyema after about sixteen weeks.

The needle tracks, following the removal, developed slight necrosis at the skin punctures (probably tuberculous skin inflammations), which healed quite promptly.

The recommendations for the treatment were its efficiency and extreme simplicity. The striking thing was the extremely large number of tubercle bacilli in the pus on ordinary smear. Most of these were probably dead, as the needle track would otherwise have reacted a little more severely to the local infection in withdrawing the needle. The organisms were not tested out in laboratory animals.

In subsequent cases five c. c. of tincture of iodine were added to two quarts of the fluid, and this was introduced and washed out in the course of the usual washing. (I believe, however, the mere mechanical removal of the vast amount of tuberculous pus, together with the large amount of bacillary residue, gives the patient normally the opportunity to handle the residue satisfactorily, if his powers of resistance are able to accomplish this.)

Rib resection was considered out of the question, and the termination of the case was so satisfactory after simple lavage, that it recommended itself in sterile (not complicated with secondary organisms) tuberculous empyema. The inflow and outflow were kept within 100 c. c. of the perfect balance, and the process prolonged until the escaping fluid became clear.

Importance of Early Diagnosis.

The vital importance of prompt diagnosis and early operation in nontuberculous empyema becomes more and more apparent as we learn more of the irreparable effects of a large collection of fluid, especially when long continued. It involves more than a factor of pressure. The more we review the theories advanced, in the hope of finding an explanation, and the discussion concerning questions of physics, the more important become certain clinical facts.

The delayed evacuation of pus in the chest, particularly in the adult, produces a loss of function almost never fully restored, even when a thorough attempt is made. Carnification and atelectasis may be avoided to a large extent by early interference, but once established are seldom overcome to any great extent. The tonus and elasticity of the lung are lost in great or moderate degree, and the methods employed for re-expansion of the damaged lung often fail, because they are tried too late, for an interval too short, or the efforts are not thorough, systematic, or properly supervised. If more patients were carefully examined after operation, and the assistance of the screen sought as it should be, the absurdity of the belief that the crippled lung was pushing out the tube and filling in a vast cavity would be only too obvious. I have tried many methods to promote expansion of an atelectatic lung, and none yield the results obtained by the use of the pneumatic cabinet. This instrument has unfortunately almost passed into disuse.

The Fluorescent Screen.

Finally, attention is called to the use of the fluoroscopic screen in determining the extent of the injury and impairment of function following a so called recovery from empyema.

Considerable experience is required to interpret the view, and avoid false conclusions. One deception will often be exposed. The false assumption that the lower lobe is in respiratory action because a murmur has been heard over that region, will be dispelled, and the conduction of sound from a distance will be better appreciated. The dense, thick adhesions may hide all beyond from vision, but the index is to be searched for by observing properly the play of the diaphragm. A striking flatness and restricted excursion are perceptible in the vast proportion of cases. This is true even when the symptoms and signs lead to the impression that little harm has been done.

Many times one half of the diaphragm is absolutely immobile, while the other half may move over a wide radius. I recently wached the diaphragm on the unaffected side rise beyond the third rib during natural respiratory effort, while the other half remained immobile during strenuous forced respiration. Occasionally the diaphragm assumes a V-shape with the apex reversed. In these cases both sides may be immobile.

The cardiodiaphragmatic angle is apt to be obliterated on the affected side, and there is an appearance as if the adhesions fixed the pericardium and the diaphragm at that point.

The diaphragm has no portion of lung in its vicinity to compress, and for some physical reasons not fully elucidated, it does not rise in the vacuum.

There seems to exist an opportunity for investigation along new lines. What happens to the affected side of the diaphragm to destroy its mobility? Is the disabled function due to a disturbance or annulment of the equilibrium of physical laws, or are pathological tissue changes and innervation responsible for the loss of power and activity?

The possibility of a fault in the diaphragm instead of in the altered associated mechanical conditions is rendered conjectural because the image on the screen may display an apparently permeable air-filled lung which lags, while the diaphragm refuses to perform its share of work.

There are other factors which might be adduced to strengthen the suspicion entertained, but the purpose at this time is confined to a gleaning of hints which may be helpful, from a cursory review of an experience somewhat unusual.—*New York Medical Journal*, January 1, 1916.

THE
CALCUTTA JOURNAL
OF
MEDICINE.

Vol. xxxv.] May, 1916. [No. 5.

LINES OF SEARCH FOR THE REMEDY.

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Introduction.

On looking back to the early days of homœopathy and contrasting them with the present time, one cannot help regarding with admiration and envy the simplicity of the procedure adopted by the pioneers of our art when seeking the remedy for any manifestation of disease in which their aid might be sought. In those primitive times there was only one line of search for the remedy recognized by the followers of Hahnemann, namely, that line which had for its objective the discovery of a remedy which had produced in the healthy a complex of symptoms as like as possible to the totality of the symptoms observed in the patient. Working with infinite diligence and zeal on this one line they achieved results which shook to its foundations the medical world of that day.

In our day and generation we find a totally different state of affairs. Simplicity has given place to complexity; instead of the line of search for the curative remedy, many are advocated and we must necessarily consider the relative merits of each

In recent years there has been quite a remarkable increase in the varieties of procedure advocated by those who profess allegiance to homœopathy; so that in addition to the primitive and fundamental method above referred to, we have now to consider the claims of isotonic sea-water, vaccines—crude and potentized—nosodes and autonosodes, antitoxins, hormones, the arborivital remedies introduced by R. T. Cooper, Schussler's tissue-remedies, radium, &c. Good results have been achieved by all the weapons in this diversified armoury, but their very multiplicity is a source of danger, because it creates a diffusion of interest and a tendency to become a dilettante in all and a master of none. The object of the present paper is to classify these various methods and to discuss their relative merits. If we are to do the greatest possible good to all who seek our help, it is a prime necessity that we should clearly perceive which of these methods is of the highest value and widest application, so that we may concentrate our attention upon it and acquire increasing efficiency in the use of it; otherwise we shall tend to be diverted from it in favour of methods of subsidiary value, especially such as have the attraction of novelty. On the other hand no one method is the best for every case, and therefore we must keep the possibilities of all in view.

Classification.

I. Empirical.

(1) Based on herbal lore and domestic use.

(2) Based on traditional medical use.

(3) Based on botanical relationship (*e.g.*, some of R. T. Cooper's remedies).

(4) Based on chemical theory (*e.g.*, Schussler's remedies).

(5) Based on biological theory (*e.g.*, Quinton's isotonic sea-water).

II. Pathological.

(1) Where correspondence can be established between pathological effects of disease and drug.

(2) Where the power of a drug over certain pathological conditions has been established by clinical use.

(3) Where a disease is treated by the supposed virus, or by a product of the disease.

(*a*) Nosodes: (1) Isopathic use. (2) Homœopathic use.

(*b*) Vaccines. (1) Crude. (2) Potentized.

(*c*) Antitoxins.

(*d*) Autonosodes: (1) Undiluted serum injected intravenously. (2) Potenized preparations of patient's blood given by mouth. (3) Pathological effusions administered hypodermically. (4) Pathological discharges (such as pus), potentized and given by mouth.

(*e*) Where glandular extracts or secretions are administered either to supply an assumed lack in the secretion of the corresponding organ, or to correct supposed excess or abnormality of the secretion of the corresponding or of different organs:

(1) Physiological use. (2) Homœopathic use.

III. Symptomatological.

Where symptom-correspondence between drug and patient is the ground of selection of the remedy, the pathology and the name of the disease being ignored, or considered of subsidiary importance.

Observations.

Empirical Lines of Search for the Remedy.

Definition.—This class may be defined as including all cases where a remedy is prescribed on other grounds than obedience to a known law of therapeutics. It will include cases where remedies are prescribed on the ground of their reputed efficacy in domestic, herbal, or medical practice; and also cases where remedies are prescribed on theoretical grounds other than an established therapeutic rule or law.

In the early days of medicine this was doubtless the all-prevailing therapeutic principle, and it is only in comparatively recent times that it has found serious rivals.

In spite of its antiquity and crudeness this method is not to be despised, for in many cases it has been the means of handing down to us remedies of real value, subsequently confirmed and precisionized by provings on the healthy. An example of this is found in *arnica*, for on reference to Hahnemann's introductory remarks on this drug in the "Materia Medica Pura" we find these words: "Common people . . . . after the fruitless employment of innumerable things" (referring to the treatment of blows, sprains, &c.). . . , "found at least by accident the true remedy in this vegetable, and hence they call it Fall-Kraut (fall-plant). Some two hundred years ago a physician (Fehr.) first mentioned this discovery of domestic practice to the learned medical art." He proceeds: "The symptoms of all injuries caused by severe contusions and lacerations of the fibres are tolerably uniform in character and . . . . . these symptoms are contained in striking homœopathic similarity in the alterations of health which *arnica* develops in the healthy human subject."

It will not be necessary to refer in detail to each of the sub-headings given in the classification, for the examples there inserted should make clear the meaning of any sub-headings which might otherwise seem obscure.

It may, however, be well at this point to offer a few remarks on a mode of treatment in which many members of this Society are interested; namely, the treatment by Quinton's isotonic sea-water. I have classed this as empirical, because it was first administered, not on the ground of any therapeutic law, but on the strength of a biological theory. I cannot concur in the theory, but there is no doubt that the practice to which it has given rise is in many cases strikingly successful. The mode of action of this remedy has not as yet been satisfactorily explained, but in spite of this it is a therapeutic weapon that we shall do well to bear in mind certain cases where other and more specific

methods fail us. One case may be briefly referred to as illustrating this point: A woman, aged about 45, was under treatment at the Bristol Homœopathic Hospital, first as an out-patient and then as an in-patient for several weeks: the leading symptoms were diarrhœa with the passage of stools containing a little mucus and a good deal of blood: there were also pains and tenderness in the abdomen in the position of the colon. The case was thought to be one of ulcerative colitis. No improvement took place under the homœopathic remedies given and careful dieting; and the outlook was unpromising, as loss of flesh and strength were progressive. Finally, I began treatment with isotonic sea-water in doses of 10 c.c., and increasing up to 100 c.c. The result was very great improvement; in a few weeks the stools became nearly normal and the patient gained strength and was able to return home and take up household duties, but she continued at times to pass a little blood. She has since recovered completely.

Relation to Law of Similars.—The prescribing of remedies on empirical grounds is, strictly speaking, outside the pale of homœopathy; but in many instances where it has been successful it has been shown to have been unconsciously homœopathic by subsequent proving on the healthy: as, for instance, in the case of *arnica*, referred to above.

Drawback.—The great drawback of the empirical method is that, lacking the guidance of a therapeutic law, its results are very uncertain and failures are very frequent.

II. Pathological Lines of Search for the Remedy.

Definition.—Under this heading are included those modes of search for a remedy which have as their basis the known, or assumed, presence of some definite pathological condition in the tissues or bodily functions of the patient; the removal of such pathological conditon being the primary aim of the treatment.

Sub-varieties.—Several sub-varieties of this method may be recognized, and the more important of them will now be described; and, where possible, illustrated by cases from one's own practice or from our literatures.

(1) Where correspondence, or likeness, can be established between the pathological effects of a drug and those present in the case under treatment.

This method will be applicable only in those cases of disease in which the pathological condition is accurately or approximately known; and in the case of drugs known to have produced demonstrable pathological conditions, usually as the result of poisonings by the crude substance.

Illustrative Case.—On April 19, 1915, Miss G. complained that the last three nights she had been awakened at 1 a.m., with severe pain in both hands, like that experienced when the hands "come to life" after extreme cold; pain relieved by rapidly moving the hands about and striking them against her knees; worse when lying still. The description of the pain led one to assume that it was caused by arterial spasm followed by relaxation, and as this is a known effect of ergot, I prescribed secale 3, two discs t.d. Four weeks later she reported as follows: Marked improvement the first night and has had no severe pain since; only a sensation of numbness lasting a few minutes and relieved by rubbing or beating the hand. Prescribed secale 30, four doses to be taken if the pain returned. There has been no further trouble with the hands.

(2) Where the power of a drug over certain pathological conditions has been established by clinical use.

This is an exceedingly common method of deciding what remedy is to be used; a diagnosis is made, and a remedy reputed to be of value in the condition diagnosed is prescribed. Seeing that in our student days we were all trained to regard disease from the nosological standpoint, and that most of us have picked up our knowledge of homœopathy from books which first describe a disease and then enumerate the remedies that are "good for" it, it is hardly to be wondered at, that at this time it is the prevailing practice. It is quite true that in a considerable proportion of cases a very fair measure of success attends this method, thanks to the pioneers, who by more laborious methods blazed the trail for us. On the other hand anyone

who has practised much on these lines—and I speak as one who followed this method exclusively for the first fourteen years of my practice—will be prepared to admit that there are very many cases which, treated on these lines, end in failure; and it may occasionally have happened to others, as it did once or twice to me, that one of these failures went to a Hahnemannian and was speedily cured; and this inevitably suggests the thought that there are more things in homœopathy than is dreamt of in the Phylosophy of those who practise on the above lines.

Illustrative Case.—A case illustrating the above method is the following: An old lady, a widow aged about 73, had a hard painless tumour in the right labium majus; it had only been noticed two or three months before the time when she sought advice. It was about 3 in. by 2 in. in size; over an area about the size of a florin the skin was adherent, depressed, and dark in colour. There were no enlarged glands in the groin. The stony hardness of the tumour and the type of patient suggested *conium* as the remedy, and *conium* 2x was prescribed and was taken steadily for about six or eight months; during that time the tumour gradually became smaller, and finally disappeared. This was about five years ago and the old lady is still in very fair health.

If time permitted I could also have related three cases of carcinoma of the rectum treated on the lines suggested by Dr. M. Le Hunte Cooper, with unit doses of ruta and carcinosin 100. One apparently recovered completely, and the other two have been holding their own between one and two years, without pain; and in one case leading a moderately active and useful life.

(3) Where the supposed virus of a disease (or a disease-product) is used in the treatment of the disease.

Of this method there are several varieties which may be classified under the following headings: (*a*) Nosodes; (*b*) vaccines; (*c*) antitoxins; (*d*) autonosodes.

(*a*) *Nosodes.*—A nosode is a product of disease obtained from a specifically affected area in a well-defined case, and suitably

potentized. It is immaterial whether or not the disease-product is known to contain specific micro-organisms; in most cases, no doubt, these were contained in the material from which the nosode was prepared. Several nosodes were prepared and successfully used before the discovery of the specific micro-organisms of the respective diseases had been made. Where bacteria are present in the material from which a nosode is made they will be accompanied by substances formed by the living tissues in the course of their reaction to the bacterial invasion; in this respect a nosode differs from a vaccine.'

Nosodes may be used in two ways.—

(1) In the treatment of the specific disease which was the source of the material used, *e.g.*, the use of *anthracinum* in the treatment of anthrax, of which some striking examples are given in H. C. Allen's "Materia Medica of the Nosodes" [2]. Some would distinguish this method as isopathic.

(2) In the treatment of any case of disease where the symptoms of the patient resemble the symptom-complex of the nosode; *e.g.*, the use of *anthracinum* in the treatment of a case of carbuncle in which the concomitant symptoms resemble the effects of anthrax poison. This may be distinguished as the strictly homœopathic use of a nosode, and therefore belongs to Section III of our classification, *i.e.*, symptomatological.

(*b*) *Vaccines.*—These are prepared from known and artificially cultivated micro-organisms. They exist in many varieties: *e.g.*, (1) *filtrates* containing no bacteria but only their exotoxins; (2) *bacterial emulsions* containing bacteria as well as their products; (3) *potentized vaccines* in which the endotoxins have been liberated by trituration, usually after freezing.

Treatment by vaccines is necessarily limited to cases of disease associated with a bacterial invasion by organisms which are capable of being cultivated outside the body: it also presupposes the possibility of distinguishing between organisms which are pathogenic and those which are non-pathogenic in any given case.

Where the bacterial infection and its effects account for the whole disturbance in the patient's health vaccine therapy is often brilliantly successful; but where the infection is engrafted upon previously existing constitutional disorder, as is very frequently the case, vaccine therapy alone will either fail entirely or meet with only partial and transient success.

Illustrative Case.—The following case belongs to the former category: A young married woman had suffered for years from severe dysmenorrhœa, but was otherwise healthy. She was treated by a lady practitioner by uterine dilatation under an anæsthetic. The operation was followed by irregular pyrexia associated with severe pyelitis. At the end of about two months she was still in the Women's Hospital running high temperatures, suffering much pain, and had wasted to an extreme degree. At this point I was asked to take on the case. She was removed to her home and I found her in the condition described. A specimen of urine showed an acid reaction, a quantity of pus, and yielded a pure culture of *Bacillus coli communis*. After a week or ten days of treatment by ordinary homœopathic remedies without any marked result, treatment was begun with an auto-vaccine. At first doses of five millions were given every two or three days; subsequently the doses were increased and the intervals lengthened. There were some marked reactions at first, but the temperature became normal in about a fortnight, pus disappeared from the urine in three or four weeks and she rapidly put on flesh and was restored to perfect health.

This was clearly a case of an acute infection accidentally brought about in a previously healthy woman, and was thus an ideal case for vaccine treatment.

For successful treatment by potentized vaccines administered by mouth see Dr. C. E. Wheeler's paper, "An Experiment in Prophylaxis," *Homœopathic World*, April 1913 [3], and Dr. Stonham's paper "Some cases of Respiratory Disease treated by Autogenous Endo-toxins," *British Homœopathic Journal*, 1914 [4]. No one could read these excellent papers without feeling that in suitable cases this method had great possibilities.

(c) *Antitoxins.*—Antitoxins are preparations containing antibodies produced in the blood of an animal in response to inoculations of progressive intensity with a pathogenic micro-organism.

The question may be raised whether antitoxins should have been classified under this heading "Where the virus of a disease is used in treating that disease." It is true the antitoxin is not the virus of a disease, but rather a preparation containing antibodies specific against that virus. Nevertheless, it is a case where the virus of the disease is utilized; but not in the way of introducing it direct into the system of the patient as in vaccine-therapy, but by introducing it first into the tissues of an animal and then administering to the patient the resulting antibodies. Whereas vaccine treatment is a procedure which may be described as homœopathic in the widest sense, antitoxin treatment cannot be so regarded unless we consider the inoculation of the animal and the administration of the antitoxin to the patient as two stages in one process. Viewed in this light antitoxin treatment may be described as homœopathy *a deux*.

It may be of interest to mention incidentally that antitoxins develop their curative effects much more rapidly when injected intra-muscularly than when injected sub-cutaneously, and there is no added risk as in the case of intravenous injection.

The sphere of successful antitoxin treatment is at present practically limited to diphtheria and tetanus, but of its value in these conditions there can be no doubt. The value of Flexner's serum in cerobrospinal fever is not regarded in this country as fully established; in the only case of mine in which it was used, it was without any beneficial effect, though injected intrathecally and subdurally

(d) *Autonosodes.*—This term may be used to include all substances used therapeutically which are derived from the body of the patient under treatment.

The following varieties may be noted as having been administered with benefit:—

(1) Preparations of blood or of blood serum.

(*a*) Undiluted serum injected intravenously.

(*b*) Potentized preparations of the patient's blood administered by mouth.

(2) Pathological effusions administered hypodermically, *e.g.*, pleural effusion, ascitic fluid, &c.

(3) Pathological discharges, such as pus, potentized and administered by mouth.

Of the above methods there is one which especially appeals to our attention and interest; namely, the use of potentized preparations of the patient's own blood. This method appears to have been originated by our homœopathic colleague, Dr. Donald Macfarlan, of Philadelphia; he has reported four cases of diabetes mellitus in which very marked benefit has resulted from this treatment. It has also been applied to the treatment of skin diseases by Professor W. H. Yeager who has reported the rapid cure of three cases of stubborn eczema in this way. Dr. C. E. Wheeler only a few months ago showed a severe case of lymphadenoma in which treatment on these lines produced a striking improvement for a time, which unfortunately proved to be only temporary. The refractory nature of the cases which have received benefit under this treatment suggests that it is a method which has considerable possibilities, and better results will probably be attained when the technique has been more thoroughly worked out in regard to size of dose and frequency of repetition. Dr. Macfarlan has suggested that this treatment should be tried in cases of chlorosis, leukæmia, pernicious anæmia, and all bacteræmias. Dr. Burford has suggested that it it may be of value in the treament of cases of cancer. I would venture to add that it might well be thought of in any case of Graves's disease that does not yield to apparently indicated remedies.

(*c*) Where glandular extracts or secretions are administered either to supply an assumed lack in the secretion of the corresponding organ, or to correct supposed excess or abnormality of

the secretion of the corresponding organ or of other related organs.

This extremely complex subject has so recently engaged the attention of this Society that I only introduce it here for the sake of completeness, and refrain from detailed comment.

The use of these extracts may be divided into two headings :—

(1) Physiological use of crude extracts or active principles.

(2) Homœopathic use of potentized preparations (such as thyroidin, oophorinum, &c.).

Relation to Law of Similars.—The question now arises, "In what relation does pathological prescribing stand to homœopathy and to the Law of Similars"? Before answering this question it is necessary to recall the definition of pathological lines of search for the remedy at the beginnig of this section; namely, that, as considered in this paper, it includes those modes of search for a remedy which have as their basis the known or assumed presence of some definite pathological condition in the tissues or bodily functions of the patient. The method was thus defined in order that it might be sharply distinguished from the symptomatic method to be described in the next section, the outstanding feature of which is that the search for the remedy is based on the totality of the symptoms of the patient, apart from their significance from the point of view of diagnosis, and apart from any view that may be held as to the underlying pathology of the case. Whatever may be said from another point of view as to all prescribing being pathological in that every symptom is an index of pathological change, the fact nevertheless remains that in practice there is a sharp contrast between the two methods just referred to, and that they are often found engaged in more or less friendly rivalry. If this rivalry takes the form of a contest between two groups of practitioners each upholding their favourite method it is to be deplored, but if the claims of the rival methods were allowed to complete in the mind of the individual practitioner in respect to each case that he is called upon to treat, the result could not be other than favourable and productive of greater efficiency.

Let us now return to the question, "In what relation does pathological prescribing stand to Homœopathy and the Law of Similars?" Is it homœopathy? Not in the sense in which Hahnemann used the term; this may be proved by the following extract from the preamble to Hahnemann's "Materia Medica Pura" "As in homœopathy the treatment is not directed towards imaginary or invented internal causes of the disease, nor yet towards names of diseases invented by man of which Nature knows nothing, and as every case of non-miasmatic disease is a distinct individuality, independent, peculiar, . . . so no particular directions can be laid down for it . . . except that the physician, in order to effect a cure, must oppose to every aggregate of morbid symptoms in a case a group of similar medicinal symptoms as complete as can be met with in any single known drug." In the present day, however, it would be pedantic and contrary to common usage to limit the term homœopathy to such practice as literarally adheres to the lines laid down by Hahnemann, even though one grants the superlative value of the method so carefully described by him. Since Hahnemann's day it has become more and more evident that homœopathy is a special application of a biological law of the widest scope, as has been most ably pointed out by Dr. C. E. Wheeler in his excellent little book "The Case for Homœopathy." This being the case it is not surprising to find that the law of similars is capable of application in practice in a variety of ways. This being admitted one can understand how it has come about that the term homœopathy is now generally used in a wide sense as including all these varied applications of the law of similars. Using the term homœopathy in this broad sense, pathological prescribing is homœopathic (though not Hahnemannian) whenever there is a similarity between the pathogenetic effects of the therapeutic agent employed and the pathological condition present in the patient, and therefore inferentially whenever the proximate cause of a pathological condition is utilized as a remedy.

Now we pass to a consideration of the merits and demerits of the pathological method. One of the cheif merits is that it

effects a great saving of time and labour in the cases to which it is applicable; whether or not this is at the expense of efficiency will be considered shortly. It narrows down the probable remedies to a comparatively few that can usually be retained by the memory, and thus obviates the necessity for referring to the repertory and the materia medica. Its popularity is largely due to the fact that it offers to provide a short cut to the coveted goal, the curative remedy; sometimes, however, even in medicine, "the longer way round is the quicker way home." Another attraction which appeals to many is that it is invested with the glamour of being "modern and scientific"; the impartial therapeutist will not allow this consideration to sway him if he has at his command another method which yields better results in practice. The most successful method is probably the most scientific, but contemporary science may not be sufficiently advanced to recognize the fact.

The pathological method has this further advantage that it is applicable to and is sometimes successful in cases where the symptomatological method is unavailable owing to subjective symptoms being absent or indefinite; such cases do exist, though their number is fewer than might be supposed by those who have not had large experience in the art of eliciting characteristic symptoms.

The demerits of the pathological method are (1) that, with the possible exception of the autonosodes, it is not available in the large number of cases in which the pathological condition is unknown.

(2) That in many cases where a definite pathological condition is known to exist this does not represent the whole pathology of the case, and therefore the treatment, even if it removes the recognized pathological condition, may fall far short of curing the patient; and in many cases the pathological condition which was removed will recur or to be replaced by some other manifestation of the uncured underlying dyscrasia. As an example of this the following case may be mentioned:—

Illustrative Case.—Mr. A. M. H., aged 24, had suffered from severe acne vulgaris since he was 15; eruption chiefly on forehead, face and back. For the last twelve months he had been treated by vaccines; at first stock vaccines were used, but without result; later auto-vaccines were used, and there was improvement for a time, but it was not maintained. His principal symptoms were: Concentration difficult; lack of self-confidence, discontented with self, sensitive, easily startled, frequent nocturnal emissions, great weakness after emissions; perspires profusely; chilly, must dress warmly. Treatment: *Staphisagria* 30, twice; *silica* 30, twice; *silica* 200 twice; *silica* 1M twice; the interval between the doses varied from four to ten weeks. Result: immense improvement in general health; acne practically cured when last seen in June, 1915.

(3) A third disadvantage of the pathological method is that the prescription is partly or wholly based on hypothetical conceptions as to the nature of the disease, and this often introduces a source of error. In contrast to this the symptomatological method requires that the prescription shall be based only on ascertainable facts; namely, the symptoms of the patient and the proved symptoms of the drug, applied in aaccordance with a law deducted from, and verified by, repeated observation. In this connection the following footnote in Hahnemann's "Organon" seems opposite: "The physician whose researches are directed towards the hidden relations in the interior of the organism may daily err; but the homœopathist who grasps with requisite carefulness the whole group of symptoms possesses a sure guide, and if he succeed in removing the whole group of symptoms, he has likewise most assuredly destroyed the internal, hidden cause of the disease" (Rau).

The reason why current pathology is an unreliable basis for the treatment of disease is that it is based on a narrow and faulty conception of the nature of disease. As Hahnemann says ("Organon," Section XIII): "Disease . . . considered, as it is by the allopathists, as a thing separate from the living whole, from the organism and its vivifying vital force, and

hidden in the interior, be it of ever so subtle a character, is an absurdity." In the case of acne referred to above the condition was diagnosed as acne; the pathology was assumed to be that of a bacterial invasion of the sebaceous follicles of the skin, and on that basis vaccine treatment—a crude form of homœopathy—was employed, and the result was failure, because the pathology on which the treatment was based was the pathology of the "disease" used in the narrow sense referred to above, and not the pathology of the patient as a whole, and therefore not accounting for the whole of the morbid phenomena. Again Hahnemann says ("Organon," Section XV): "The affection of the morbidly deranged . . . vital force that animates our body in the invisible interior, and the sum total of the outwardly cognizable symptoms produced by it in the organism and representing the existing malady, constitute a whole. . . . The two together constitute a unity, although in thought our mind separates this unity into two distinct ideas, for the sake of facilitating the apprehension of it."

Referring to the case of acne again, treatment in accordance with this broad and comprehensive conception of the nature of disease, treatment based on the totality of the symptoms, resulted in a most gratifying success.

One cannot leave this subject without remarking that the more one considers the conceptions of pathology expressed by Hahnemann in his "Organon" and "Chronic Diseases" the more one is made to feel that his genius enabled him not only to anticipate much that has since been discovered, but also that his prevision carried him beyond the limits yet reached by the most advanced teachers in the orthodox school of the present day. To point the moral in the form of a paradox one might say, "If you want to be modern and scientific, base your treatment on the latest results of pathological research; if you want to be ultra-scientific and ahead of the times, pay diligent attention to the "Organon" and the "Chronic Disease."

To guard against possible misunderstanding, it may be well to add that nothing which has been said above is intended to

detract from the value of pathological investigations as an aid to diagnosis and prognosis.

III. Symptomatological Lines of Search for the Remedy.

Definition.—The search for the remedy is based on the totality of the symptoms of the patient, apart from any theory as to their mode of causation or diagnostic import; the aim being to find a remedy which has produced in the healthy a symptom-complex as like as possible to that presented by the patient.

This alone is the mode of search for the remedy which was taught by Hahnemann, and a careful reader of his writings cannot do other than conclude that it would still be his teaching if he were living at the present time. In Section XVIII of the "Organon" he says: "From this indubitable truth, that, besides the totality of the symptoms, nothing can by any means be discovered in diseases wherewith they could express their need of aid, it follows undeniably that the sum of all the symptoms in each individual case of disease must be the *sole indication*, the sole guide to direct us in the choice of a remedy."

The expression the "totality of the symptoms" is one which is often misunderstood; the sense in which Hahnemann used it is made clear by consecutive perusal of the sections in which it occurs and of others which qualify these. The great modern intrepreter of Hahnemann's writings, J. T. Kent, deals with it as follows in his lectures on "Homœopathic Philosophy": "The 'totality of the symptoms' means a good deal. It is a wonderfully broad thing. It may be considered to be all that is essential of the disease. It is all that is visible and represents the disease in the natural world to the eye, the touch and the external understanding of man. It is all that enables the physician to individualize between diseases and between remedies. . .

. It does not mean the little independent symptoms, but it means that which will bring to the mind a clear idea of the nature of the sickness. Many of the little symptoms that occur can be left out of the total without marring, but the essence, the characteristics, the image, must be there." Hahneman says ("Organon" Section CLIII): "The more striking, singular,

uncommon and peculiar signs and symptoms of the case of disease, are chiefly and almost solely to be kept in view." Gibson Miller, in his "Synopsis of the of Homœopathic Philosophy," writes thus: "In all advanced cases of chronic disease there are three classes of symptoms, viz. —

(*a*) "Those that signify the patient.

(*b*) "Those that signify the disease; *i.e.*, the common or pathognomonic symptoms.

(*c*) "Those that signify the ultimates or the results of disease.

"The first of these are the really important ones, and to prescribe exclusively on the two latter groups is only to court failure." Further on he says: "It must not be supposed that the symptoms that signify the disease are to be ignored in the selection of the remedy. They must be taken into consideration, but subsequently to, and as of much less value than those that are predicated of the patient,"

The question of the grading of symptoms thus referred to is matter of the utmost importance, but time does not permit me to enlarge upon it, for a detailed presentation of this subject reference should be made to Dr. Gibson Miller's paper, "The Comparative value of Symptoms in the Selection of the Remedy," read before this Society in December, 1910; it is a classic which deserves to be read and re-read. In cases which demand careful study before prescribing, I have found it helpful to proceed as follows. Having obtained a full record of the symptoms related by the patient and friends and observed by oneself, I critically examine this record and underline in red all the important general and characteristic symptoms, *i.e.*, those of the highest grade; I then go through the record a second time and underline in blue any important particular or local symptoms. The symptoms thus emphasized are then utilized for repertorizing the case.

The use of the repertory has often been condemned as mechanical and unscientific; this arises from a misunderstanding of

the function of a repertory. No doubt the repertory has sometimes been misused in a way which has justified this impeachment; the symptoms have been written out, and against each the remedies corresponding, and the remedy having the highest numerical aggregate has been prescribed simply because it stood in this relation to the others. But this is not the correct practice, and is condemned by our best teachers. The right way to use the repertory is to regard it as a kind of index by means of which it is possible to select four or five or more remedies, which lead all others in likeness to the most important symptoms of the patient, and then to study in the materia medica the entire symptom picture of each of these remedies; that remedy is then selected which presents the closest resemblance to the disease image furnished by the symptoms of the patient. It will often happen that the remedy thus chosen is not the one which has the highest aggregate of points on repertorizing, but this is easily accounted for by the fact that it is impossible to translate into repertory language the finer shades of drug action, and also because resemblance of one whole picture to another is much more easy to recognize when they are whole than when each is dissected into its component parts.

I now desire to pay tribute to the advantages of this method of prescribing. It is only within the last five years that I have been initiated into some of the mysteries of this department of homœopathy, and hence I can only speak as a novice and not as an expert; but I can honestly say that what I have learnt has been of the greatest help to me and to many of my patients; for this I express my grateful acknowledgment to the teaching and ready help of Dr. John Weir, and to the great trilogy of Dr. J. T. Kent, the "Lectures on Homœopathic Philosophy," the "Lectures on Materia Medica" and the "Repertory." The advantages which I can vouch for as observed in practice during the last few years are as follows: (1) The method is applicable to a larger number of cases than the pathological method, because it can be successfully applied in a large number of cases in which the pathology is unknown.

For example, several cases of recurring severe headaches have been cured or greatly relieved.

(2) It has apparently led to more rapid recovery in cases of acute disease, *e.g.*, one case of whooping-cough treated with a few doses of *carbo veg.* 200 was well in ten days after the onset of the cough.

(3) It brings under consideration in any given case a number of remedies which would not be thought of on empirical or pathological grounds and which may prove to be of superior value, *e.g.*, a little girl had whooping-cough very severely and the more commonly indicated remedies such as *ipecacuanha* and *drosera* had no marked effect. On considering her symptoms more closely *sepia* appeared to be indicated, and a few doses of *sepia* 30 were given; there was a marked improvement from the first night; after two or three days the improvement began to flag, but a few more doses of *sepia* 30 and 200 resulted in a rapid recovery.

(4) It renders possible the cure of many cases of chronic disease, which under other methods one had failed to cure, *e.g.*, J. McD., parlour-maid, aged 24, was admitted to the Bristol Homœopathic Hospital on January 30, 1915. She had severe rheumatoid arthritis which had begun a year before. Both knees were swollen and contained fluid; the right ankle, right wrist, and finger joints of right hand were stiff and painful; there was aching and stiffness of the cervical spine. She could not walk, had to be carried. From May 7 to August 2 she had been an in-patient in the Bristol Royal Infirmary, and in November went to the Bath Mineral Water Hospital; she was there for two months, but when she left was weaker and was getting worse. On January 30 she had *silica* 30, and again on March 18. On April 22 she had *silica* 200, and again on August 20. Since June 4 she has been attending as an out-patient. She is practically free from pain, can walk a mile or two without difficulty, and does a considerable amount of housework.

(5) It causes a progressive increase in the knowledge of the materia medica.

(6) It leads to fresh clinical uses of remedies, *e.g.*, in a case of acute puerperal pyelitis due to *Bacillus coli*, to which I was called in consultation, the symptoms suggested *sulphur*. Two or three doses of *sulphur* 10M. resulted in a rapid fall of temperature and improvement in all the symptoms, followed in a short time by complete recovery. This has led me to think of *sulphur* once or twice since in similar conditions, and I think it has done good.

(7) The fact that by this method cases of acute disease often recover with remarkable rapidity, and that many cases of chronic disease receive striking benefit not hitherto experienced, results in the awakening of an enthusiasm for homœopathy on the part of patients and their friends, which is not observed where results are less striking. This in its turn brings more converts to the banner of homœopathy.

A case like the following makes a deep impression on people: On September 10, 1915, Mrs. S. complained that for about three weeks she had been suffering from very severe shifting pains in both thighs and knees, but that the pains had now left these parts and gone to the heels, where they were very acute. I gave her *valerian* 1M. three doses one every four hours. Next day she reported that after the first dose the stitching pains in the left heel were aggravated. After the second dose she fell asleep and had a good night, the first for over three weeks. She did not need the third dose as the pain did not return.

Disadvantages of the Symptomatological Method.—(1) The amount of time and labour involved. This is certainly a considerable item in many of the chronic cases; the acute cases can be more rapidly dealt with as a rule. But increased experience of the method and increased familiarity with the materia medica, leads to a decrease in the time and labour involved. Above all we cannot conscientiously do for our patients less than the best we are capable of at the time.

(2) The method is inapplicable where symptoms are very indefinite or absent. Sometime in such cases a pathologically indicated nosode will "develop" the case, awakening reaction and bringing out symptoms which can be utilized in selecting a remedy which will carry the patient farther than the nosode alone would have done.

Conclusion.

To sum up one may remark that whilst there are many possible ways of practically applying the law of similars, and each has its value, no one can claim to be doing the utmost possible for his patients and for homœopathy who has not sought to render himself conversant with the method of prescribing upon the totality of the symptoms as taught by Hahnemann, Kent and their followers.

The future of homœopathy in this country, as elsewhere, largely depends on the quality of the work done by its professed exponents. If homœopathy is to progress in public acceptance it must be of such an order as to evoke enthusiasm; without this enthusiasm among the laity the dead weight of prejudice and the consciousness of being a small minority will be an effectual bar to progress. Enthusiasm is not to be expected unless the difference between the results of homœopathic and other treatment is evident and striking. This evident difference is not so easily attained as in the old days, when homœopathy was first introduced, because the average efficiency of non-homœopathic treatment is much higher, but it is attainable if we make the most of our resources. Without enthusiasm on the part of the laity there will be a dearth of recruits to fill up vacancies in the ranks of the homœopathic profession; and it is conceivable that a time might come when the dominant school might initiate legislation prejudicial to the welfare of homœopathy, and there might not be a sufficient weight of public opinion to effectually oppose it. On the other hand, if we all develop to the full the rich heritage that has been handed down to us, it must inevitably hasten the day when homœopathy will be universally recognized as the chief and controlling luminary in the therapeutic firmament.—*The British Homœopathic Journal*, January, 1916.

EDITOR'S NOTES.

A Contribution to the Technique of Radium Administration.

Last week we called attention to the first year's working of the Manchester and District Radium Institute, of which Sir William Milligan is honorary secretary and treasurer. The printed report which now reaches us contains a record of the experience gained and some observations regarding the technique of burying radium tubes in growths and the choice of cases for this treatment. These observations are as follows :—

1. Thorough aseptic technique is as necessary as in general surgery, because screened radium does not have a markedly antiseptic effect.

2. Screens containing tubes of radium emanation may be boiled since the internal pressure of the heated tubes is as a rule well below that of the atmosphere. The boiling of tubes containing radium salts is not worth while on account of the risk of breakage.

3. The object in radium treatment is to produce an adequate and even distribution of the rays throughout a tumour. Thus it is usually better to bury a number of weaker tubes in a growth than to employ one strong one for the same purpose.

4. Accurate implacement of a tube in a growth is essential. It usually happens, therefore, that it is better to make a large incision and expose the tumour than to push tubes blindly through a small cut in the skin. It is, moreover, safer.

5. So far it has rarely been found possible to remove a cancer with a single dose. Too big a dose may produce a violent reaction with local necrosis of tissue.

6. The reaction or ulceration after an overdose may last a long time, but never fails to settle down or to heal completly in the long run, with the following exception.

7. A growth treated by radium must be surrounded by or contain an adequate quantity of healthy tissue capable of supplying sufficient assistance for the work of repair, otherwise a per-

manent malignant ulcer may be formed. It is better to attempt to treat recurrences situated in regions of low vitality by means of externally applied radio-active places.

8. The quantities of radium and radium emanation which should be used vary according to the size of the growth, the thickness of the screen employed, and the situation of the tumour. Some malignant growths appear to need larger doses per cubic centimetre than others. If we could find out exactly the amount of radiation therapeutically needed per cubic centimetre of a tumour, and an accurate method of estimating the size of cancer growths, there would merely be left to the physicist a mathematical calculation of the quantities to be used to produce total absorption, and the use of a sufficient number of tubes would remove the possibility of local overdose.

9. In the treatment of malignant glands of the neck careful attention should be given to the toilet of the mouth. The presence of carious teeth may lead to septic infection of glands with definite abscess formation when the radium tube is introduced.

These observations will, we feel certain, be of practical use to other workers.—*The Lancet*, February 5, 1916.

Treatment of Diabetes by the Allen Method.

Alfred Stengel, Leon Jonas; and J. Harold Austin put the patient to bed and oblige him to fast, except that he is permitted to take alcohol, water, and sodium bicarbonate. Alcohol is given in the form of whiskey in hourly doses, from fifty to 250 c. c. daily. The fast is continued for from twenty-four to forty-eight hours after sugar has disappeared from the urine. After the fast, say the authors in the *Pennsylvania Medical Journal* for January, 1916, green vegetables should be allowed and increased until sugar again appears in the urine. Then there is another day of fasting. Although the patient improves and his tolerance increases, his weight is not permitted to reach the normal; he is kept about ten pounds below his former weight. It is the most effective treatment for cases exhibiting high ketonuria.—*New York Medical Journal*, February 26, 1916.

The Allen Treatment of Diabetes.

J. T. Halsey, discusses in detail the Allen treatment of diabetes, which is in a number of particulars, as our readers are aware, a radical departure from that which in recent years has been generally approved and accepted as the best. The chief and most important features of this treatment are :

1. Inauguration of treatment by a period of absolute fasting, lasting ordinarily from one to four or five days, in extreme cases for ten days.

2. Under-feeding, i.e., giving much less than is ordinarily considered an adequate ration, for a period of variable length following that of absolute fasting.

3. Determination of individual tolerance for carbohydrates and proteins, as well as for fats which in general have been regarded as harmless or even beneficial in diabetes, whether mild or severe. The degree of tolerance should decide the quantity of these foodstuffs to be permitted.

4. Careful avoidance of an increase of weight unless the patient is decidedly underweight.

The advantages alleged or demonstrated are : More rapid and certain abolition of the glycosuria and of its cause, the glycemia. More rapid and more successful building up of the carbohydrate tolerance, in other words, of the ability to oxidize carbohydrates. Prompt and complete relief of the acidosis or acidemia, and as a result prevention of, or, if present, the clearing up of diabetic coma.—*New York Medical Journal*, February 26, 1916.

The Goat as a source of Milk.

A very interesting circular has been issued, amongst others this week, by the Board of Agriculture and Fisheries, pointing out how in certain districts goat-keeping might be extended with advantage. It is well known that many cottagers and others living outside the area of retail delivery find it difficult to obtain milk for their families. The large dairy farms are, as a rule, under contract to supply milk to distributing agencies in

towns, or else they turn their milk into cheese and butter. As the Board rightly says, all the objections which apply to the keeping of a cow by a cottager would be met in the case of a goat. The first expenditure for its purchase is within his means the housing accommodation is reduced to a minimum, the food costs little, and there is no great expense to be borne for the maintenance of the animal. Even in the event of a cow's milk supply being available, goats may profitably be kept to supply milk for domestic use. It is, as a rule, a most wholesome milk, and its flavour, if the food of the animal is regulated, is not any real drawback to its employment. Moreover, goat's milk is easily digested by children, and especially infants, and, as is well known, it is far less likely than cow's milk to contain tubercle bacilli of animal origin. The average goat will give at its flush three pints of milk a day, and, on the whole, calculations based on extreme cost of keep, outlay, and so forth, show that while a good supply of milk could be maintained, a very fair profit could be made. The suggestion is a valuable one, and the information contained in this circular as to how to start goat-keeping, as to the choice of breeds, as to breeding itself, housing, feeding, tethering, milking, and the care of the milk, and so forth, should be spread up and down the land. We append the composition of goat's milk compared with human milk and cow's milk :—Goat's milk : Water 86·04 per cent., fat 4·63 per cent., sugar 4·22 per cent., casein 3 49 per cent., albumin 0·86 per cent., and mineral matter 0·76 per cent. Human milk : Water 88·2 per cent., fat 3·3 per cent., sugar 6 8 per cent., casein 1 per cent., albumin 0·5 per cent. and mineral matter 0·20 per cent. Cow's milk : Water 87 33 per cent., fat 3·75 per cent., sugar 4 75 per cent., casein 3 0 per cent., albumin 0 40 per cent., mineral matter 0·75 per cent. It will thus be seen that the composition of cow's milk and goat's milk is much the same, although goat's milk is superior as regards fat, which is an advantage. Human milk differs chiefly from goat's and cow's milk in that it contains a much smaller proportion of mineral salts and casein.—*The Lancet*, February 5, 1916.

Brilliant Green as an Antiseptic.

Archibald Leith cites his own experiments and those of others, which showed that this triphenyl methane dye is five to ten times as actively bactericidal as mercury bichloride. Since, however, these experiments were done *in vitro*, the efficacy of the substance, when used in the presence of the serum in the tissues of wounds, had to be determined by clinical experience; the result was that the drug proved to be of great value. It was used in a solution in the proportion of one to 1,000, the solvent being distilled water, normal or hypertonic salt solution as desired. Wounds were first cleaned with dry gauze, and an ounce or so of the solution was introduced into the wound, which was then packed with gauze saturated with the solution. The dressings were changed daily or oftener in badly infected cases for a few days. The first effect observed was the total disappearance of foul smell. The dead tissues were found to have taken up the dye, while the living ones remained unstained, giving a clear differentiation, so that dead tissues could readily be removed. After a few days, fresh, healthy granulations sprang up and healing proceeded rapidly in most cases. The dye seemed to have a much greater avidity for bacteria and dead tissues than for other elements in the wounds. It also proved destructive to anaerobic organisms. In a few cases it was followed by the usual favorable effects for a few days, after which the granulations became pale and unhealthy. Then change to iodine water or other dressing brought about prompt healing. In some cases brilliant green failed altogether of good effect, but such cases resisted all other measures. The disadvantages of the drug were its staining properties for clothing and the hands, although the stain could readily be removed by alcohol or even water. It did not produce toxic effects and seemed to act as a decided stimulant to granulation tissue.—*New York Medical Journal*, March 25, 1916.

Alcoholism and Mortality in Typhoid Fever.

Among 136 men, eighteen to twenty-four years of age, belonging to the French active army, who were under treatment in the author's hospital for typhoid cases, the mortality was 10·3 per cent.; among 141 men of twenty-four to thirty-four years belonging to the reserve army, the mortality was 15·6 per cent, while among twenty-seven men of thirty-four to forty-five years belonging to the territorial army, no less than 58·3 per cent succumbed. The fact that a larger proportion of the men of the first group had been subjected to antityphoid vaccination than was the case in the other groups accounted only in part for the differences in mortality. In spite of the fact that the proportions of vaccinated reserve and territorial men were the same, the mortality was twice as great in the latter. Examination into the causes of death showed that whereas the younger patients were generally carried off in the febrile period by the intensity of the infection or complications such as peritonitis, intestinal hemorrhage, or diphtheria, the older ones went through a prolonged course of the disease and, after affording hope of recovery, succumbed to cardiac collapse, myocarditis, and protracted pulmonary congestion, with imperfect renal elimination or signs of hepatic insufficiency. Thus, the older patients died because of weakening of their vitality, perhaps in part through the greater number of infections and intoxications previously experienced, but largely owing to alcohol, most of the patients of the third group who died being found to have been heavy drinkers, not only through the histories given by themselves or their relatives, but through the significant intense delirium, extreme restlessness, tremor, hallucinations, and subicteric condition noted during the course of the disease. Evidently alcoholism accelerates aging of the tissues and lowers the resistance to infections after the thirty-fifth year of life.—The *New York Medical Journal*, March 25, 1916.

Arrest of Cataract at an Early Stage.

E. L. Jones maintains that cataract in the aged should not be considered a normal senile change, but a manifestation of some pathological process in the uveal tract, the ciliary body, or choroid, whether it is shown by other symptoms or not. The first sign of cataract is a fine dust, and after distinct opacities have formed it is still by this fine dust that the opacities extend. When the lens becomes sufficiently sclerosed, this dust formation ceases and there is no further clouding of its substance. By stimulating the lymphatic circulation of the globe by the systematic use of dionin drops, or a sufficiently strong subconjunctival injection of cyanide of mercury, an artificial sclerosis of the lens is accomplished which causes the disappearance of the fine dust and the arrest of cataract. He believes that this cures some low grade perversion of the function of the ciliary body, which has to do with the nutrition of the lens. Where there is no perversion of the nutrition of the lens neither dionin drops nor subconjunctival injections show any tendency to induce sclerosis. No value is asserted for the treatment in spontaneous cataract in which the stage of ability to read coarse print has passed, and dense opacities are not supposed to disappear at any time. The solution mentioned as most generally used is eight grains of dionin to half an ounce of cyanide of mercury solution one in 1,000, three drops in the eye at bedtime. As many eyes get very red, and some chemosed from these drops, bedtime is preferred for use, so that these effects may pass off during sleep. Jones ascribes the improvement to the dionin.—The *New York Medical Journal*, April 1, 1916.

The Gale and a Lesson.

It is many years since the elements have raged in this country with such fury as on the evening of march 28th, when a wind velocity of 47 miles an hour was recorded at Greenwich. Trees and telegraph posts were blown down all over the country, long-distance trains ceased to arrive at the London termini, and snow

drifted in places many feet deep. Already several deaths are reported from being blown over in perilous situations, from various accidents, and from exposure on the hills. This list will probably be higher when messages again pass over the reinstated telegraph wires, and for every death from exposure scores will have suffered more or less permanently in health from the same cause. In nearly all cases where this happens the sufferer will be found to have been insufficiently or unsuitably clad. During the last 18 months millions of men have been clothed at the expense of the State in woollen garments of such texture and thickness that soaking should be impossible, and in footgeer through which water percolates with difficult. Under these conditions the conduction of heat away from the body seldom reaches a dangerous degree. It is surely time that the civilian population rendered themselves similarly immune to meteorological conditions in the winter and spring. It is a mistake to suppose that this requires heavy or thick clothing, it is largely a question of texture and uniformity. Now that fashion has relaxed her claims, the opportunity should be taken to discard paper shoes, gossamer stockings and blouses, and similar follies. When the claims are again heard, some at least will refuse to risk their lives for appearances that are often unsightly.—*The Lancet*, April 1, 1916.

The Extinguishing of Small Petrol Fires.

A small petrol fire in the garage or hangar may easily be the beginning of a serious conflagration, and so a simple means for extinguishing the small fire may render valuable service. The British Fire Prevention Committee have recently carried out a series of tests with the view of finding a simple mixture which when thrown on the fire would extinguish the flames. The mixture ultimately found to give the best results was sawdust and bicarbonate of soda, which has advantages over sand and similar materials as an extinguishing medium for small fires. Sawdust would seem to act by floating on the surface of the inflammable liquid, thus excluding the oxygen of the air and smothering the

fire. Ordinary sawdust as obtained from sawmills is reported to be the most suitable for the purpose, but it should be free from shavings and chips of wood, while it does not require to be either specially dried or to contain added moisture. The addition of bicorbonate of soda, although not essential, has certain advantages. In the heat of the flame carbonic acid gas is given off from the bicarbonate of soda adhering to the floating sawdust, and accordingly close to the source of the fire. The gas thus given off helps to extinguish the fire. The committee have found that an effective proportion of bicarbonate of soda to sawdust is 10 lb. of the former to 12 lb. of the latter. They recommend that this mixture be kept in a bin holding eight bushels. In regard to the application of the mixture, the committee recommended that in order to be thoroughly effective it should be applied not only in bulk, but rapidly and systematically, the object being to produce what may be termed a lateral "curtain" or scythe effect. Judging from the number of enquiries which have been made on this subject, many of our readers will be glad to hear of this simple device. The committee are careful to add that so far their investigations have been limited to small quantities of inflammable liquids not exceeding two gallons, and the areas over which they were spread did not exceed six feet square. These conditions are generally met with in motor garages and hangars for which the proposed mixture is, in their opinion, applicable and economical.—The *Lancet*, April 22, 1916.

A Dietetic View of the Tax on Aerated Waters.

Water in its aerated form is clearly a luxury, and the addition of carbonic acid gas to water justifies a tax according to this view. The tax will diminish the consumption of all areated beverages, and a return to the use of plain water will ensue. For the whole community, teetotal or otherwise, a beverage that is not carbonated, and which is therefore not taxed, will be cheaper. But the physiological action of a water briskly effervescing with carbonic acid gas is different from that of a plain

water or of a water which is not effervescent, and a general return to plain water therefore raises some dietetic questions. Apart from æsthetic considerations, questions, for example, of its acid attractiveness, carbonated water exerts, according to some observers, a specific effect in the stomach. Aerated beverages in most cases promote the chemical processes of digestion by causing an earlier and more abundant secretion of gastric juice, while the carbonic acid gas may also act as a stimulant to the movements of the stomach, and thus aid the mechanical process of digestion. Possibly the effervescent action of the carbonated water causes a circulation or distribution of the food particles. In England the introduction of cheap soda-water was largely responsible for making whisky a popular alcoholic beverage, and incidentally the public were unconsciously basing their preference of aerated water to still water on the agreeable effects on digestion which in so many cases an aerated beverage produces. It is well known, moreover that an effervescing alcoholic beverage is a more rapidly diffusible stimulant than a still fluid. It is important, however, to remember that the duty on table water is designed to apply not to the manufacture of these waters but to their sale, which means that the tax is charged separately on the quantity contained in a separate bottle, the term "bottle" including any reservoir. Premises for manufacture will require to be licensed under a fee. For domestic purposes, however, the manufacture of soda water as in a seltzogene or similar vessel, with which most of us are familiar will be neither taxed nor is it intended that a licence charge be imposed. The definition for "table waters" makes this clear, for they are described as "any aerated waters and any beverages sold or kept for sale in bottles other than (*a*) any liquor for retail sale of which an Excise licence thus required; and (*b*) syrups or other liquors intended to be consumed in a diluted form."—*The Lancet*, April 15, 1916.

The Sterilisation of Water by Ultra-Violet Rays.

The sterilisation of water by means of the ultra-violet rays from a quartz mercury lamp has been carried out on a large scale in France with some success. An account of certain of the early experiments appeared in The Lancet five years ago. At first many difficulties were encountered, the chief one being to get the water completely exposed. Even minute traces of suspended matter present or turbidity prevented sterilisation, and the method was not effective until the water was first filtered bright. In a very exhaustive series of trials, the results of which are published in the Thirty-third Annual Report of the Provincial Board of Health of Ontario just issued, Mr. N. F. Parkinson, M. A. Sc., reports favourably on ultra-violet-ray treatment of water, and he regards, his researches as proving that given certian conditions, which can easily be controlled, the results are satisfactory and reliable. He emphasises the importance of steadiness of treatment. The requirements for a constantly good effluent are that the lamp itself be burning under a constant voltage, and that the lamp itself be in a good condition. The treatment of turbid water has received particular attention. By means of a system of baffles adjusted according to requirements the sterilising plant was brought to a high state of efficiency. Thus, in one case where a water showed a turbidity of 20 parts per million (American Public Health standard) the removal of bacteria was well over 99 per cent. With a turbidity of 30 and a direct path between the initial and final exposure—that is to say with the horizontal baffles entirely removed—the removal was 97·5 per cent. and 98·4 per cent. as regards the bacteria growing at temperatures of 81·2° C. and 37·5° C. respectively. These researches are of great importance, since the method promises to provide a simple and expeditious way of sterilising water supplies and to render chemical treatment unnecessary. The action of the ultra violet rays appears to be entirely physical, and it is very rapid. It was at first surmised the destruction of bacteria was due to the formation of ozone or of hydrogen peroxide in the water, but this does not appear to be the case,

since only a trace of such substances is formed after some hours, while the sterilisation requires only a short exposure.—*The Lancet*, February 5, 1916.

The Iron-Bacteria.

A very interesting article contributed by David Ellis, Ph. D., D.Sc., F.R.S.E., to the January number of *Science Progress* deals with those higher bacteria which are almost always to be found flourishing in ferruginous waters. As the organisms grow and multiply their mucilaginous outer membranes become impregnated with brown ferric hydroxide. They have been termed iron-bacteria, though iron would not appear to be essential to their prosperity. When a microscopic examination is made of the red deposit which forms the bed of ferruginous springs it will generally be seen to consist of a multitudinous number of small hollow tubes. These are the sheaths built up by the organisms during their life-time, which are left as memorials of their activities. The paper is full of interest as to the life-history of this group of organisms, but the section which from the hygienist's point of view claims more attention is that dealing with those iron-collecting organisms which appear and multiply sometimes in water-supplies and are the cause of a considerable nuisance. But there is no reason to think that these organisms possess any pathological significance. No poisonous excretions are liberated as a result of their growth, yet, as Dr. Ellis points out, they seriously inconvenience the engineer and give anxiety to others who are concerned to see their water reservoirs assume a sinister tint. When a certain, at present unknown, sum total of conditions holds, these organisms multiply at an extraordinary rate, and the water in a very short time takes on a disquieting rusty red colour. It would appear that these sudden rapid multiplications never last long because the organisms themselves probably make the water unfit for their continued existence. In the intervening period their activities resemble those of other water organisms, and it is

possible at most seasons of the year to detect their presence by a diligent search in their haunts. One of the best examples by Dr. Ellis occurred at Cheltenham in 1896, when the water supplied to the town became red, turbid, and developed an offensive odour. Within a fortnight the filters had become clogged. This state of affairs continued for about six weeks, after which the water once more began to assume its normal appearance. There was no evidence to show that this rapid growth of the iron-organism had any pathological significance. The culprit in this instance was the iron-assimilating organism known as *Crenothrix polyspora*. The same inconvenience has occurred in London, Berlin, Lille, Rotterdam, and elsewhere. Dr. Ellis points out that the absorption of iron compounds is not essential to the growth of these organisms, since artificial cultivations can be made from which the iron has been rigorously excluded. But it is suggested that these iron-bacteria by their peculiar action may in the past have been the builders of rocks composed of ferruginous stone.—*The Lancet*, February 5, 1916.

Rice Diet in Skin Diseases.

L. Duncan Bulkley insists that this diet should be carried out with exactness in all its details in order to obtain results. The diet consists exclusively of rice, butter, bread, water, and nothing else, three times daily, for a specified time which depends on the nature and severity of the case. The rice must be well boiled in water, not soggy, and must be eaten hot with a fork, not a spoon, to secure the action of the saliva during thorough mastication. Water should be taken freely, but not when food is in the mouth, and a pint of hot water should be taken before the morning and the evening meals. In acute eczema five days make a marked improvement, while psoriasis requires long periods. Milk must not be taken with the rice nor must the patient take coffee or chocolate.—*New York Medical Journal*, March 18, 1916.

Gleanings from Contemporary Literature.

THE TREATMENT OF OBESITY.

By Jacob Gutman, M. D.,

We are all familiar with the fact that prolonged starvation causes a diminution of bodily weight. Underfeeding, for that reason, is the underlying principle of practically every variety of obesity cure. It would seem superfluous, therefore, to speak of methods of weight reduction or of fundamental principles in the dietetics of obesity. Nevertheless, upon closer examination of the practical application of this principle in the preparation of dietaries we immediately find considerable divergence of views, not only in the manner of application, but even in the interpretation of the principle itself. With the exception of the one fact, the necessity of reducing the total daily quantity of food, few authorities agree upon the variety of nutrition or upon the mode of its administration. Indeed, many dietaries are without scientific or physiological basis. It may be permitted, therefore, to indulge in a brief discussion of the subject, laying particular stress, first, upon the more important principles governing the selection of a dietary for the obese, and second, upon the indications and contraindications of such treatment.

By obesity we mean an excessive accumulation of fat in places where normally it is found in but moderate amounts, i. e., in the subcutaneous tissues, omentum, body cavities, liver, glands, etc. The interpretation of the term moderate, is subject, of course, to the judgment of the individual observer; what may seem moderate to one may be pronounced as exceessive by another. That the normal, moderate amount of fat has a definite function cannot be denied. Indeed, it serves some very useful purposes. It protects numerous organs and sustains others in position. Its storage serves for energy-production, being utilized constantly for oxidation purposes and heat production. It prevents a too rapid loss of the bodily heat. It avoids the wasting of the organism's more vital tissues, the body proteins. It also helps to impart the external form to the various organs. A certain amount of bodily fat is therefore physiologically necessary. Hence, reduction cures, whenever applied, should never be forced to such an extent as to decrease this necessary useful minimum.

On the other hand, the excessive accumulation of fat demands removal. It is not as harmless as many laymen and some physicians would have us believe. On the contrary, the excess is more dangerous than is generally appreciated. While the fat causes no pain or visible damage, it nevertheless produces its harmful effects slowly and surely, though invisible. The most important organ, the heart, is particularly affected by the accumulated fat. This adiposity compels the organ to provide for circulation in a greater volume of tissue. This requires greater motive force, greater expelling power, or more frequent action if the heart is inadequate for this increased force. The burden of this organ is still further increased in a mechanical way, by the localization of the fat within the heart substance, the pericardium, its grooves, the apex, etc. (adipositas cordis); all these conditions hamper the organ.

The adiposity of the abdominal cavity contents causes increased intra-abdominal pressure, which augments the labors of the muscles of inspiration, of the diaphragm in particular. The latter is also interfered with in its downward excursions during inspiration, thus decreasing the expansion of the chest cavity and necessarily diminishing the volume of inspired air. This reduction of necessary oxygen causes inefficient oxidation of the metabolic products injurious to the organism, the retention of which is harmful to the body and creates pathological conditions.

Another deleterious effect of obesity is the heavy weight of the individual. This great volume of the body, its excessive weight compels the victim to curtail his usual exercises and activity both of which are necessary to health. This inactivity still further aggravates the obesity, as it reduces the oxidation processes and the destruction of fatty tissues concomitant with such exercise.

By its situation in the liver, the glandular tissues, and other internal organs the fat interferes with their vital functions, which in these cases are manifold and of enormous bearing upon the metabolism and the welfare of the individual. The harmful effects of such interfernce may be easily comprehended without further explanation. The presence of the adipose tissue even subcutaneously is deleterious, for it interferes here with the peripheral circulation, decreasing the normal cutaneous respiration and thus interfering with the thermostant of the body. This is of great moment to the victim, as it favours sunstroke in a hot climate or on a hot day.

Nor do the skeletal muscles escape injury in the obese, for the fat, by its occupation of the the intermuscular spaces, compresses the individual muscle fibres, causing pressure strophy and degenertion. This results in constant weakness, slow activity, lassitude, early exhaustion, and such similar states on the part of the subject.

From the foregoing it may easily be concluded that the harm accomplished by excessive adiposity is varied and of serious consequence. Hence the imperative advisability of its reduction is evident. However, reduction may not always be attempted with impunity no matter how advantageous it may appear. In conditions where there is a natural tendency to progressive loss of flesh, reduction cures are not permissible. This is particulaly true in tuberculosis and diabetes; hence, only in the most extreme cases is it permitted to employ this treatment Nor is it advisable to apply the treatment to adults above fifty years of age, for the natural tendency of fat is to disappear at this age, concomitant with the gradual decline of the sexual function. Neither is the treatment indicated in those numerous cases of so called neurasthenia with a train of symptoms formerly little understood, but now better studied and correctly identified with physiological disturbances of the internal secretory glands; for in all these cases one important symptom is always to be found, loss of weight and weakness.

On the other hand, reduction cures should not be neglected in every case of high grade of obesity, no mater at what age, as the condition is always a threatening and dangerous one. Medium grades of obesity may be overlooked in middle aged persons, but never in the young. Nor must it ever be disregarded in those cases where it is the accompaniment of chronic diseases of the circulatory apparatus—myocarditis, cardiac insufficiency, arteriosclerosis. The same statement is true of the obesity accompanying emphysema, chronic pleurisies, bronchiectasis, bronchial asthma, and other similar respiratory disturbances. The adiposity occurring in those with sclerotic kidneys or the various forms of arthritic disease, whether uratic or rheumatic, must be given attention before any favorable result may be expected from the usual treatment.

Having decided upon the advisability of reducing a given case of obesity, our next problem is the preparation of the dietary. Before attempting this method of treatment, however, it is well to determine whether the diet alone will suffice to obtain successful results. While it is true, that systematic underfeeding will accomplish

satisfactory results in cases of obesity, classed by von Noorden as exogenous, it will not suffice to accomplish similar results in the other class of cases, the endogenous. To the latter class belong cases resulting from the disturbances of the functions of the various endocrine glands. It seems to me, that the great majority of obesity cases belong to the class, and only a very few cases constitute the other, the exogenous class. To the latter category belong the cases of obesity caused either by overfeeding or by underexercising, or both. Repeated excessive intake of food, or diminished expenditure of energy disproportionate to the intake must leave a balance for accumulation within the organism. In the endogenous variety, on the other hand, this disproportion need not necessarily be an accompanying etiological factor. Such persons often take a moderate amount of food, and yet continue to add weight constantly. This is due to the abnormally low oxidation quotient, to a low rate of metabolism, a diminished oxygen consumption, a low nitrogen excretion. Even the respiratory quotient is depressed. This condition has been found to be constantly associated with a deficient function of the thyroid gland. What the causative reason for this subthyroidal state is, or what pathological conditions underlie it, need not be discussed here. Suffice it only to remark, that in the obese a small thyroid is a common finding.

The hypophysis cerebri also takes part in the production of obesity. The same is also true of the sexual apparatus, examples of which are daily at hand in the forms of obesity after menopause, middle age, in pregnancy, lactation, etc. It is also a known fact that the thymus, the pineal gland, the pancreas, and other endocrine glands have an important bearing upon the accumulation of fat in the body. All such cases of an endogenous nature, as it may be readily understood, cannot altogether be affected by diet alone, although their improvement may be favored by such treatment. On the other hand, the true exogenous cases are distinctly and definitely improved by diet and diet alone.

Having come to the conclusion that a dietary will be of benefit in the case in question, in the preparation thereof several cardinal principles must be taken cognizance of in order to meet the physiological requirements.

In the first place, it must be decided whether a rapid, a moderate, or a slow reduction method is to be employed, and in accordonce with such a decision the total calorific value of food per diem must be

graded. In the first instance, only about two-fifths, in the second about three-fifths, in the third about four-fifths of the normal food requirement is to be administered; or, in scientific onomatology, about 1,200, 1,600, and about 2,000 calories respectively.

In the second place, it must be borne in mind that the reduction cure must not become a starvation cure, i. e., while the nourishing qualities of the food are reduced, its bulk must be sustained. A diminution in the bulk causes a sensation of hunger, resulting in dizziness, fainting spells, heartache, nervousness, irritability, etc., conditions absolutely unnecessary, and uncalled for. Hence we administer bulky foods.

In the third place, the preservation of the body proteins from which the cells proper are constructed should ever remain a guiding principle. We reduce, therefore, the other varieties of food, eliminate, if desired, all fats, decrease the protein intake, but never to an extent that the organism is compelled to utilize its own in the processes of life. Therefore, we never administer less than about 600 calories of proteins in any form of reduction diet.

In the fourth place, the total daily calorific value should be gauged, not by the weight of the individual, as in the obese, but by the weight of a normal individual of the same height, sex and age, for the great bulk of inactive fatty tissue does not consume proportional energy.

In the fifth place. we do not allow more than a maximum of thirty calories per kilo a day, notwithstanding the activity of the patient, athough we allow forty, fifty, and sixty calories in normal cases of moderate or excessive activity, for, as a rule, the obese individual will not indulge in much more exercise than the ordinary person when at rest. As a rough guide for the estimation of the weight, the height of the individual as expressed in cm., less 100, will determine the number of kilograms the patient ought approximately to weigh. There are other methods perhaps more accurate for weight estimation such as Oeder's and von Noorden's but for practical purposes the above mentioned method is adequate.

Sixth, we determine the total combustion value of the daily intake of food by multiplying the number of kilograms of normal bodily weight, as previously calculated, by 30. This gives the necessary amount of food to sustain life and normal weight. We reduce the amount to the required fraction in accordance with the desirability of a rapid or slow loss of flesh. Under these circumstances the orga-

nism will be compelled to sustain itself at the expense of its own tissues, the fat being first sacrificed. Magnus Levy has found that an ordinary individual of medium weight expending 2,700 calories a day distributes the calorific consumption in the following manner: 1,600 of these are utilized by him for the vital processes of life, respiration, circulation, heat production, etc., 240 calories are expended for gastrointestinal energy during digestion, while 860 calories are consumed for all other exercises, useful or useless. Jaquet found that these relative proportions hold true in cases of obesity, although the absolute expenditures are all diminished. Hence, the meagre and reduced dietary administered to the obese suffices only partly to supply energy for the most vital processes of life. The digestive and other expenditures must therefore be necessarily derived from an energy obtained from the combustion of the most easily burned material, the fat; hence a diminution of the adiposity.

Seventh, in prescribing a diet the physician must bear in mind also the patient and not only the obesity, i.e., we must not disregard the customs, wishes, and individual predilection for foods by the patient, if it is thereby possible to gain his co-operation and satisfaction. It is not a hard problem to substitute intended food for that more palatable to the patient, provided that nutritive value thereof is kept in mind.

Eighth, we do not attempt to reduce weight too rapidly. Rapid loss of fatty tissues may favor the destruction of other tissues, especially muscular, like that of the heart. It is a fact that in inanition the adipose tissue suffers first and foremost, so that from seventy to ninety per cent. may disappear entirely, while the fleshy albuminous organs, such as the muscles, glands, blood, etc., will loss from forty to fifty per cent. The nervous system and the nuclear protoplasm, i. e., tissues of highest function, are the last and least to suffer in inanition, losing but one to two per cent. in substance. Nevertheless, in the course of a rapid loss of flesh, exemplified in actual starvation or too rapid reduction cures, these higher tissues participate to a greater degree in the general destruction.

Ninth, while reducing the obesity of our patient, we keep him under constant observation, and are not alarmed if in the first few days his nitrogen balance, the guide to his protein metabolism, is on the wrong side, for in the next several days his organism will accommodate itself to the new conditions and new diet. We are not overjoyed when the scale shows a rapid weight reduction in the early

period of treatment, for the body will soon find means to overcome this disturbance of its balance, and the reduction rate will be thus diminished. We keep in mind the carbohydrate supply as well as the protein material, for the natural deposit of the stored glycogen in liver and muscles, in amount equal to about 500 grams will soon be exhausted and the supply must again be replenished; otherwise the system will suffer.

Tenth, we must not be vague in our orders, but be explicit in our directions. We specify the articles and the amounts of every food permitted, we instruct the patients to use weight and measures. We do not let him depend upon quantities estimated by himself, but we permit him all the water he needs in his economy, yet are not too liberal.

Keeping the above described principles in mind, the actual preparation of a dietary, based upon sound physiological principles, becomes an easy matter to the physician. It is altogether unnecessary to depend entirely upon any of the numerous ready made dietaries recommended by our English and foreign writers, notwithstanding the extensive use some of these diets enjoy in the countries where they originated. While it is true that many of the recommended diets are of some merit and are applicable in a number of cases, it is also true that the demerits of these, as well as of others, are not to be disregarded. Whatever their value may be, it is better practice to prepare a diet to fit the individual case rather than to attempt to fit different cases to the same diet. A diet specially prescribed is always of more value, more scientific, better adapted to, and more appreciated by the patient. On the other hand, in order to save time, it is advisable to have on hand a skeleton diet, so composed as to meet all general requirements of a successful obesity cure. Table 1 exhibits one I have used for a number of years with very good results. Although modifications of this schematic diet were made in a great many of my cases, the fundamental basis was retained. The skeleton diet contains about 1,100 calories, of which over 400 are in the form of proteins, 540 in carbohydrates, and 156 in fats. The amounts of proteins and carbohydrates suffice for the prevention of unnecessary tissue waste, while the quantity of fat constitutes a minimum. The proteins found in the dietary are of various kinds, animal, vegetable, etc., producing upon decomposition various forms of aminoacids, a fact of importance in the reconstruction of every body-cell. There is also sufficient bulk of food at every meal, enough to satisfy even a good appetite. The quantity of fluid contained in the diet is also

sufficient to meet the demand of the ordinary processes of metabolism. This diet, with a certain amount of modification, has enabled me to obtain a loss of weight in every case, with but few exceptions; in some even as much as twenty and twenty-two pounds were lost during the first month of treatment.

Modifications of the diet can easily be accomplished by the substitution of some articles of food by others. This may be facilitated by the use of some such table as the one hereto appended, Table II, exhibiting the calorific value of foods. Thus, personal predilection for particular foods, the habits and social usages of the patient, as well as changes of the dietary to avoid monotony, can be easily and simply accomplished. It is best also to adhere to the use of simple foods and to avoid table luxuries. The latter are often stimulating to the palate, favoring an extraordinary intake of food and an increase in the obesity. They are also difficult to compute as to their energy value, which make their administration in exact quantities difficult.

TABLE I.—SKELETON OF REDUCTION DIET (GUTMAN).

Quantity in grams.	Food.	Proteins.	Fats	Carbohydrates.	Calories
	Breakfast:				
100	Baked apple .	0.3	...	12 8	53
50	Egg ...	6.0	5.7	0.4	84
50	Roll ...	3 5	0 2	28.2	132
200	Tea, lemon ...	...	..	.	...
5	Sugar ...	..	..	4.8	19
	Luncheon:				
100	Lambchop or cold chicken ...	19.0	0.0		100
100	Salad ...	1 1	0.2	1.8	15
40	Rye bread ..	1 9	0.2	20.0	88
200	Buttermilk .	7 2	1 8	7.6	14
	Dinner:				
200	Consommé ..	1.2	1.2	...	16
200	Beef, steak	40.0	5.4	...	242
100	Potato ...	1.5	0.1	20.0	88
200	Fresh vegetables ...	2.2	0.4	3.6	30
150	Fruit dessert ...	0.5	...	18	75
200	Coffee ...	...	...	...	...
40	Rye bread ...	1.9	0.2	20.0	81
	Total ...	86.6	16.2	137.2	1,114
	Calories ...	418	150	540	1,114

TABLE IV.—CALORIFIC VALUE OF 100 GRAMS OF COMMON FOODSTUFFS

Foods.	Calories, average.
Lean beef	100
Lean chicken	110
Lean lamb	100
Fish	70-90
Lobster	90
Oyster	60
Milk	60
Buttermilk	45
Skimmed milk	45
Butter	750
Cheese	450
Eggs	150
Bread	250
Flour	350
Sugar	400
Potatoes	90
Vegetables	20 40
Fruits	50

New York Medical Journal, January 22, 1916

THE
CALCUTTA JOURNAL
OF
MEDICINE.

Vol. xxxv.] June, 1916. [No. 6,

THE REMEDY OF PRECISION.*

By J. T. Elder, M.D.

A few years ago H. G. Wells, the English writer, published a book which he called The Martians; doubtless many of you here to-day read the story; a very ingenious, pseudo-scientific tale about some inhabitants of Mars who traversed the void between Mars and our Earth in a high-powered projectile and, upon arriving there, began to deal out death and destruction from a machine that threw out a beam of light, the vibrations of which disintegrated any substance with which it came in contact. For a while the Martians carried everything before them, but they were finally destroyed, and the ingenious manner of their destruction made, at the time, a deep impression on my mind. They were killed, poisoned by the air, water and food-borne germs peculiar to our earth, against which the blood and tissues of the Martians offered no resistance. The whole problem of combating infectious diseases to-day is a question of how best to procure immunity against these same germs which proved so fatal to the Martians.

Incantations, amulets, drugs, the serums of immune animals, dead and living cultures of the pathogenic organisms and their

* Read before the annual meeting of the Tex. State Ost. Soc. at Galveston, Tex., March 1915.

toxins, have all been tried with varying degrees of success, as witness our mental science friends at one end of the fighting line and Von Ehrlich at the other.

Disregarding the mental or Christian wing, which, in the present state of our enlightenment, is too subtle or, perhaps I should say, too spiritual, and disregarding also the other extreme of the so-called specific, about which there is waging a fierce controversy, it is my purpose this afternoon to bring to your attention facts and theories concerning autotherapy, which Gould defines as the spontaneous cure of disease, but for which I believe "self-cure" or "nature cure" is a better definition.

Physicians of all schools, since schools began, have depended upon autotherapy. The hot application, wet or dry, the poultice of mustard or flaxseed or mud; hydrotherapeutics in any form —what are these but autotherapeutic measures? And mighty good measures too, as we all know. In fact were it not for two or three "near" specifics—salvarsan or neo-salvarsan in certain symptoms associated with the spirochetæ, hydrochloride of ipecac, emetin, in certain forms of dysentery characterized by the presence of amæba and quinine in certain forms of malaria —it could be said that all measures, medicinal, osteopathic, etc., for the cure of infectious and contagious conditions, depend on autotherapy.

As to the therapeutic processes that take place within the body during an infection we know very little. Our patients get well or die of pneumonia, typhoid and other classical infections, and we do not know how or why. Some infections tend to develop an immunity in the individual; others seem to predispose towards reinfection.

Before going more thoroughly into the subject of autotherapy, I wish to summarize a report of pneumococcic infection and immunity, by the Rockefeller Institute, for the purpose of showing how little is known of the process of infection and how uncertain is passive immunity by the route of bacterins and serums.

I have chosen pneumonia to illustrate my point because it is a representative infection, very similar in its symptoms to typhoid, differing only in degree, and to many other infections also.

In the typical pneumococcic infection, although a toxin has never been demonstrated, either in test tube culture or in the body fluids, it has been fairly well demonstrated that the symptoms are caused only when the bacteria are actively multiplying in the presence of nutritive material. During this process it is believed that the pneumococcus gives off a yeast or ferment which quickly becomes inactive when it diffuses through the surrounding medium. Near the pneumococci, however, the ferment or toxin is active, and acts by changing the hemoglobin of the blood to meth-hemoglobin. This change is in the nature of oxidation, so that the give and take of CO_2 and O by the blood becomes greatly diminished, causing, in part, the symptoms with which we are all familiar.

Now there have been differentiated four distinct races of pneumococci, called for convenience, groups one, two, three and four. Immunity from one race of pneumococci does not give immunity from the others. The different races vary in the severity of the effect produced, group 3 being associated with epidemics of pneumonic plague in which the mortality is very high—about 67 per cent., while strains of group 4 may be found in 80 per cent. of healthy mouths.

It has been demonstrated also that the injection of killed pneumococci causes no reaction except as a foreign proteid; neither does a filtrate from the living pneumococci have any effect whatever except as stated—that the tissues resent any foreign substance and disintegrate and remove it as soon as possible.

Horse or goat serum, brought up to a high degree of immunization by repeated non-lethal doses of living pneumococci, will produce a passive immunity in the human body in the early stages of a pneumonia infection, provided that the animal

has been immunized with the specific race of pneumococci which caused the human infection, and also providing that it can be given in large enough quantities. Here again difficulties intervene, for serum sickness and anaphylaxis may occur if repeated doses are given at improper intervals. Nature resents the admixture of different kinds of blood serum and, after one dose is introduced, and sufficient time is allowed for the formation of antibodies, the second dose is apt to have serious results.

In face of these difficulties, it is no wonder that the results of bacterin- and serum-therapy have been so contradictory. Take tubercular infections for instance, of which we have a large number in San Angelo, attracted there by the ideal climatic conditions. More severe tubercular infections, like all others, become mixed infections early in the course of the disease. In fact very few people die of pulmonary tuberculosis. They die of a strepto-stephylo-pneumococcic infection.

The first duty of the physician in these cases is to get rid of the mixed infection with its attendant high temperature and great tissue waste. Sometimes absolute rest in bed, with forced feeding, will enable nature to beat down the infection and stamp it out. When these methods prove inadequate, I have often resorted to an autogenous bacterin. The sputum is collected and a culture made of those bacteria which the laboratory worker deems to be the leading infections aside from the tubercular bacteria. These bacteria are then killed and placed in solution and administered in graduated and increasing doses to the patient. The strange part of it is that in spite of the Rockefeller report, one occasionally gets astonishingly good results from this method. The temperature drops to 99 or thereabouts; the appetite improves and the patient improves and the patient gains weight. Very often, however, the autogenous bacterian fails of results, and this is largely due, to my mind, because it does not represent the toxin complex existing in the body. It lacks specific effect because the culture made from the different organisms, produced in

a different culture medium from the body tissues, may have altered the nature of the toxin and, too certain strains that may have been causing most of the infection, may have been neglected in making up the bacterin. It is for these reasons that I believe the autotherapeutic measures advocated by C. H. Duncan of New York City, will come into more general use in the treatment of many of the infections, possibly all.

It is well to remember, however, that autotherapy, as I am about to present it to you, and as doubtless some of you know it, contradicts much that is held to be true by those who presumably are best qualified to judge in such matters, and is based on clinical experience alone.

When you cut your finger and it becomes infected and finally gets well again, it is because your body, by means of its serum and leucocytes, has thrown off the infection. It is true that you have helped by keeping the finger clean, but nature has done the work. It was the unchanged toxins and bacteria that stimulated the healthy blood and tissues to resistance. Now it makes no difference whether nature or the physician brings these unchanged bacteria and toxins from the local lesion into contract with healthy tissues, the result will be the same, except that the physician steals the march on the slower process of nature—the time of sickness is shortened; in fact, the fire is put out before it has had a chance to gain head way.

Most animals assist in bringing about a natural cure by placing the exact toxins of the disease in helthy tissues, by licking their sores. The only place a dog has a bad infection is on his head where, for anatomical reasons, he cannot lick.

Briefly stated, then, the principle on which autotherapeutic cures are made is as follows. The tissues tend to eliminate the toxins of a disease in the pathological discharge. The physician separates the toxins in the discharge from the extraneous matter and places them in healthy tissues. The healthy tissues react against these toxins and against the disease.

Here is Duncan's general rule for autotherapy: When the pathological exudate or the end product—or a dilution of the

same—of any localized, loosely localized and possibly non-localized infectious disease, is filtered with a Berkfeld filter and the filtrate injected hypodermically, or placed in healthy tissues, antibodies specifically corresponding to the disease will tend to be developed.

A corollary from this general rule is: In extra-alimentary and extra-pulmonary diseases, if the crude pathological end products are placed in the mouth, specific resistance to the disease will tend to be developed.

If this theory, as expressed in the preceding rule, stands the test of time and clinical application, it will indeed be a giant step forward in the treatment of infections.

Let me quote two case reports at this point to illustrate the two methods of using the toxins: Case 1 is Duncan's; case 2 is from any own practice.

Case 1 was a skin lesion on the back of both hands of ten years' duration. It very closely resembled the dermochromes of lupus erythematosus as shown in the works of Jacoby and Pringle, but it was much more extensive. The backs of both hands from the tips of the fingers to the middle of the forearm were covered with crusts. The skin was cracked and red, and itched and burned; the only relief the woman was able to obtain was by keeping the eruptions greased. She could scarcely close the hands on account of pain. It interfered with her housework and she had become discouraged with previous treatment, and it was only after she had seen a case of pustular acne in an acquaintance cured by autotherapy by the writer that she applied for treatment. The patient was instructed to lick and suck the lesion every time it itched and burned. In two weeks the case was cured.

Case 2, J. C., age 26, male, consulted me in February, 1915. He was in good physical condition, apparently, but for a succession of carbuncles on the back of his neck. He came to me with his third carbuncle, the others having been treated by a surgeon in the usual way. I made a rather shallow incision, just

enough to secure drainage, placed a gauze wick in the wound and covered with a moist gauze dressing, instructing the patient to keep the dressing moist with 1 per cent. lysol solution. Of the discharge from the carbuncle I saved 10 drops of pus, which I placed in a clean vessel with 6 parts distilled water. This solution was allowed to stand for 24 hours with frequent shaking to secure a thorough mixing of all the toxins in the solution. At the end of 24 hours the solution was placed in a Berkfeld filter and 10 minims of the filterate was injected hypodermically into the patient's arm. A mild negative phase ensued, during which the patient felt slightly under the weather. This lasted about a day. I saw the case the next day and the wound was drying up rapidly and looked clean and healthy. It was suggested that another injection of the solution be made in a few days as a precautionary measure but, as the skin seemed to be perfectly healthy, this was not done. There has been no recurrence up to the present time.

I have quoted this case in detail so as to give you an idea of the extremely simple technic for securing a truly autogenous filtrate, representing the exact combination, not only of bacterial toxins present in the local infection, but the tissue toxins which are certainly a factor in all infections.

I have been using this method for the past two years for the treatment of wounds, skin infections, gonorrhœa, pneumonia, asthma, some forms of rheumatism which I believe to be due to pyorrhœa, and indeed I have even made the attempt to influence the course of rheumatism by filtering the toxins from the urine.

With gonorrhœa the technic, as suggested by Duncan and which I follow, is to irrigate the urethra in the male with an ounce of sterile distilled water. This is collected in a well stoppered bottle and prepared as I have outlined above. Twenty minims are injected a day. A fresh supply is collected for each injection, for this form of infection tends to become more toxic with age. All toxins tend to become more toxic with age but different infections vary in this respect. One of my difficulties

when I began to use autotherapy was in getting reaction from the toxins. The products of a cold and of many forms of bronchitis frequently have to be kept for two or three days before they are strong enough to cause a reaction when injected. In some cases of chronic cold or *grippe*, I have found the infection to be so slightly toxic that I have added small quantities of grape sugar to the solution in order to encourage growth before filtering. But to return to our gonococcus. Treatment as outlined will abort some cases when undertaken early, and give good results in all cases. It must be understood, however, that other measures were used also, such as irrigating treatment with potassium permanganate or other anti-septic washes.

This leads me to speak of another angle of autotherapy, really a form of passive immunity. Let us suppose that for any reason an individual is incapable of forming antibodies to resist an infection—good examples are exhausted tuberculosis patients and babies—is it possible for such a one to receive passive immunity from his own specific infection. The reports of some observers seem to show that it is possible. Duncan claims that it can be done through animal's milk in the instance of the adult, and through the mother's milk in the case of the nursing baby.

Nature makes provision to protect the young, especially among animals. The mother, in almost all instances, devours the placenta after her progeny are born, and licks them in addition. In this way she protects herself and her young against all extra-uterine infections. Her healthy intestinal tract manufactures antibodies for any bacteria or toxin ingested, and these antibodies protect her and, through her milk, which, it is claimed, carried immunity from any infection to which she has been exposed and has successfully resisted, carry protection to her young.

Now let us say that a tubercular patient is not doing well and apparently has lost his ability to resist his infection, it certainly would be folly to add to his burdens by increasing the amount of toxins within his body. He has already but a feeble

resistance to the toxins present. Why could not a healthy milk-giving animal be innoculated with his specific toxin-complex from his sputum, and the animal's milk given to him in large quantities! In case of the baby, if any pathological exudate can be obtained from his infection, why not immunize the mother through the alimentary tract, or hypodermically, and cure the babe through the mother's milk! Let me quote some case reports, not my own, illustrating these possibilities.

Case 4, female, age 39, had cough for five years following pneumonia. Eighteen months ago the case was diagnosed as pulmonary tuberculosis. When first seen by the writer in June 1914, the patient was in a rapidly advancing stage of the disease. Upper lobe of both lungs and lower lobe, right lung involved; she coughed the greater part of the night and raised much mucus; she had night sweats and lost considerably in weight. Her present weight is 83 pounds; evening temperature, 100° F. plus, with morning remissions.

It was decided to treat the patient by autogalactotherapy. Accordingly on Wednesday, June 29th, a healthy lactating goat was injected with Ic.c. of the filtrate of her sputum and the following day she began to take the morning milk. On the following Sunday night, to use her own expression, she "slept like a baby the whole night through." This patient is improving in every way. It is too early to offer a favorable prognosis, but it is certain that here is a case of advanced pulmonary tuberculosis that is apparently improving under a new method of treatment.

Case 3. During the early spring of 1914, Prof. Wm. H. Dieffenbach of New York was severely poisoned with ivy while working on his farm. His ears swelled to three times their natural size; his face and arms were covered with blisters. He became so acutely sensitive to the poison as to get just such another attacks during through the country in his automobile. He has had six distinct attacks during the spring and summer; in fact he could not go into the country without bringing on an attack and tried 30 different remedies without

relief. Having read a paper by me (that is, Duncan) on the subject of unmodified antitoxin therapy, he decided to test it on himself as a patient. Accordingly he gave one of his cows the leaves of the poison ivy for several days. He then drank about a quart of the cow's milk. In a few hours the stringing, burning sensation became less and the painful itching gradually subsided. He improved and made an uneventful recovery. He has been in the country several times since with no sign of recurrence. The cow apparently thrived on the leaves. Now this theory is tenable or untenable. If experiment proves it worthy to endure, shall we osteopaths permit such a natural scientific and truly osteopathic means of helping nature to do her work escape us for lack of investigation and research?

In infectious diseases we readjust the tissues, free up the nerves and vessels, and try to help nature to work against the disease with her maximum of efficiency. We say that, if nature cannot be helped to throw off her infection through her own chemical reactions, it is useless to try to introduce foreign bactericidal agents, and in this we seem to be right; but, if we can add the means I have outlined to hasten nature's own processes, make her mobilize her forces at once, instead of waiting for the slow spread of the exciting toxins through the circulation, then we shall have reached an impregnable position in the treatment of infectious diseases, far in advance of any other school.—The *North American Journal of Homœopathy*, April, 1916.

SOME NERVOUS PHASES OF SYPHILIS*.

By Harry B. Ballou, A.B., M.D.

Soon after syphilis had made its appearance in Europe in 1497, various investigators began to suspect that it was responsible for certain nervous manifestations, and to speak of headaches, neuralgia, epileptiform attacks, and paralyses, as due to the disease. As early as 1672 Willis seemed to have some conception of what we now call general paresis. Progress, however, was slow, and not much was done to make clear the effect of syphils on the central nervous system until 1847, when Virchow laid the foundation for our present knowledge of the diseass.

Since then a great deal has been done to clear up the perplexing question and to give a workable knowledge not only of the clinical symptoms and the pathological changes but also of the relation between the acute disorders and those of later onset. Nissl and Alzheimer have fully established the histo-pathology; Schaudin has shown the exciting agent to be the spirochæta pallida; Moore, and others have demonstrated the parasite in syphilitic gumma of the brain and spinal cord, in syphilitic meningitis, in congenital syphilis of the nervous system, in the cerebro-spinal fluid, and in the paretic brain and spinal meninges of tabetic thus making clear the etiology even in the heretofore obscure para or meta-syphilitic disorders. This, however, did not complete the task, for the manifestations of the disease were so varied as to still baffle the diagnostician and it became apparent that something more was needed before the knowledge already gained could be put to a practical use. Therefore, along with the work already done, Neisser, Metchnikoff, Wasserman, and others, were able to so perfect the laboratory technic as to render the diagnosis comparatively certain, especially when the results of the laboratory tests are considered in conjunction with the neurological findings.

The value of these laboratory tests can perhaps be better appreciated when we realize that they furnish not only a ready and

* Read before the Boston District of the Massachusetts Homœopathic Medical Society, March 2, 1916.

the most reliable means at hand for determining the presence or absence of syphilis in any obscure nervous disease, but also enable us when considered in conjuction with the neurological findings to differentiate fairly accurately the acute syphilitic nervous disorders from paresis, tabo-paresis, and tabes. Thus it seems that practically all forms of early syphilis of the nervous system show a positive Wasserman reaction in the blood. In the cerebro-spinal fluid the Wasserman reaction is also positive in practically all forms of cérebro-spinal syphilis, but in paresis the reaction appears to be more uniform with a smaller quantity of the fluid. On the other hand, in syphilis without the nervous involvement, the cerebro-spinal fluid usually gives a negative Wasserman reaction. The cytological examination of the cerebro-spinal fluid shows a positive lymphocytosis in cerebro-spinal syphilis, in paresis, and in tabes without paresis, the number of cells, perhaps, merely showing the activity of the inflammatory process. The cell count is apparently of great importance, for Sicard, Ravaut, and others have shown that especially in paresis a pleocytosis may antedate the onset of the neurological symptoms by as long as two years. The chemical examination of the fluid shows an increased globulin content in all three diseases, but this reaction is thought to be an especially characteristic feature of paresis.

Several clinical forms of cerebro-spinal syphilis have been mentioned, although apparently it is seldom that a syphilitic infection of the brain and its meninges furnishes a pure clinical type at least in the acute stages of the disease, for the reason that if the arteries of the brain are attacked, there is almost sure to be an accompanying gummatous formation or a meningitis either of the base or convexity, or both, thus giving rise to a confusion and multiplicity of clinical symptoms, the nervous phenomena depending largely on the location and the extent of the pathological process.

In the vascular form of cerebral syphilis, it is the arteries of the brain that are first attacked. There is an infiltration of the adventitia and a proliferation of the intimal endothelium

which gradually reduce the lumen of the arteries, often causing a complete occlusion with a resultant area of softening or degeneration of that section of brain tissue supplied by the vessel. Sometimes, instead of the larger arteries being involved, the smaller ones in the cortex are the seat of the change, and we get a syphilitic endarteritis. Therefore, as the disease progresses some patients may show a picture similar to general paresis or may exhibit focal symptoms such as mild transitory palsies, monoplegias, speech disturbances, apoplectiform attacks, and sooner or later permanent paralysis. Clinically, the prodromal symptoms of headache, dizziness, irritability, insomnia, lack of interest, and inefficiency, often appear within a few months after infection.

In the basal meningitis there is a thickening of the meninges, and possibly a gummatous formation, the process frequently extending in all directions, invading the brain, affecting the entering and emerging cranial nerves, and even spreading to the spinal meninges. Under such conditions the optic chiasm is frequently involved, and the boring, stabbing headache with noctural exascerbation is often accompanied by vomiting and choked disc. As the diseased process digs deeper and deeper into the brain, oculomotor palsies and a variety of other symptoms both neurological and mental may devolop. Still another picture ensues when gummata of the cranial bones and a meningitis of the convexity involve the motor area, causing epileptiform seizures which may perhaps continue over a period of years.

Besides the syphilitic diseases of the nervous system already mentioned, there is another group, commonly known as the para- or meta-syphilitic disorders. The onset of these diseases, general paresis, taboparesis, and tabes, is insidious; the varied manifestations, both mental and physical, seldom becoming prominent until from seven to twenty or more years after infection. Just why any distinction should be made between cerebro-spinal syphilis and the later manifestations of the disease, has apparently never been satisfactorily explained, but it

is interesting to note that less than four per cent. of those infected with syphilis develop either paresis or tabes. Still, paresis is of relatively frequent occurrence, and in 1904 every twelfth patient admitted to the New York State Hospitals suffered from the disease. It is generally conceded, however that general paresis differs from the acute syphillic disorders of the nervous system not only in the histo-pathology and laboratory tests, but also in the results of the therapy.

In paresis, the pia is invariably altered by a diffuse infiltration of plasma cells, some lymphocytes, occasional mast cells, an excess of connective tissue, and at times the formation of new capillary vessells, some sections showing an enormous increase in the number of blood vessels. These changes are more marked in the frontal and parietal regions, and the blood vessels of the cortex often show a proliferation of the endothelium of the intima, some degeneration of the media, and thickening of the adventitia, due to the plasma cell infiltration. It is rare, however, in paresis that the vessels either new or old show sufficient degenaration to occlude the lumen of the vessel as is often the case in the vascular form of cerebral syphilis. Rod cells are found scattered through the tissues and the lymph spaces are enlarged. There is an increase in the neuroglia in the outer cortical layer and about the vessels, but there does not seem to be any characteristic change in the nerve cell. Pathologically, therefore, one of the most distinguishing features of paresis as compared with cerebral syphilis is the plasma cell infiltration and formation of new blood vessels.

The diagnosis of paresis is comparatively easy when once the disease is established, but although expansive, demented, depressed, agitated, galloping, and atypical types are described, there really seems to be very little uniformity in the mental symptoms which characterise the onset. The disease may be far advanced before the family, friends, or business associates suspect the change that has taken place. In fact, the first serious warning may be a foolish business venture, an erratic act, a sudden ungovernable outburst of temper, or a convulsion.

Then perhaps it will be remembered that for many months the patient has shown a gradual change in disposition, an unnatural indifference to business affairs, family duties, and moral obligations, impairment in judgment, increasing irritability, expansive ideas, or possibly increasing loss of memory and deterioration. As the mental symptoms develop, the physical symptoms become more pronounced. There may be fibrillary twitchings, slight tremor of the hands, unsteadiness in walking, speech defect, mistakes in writing, unequal, inactive pupils, and increased or absent patella reflexes. In the incipient stages, however, both the mental and physical symptoms may fail to attract attention, and by way of illustration I wish to mention two somewhat remarkable cases of paresis that have come under my observation at the Westborough State Hospital.

The first, a French Canadian acrobat of forty, who gave up his acrobatic work about one year before admission to the hospital because he felt he was becoming "too slow" to successfully continue it. He then secured a position to run an elevator car in a department store, and continued to do this work efficiently until the day before commitment, his family and associates, in the meantime, observing nothing wrong with him. On admission, he was disoriented, confused, and showed the typical physical-complex of paresis. The blood serum and the spinal fluid gave a positive Wasserman reaction. He later developed marked agitation and apprehension, and was clouded, but did not express any delusions. He died twenty days after giving up his work, and the autopsy findings confirmed the diagnosis. In this case it is fairly safe to assume that the neorological symptoms of a grave nervous disorder were present at the time he felt he was "too slow" to continue his acrobatic work, but it is evident that, if consulted, his physician failed to detect the real source of the trouble.

Second, a hardworking intelligent, single man of 43. For a year and a half before commitment his sister had observed nothing wrong except that he seemed nervous, and had had several attacks, each of about one half-hour duration, when he

would complain of a sensation as of pins and needles in his right hand, arm, and tongue. His hand and tongue would then become stiff and he would be unable to speak, but he did not lose consciousness, and was able to return to work. He had used liquors to excess for ten years, and his sexual life had been excessive and promiscuous. On admission, September 18, 1913, he was mildly euphoric and showed some memory defect, but had no hallucinations or delusions, and was quite clear mentally. Physically, there was a marked tremor in the muscles of face and tongue, speech slow, tremulous, and slurring, Argyll-Robertson pupils, patella reflexes increased, slight Romborg, and ataxic gait. At autopsy, besides the characteristic changes in the brain and its membranes, the spinal cord showed areas of degeneration in the lower thoracic and lumbar regions, and the spinal pia was congested and slightly opaque. In the cervical region there was a questionable firmness and a greyish appearance of the crossed pyramidal tracts. In this instance it would seem that the early attacks of transitory paralysis of the hand and tongue should have been sufficient to direct attention to the possible significance of the symptoms.

An unusual feature in the final course of this case is that during the twenty-six months of his hospital residence he did not undergo much further mental deterioration, did not develop any delusions, had a fairly good insight into his condition at all times, enjoyed parole privileges, and did a great deal of work in spite of his increasing ataxia, kept an accurate account of the number of other paretics in his ward who had died, and fourteen days before his death told the physician he could not keep up any longer. He then gave directions for his burial, and predicted correctly that he would probably be number forty-six.

In tabo-paresis, the prodromal course is apparently about the same as in the cerebral type. There is some dispute as to whether the changes in the cord are due to exactly the same process as causes the change in the brain, but, at any rate, there is a similar degeneration which takes place in the posterior

columns of the spinal cord causing loss of the patellar reflexes. The mental complex is much the same as in the cerebral form of paresis. Rarely a case of juvenile paresis finds its way to an institution, but the clinical picture is so variable that many such patients die diagnosed as imbeciles after perhaps a normal development up to a certain age. In this regard it is interesting to note that the paresis develops after about the same length of time as it would if the infection had been acquired.

There is hardly time here to take up the question of tabes without parésis, or any of the other manifestations of syphilis of the brain and spinal cord. In closing, however, I wish to make a plea for the recognition of paresis in its incipient stages. When we consider the extent and character of the change that has taken place in the nervous tissue by the time the nature of the disease is usually recognized it seems almost beyond the realm of reason to expect useful results from any form of neurotherapy. There are, of course, conditions which may be confused with paresis, such as a diffuse form of cerebral syphilis, cerebral arteriosclerosis, idiopathic epilepsy, arising in adult life, and a so-called pseudo-alcoholic paralysis. I believe, however, if the general practitioner will consider paresis as more of a physical than a mental disease an early diagnosis is possible, especially if the laboratory aids are more frequently employed in every case of even mild nervous disease that is in the least obscure.—*New England Medical Gazette*, April, 1916.

EDITOR'S NOTES.

Plantain Juice as an Antidote for Snake-bite.

At Colombo, in the presence of a large gathering, including doctors, Mr. Donald Obeysekere demonstrated the efficacy of plantain juice as an antidote to snake-bite. Mr. Obeysekere liberated a cobra from a gunny-bag face to face with a valuable bull terrier, upon which the demonstrator's confidence in his remedy led him to experiment. The dog, however, broke the cobra's back after a ten minutes' fight, during which he had succeeded in avoiding its fangs. The bull terrier was then held off, and a village pi-dog was brought in and was severely bitten by the snake. It howled with pain and collapsed in a few minutes. The dog was then given plantain juice freshly expressed from some young trees of no particular variety, and when about a breakfast-cup had been administered it is stated that the dog began to revive. Within half an hour it was on its feet, and the doctors present were satisfied that it had got over the effects of the poison. The journal adds that the experiment was then repeated with a cock, which was likewise bitten badly and recovered. Dr. Fabian Hirst, who was present, was asked to make further experiments, the result of which will be awaited with interest.—*The Lancet*, April 1, 1916.

Nitrogen Retention in the Blood.

While the value of estimations of the urea content of the urine as a test of renal efficiency, especially when carried out by the hypobromite method, is now regarded as relatively small, there can be no doubt that a knowledge of the quantity of nitrogenous waste bodies present in the blood is capable of affording valuable indications as to prognosis and treatment. Some interesting observations on this subject are contained in a recent paper contributed to the *Edinburgh Medical Journal* for April by Dr. Francis D Boyd, who used the methods of Folin and Denuis for estimating the non-protied nitrogen of the blood. From these it appears that the percentage of such materials may rise as high in other diseases as in ordinary cases of Bright's diseases, and

also that the blood pressure in cases of renal disease is not directly proportional to the amount of nitrogenous waste products present in the circulation. Nevertheless, large percentages are of bad import, anything over 50 mg. of non-proteid nitrogen in 100 gm. of blood indicating that the patient is in a dangerous condition. If as much as 100 mg. per cent. are discovered there is immediate danger of fatal uræmia. Treatment in such cases of nitrogenous retention must be directed to diminishing the protein intake and eliminating the waste materials by other routes besides the kidneys. For the latter purpose purgation is most useful. For the former the old-fashioned milk diet is not really suitable, as it actually contains a larger amount of protein in relation to its nutritive value than many other forms of food. If possible, it is advisable in cases of nitrogenous retention to withhold all food 24 hours, giving only water to relieve thirst. Afterwards such things as water-arrowroot, cream, sugar, and stewed fruits (apples, prunes, figs) may be allowed, such diet being sufficient to supply energy for a patient at rest in bed. In cases of chronic nephritis, examinations of the blood nitrogen must be made from time to time as a means of regulating the diet permitted, since it is harmful to restrict nitrogenous food unnecessarily, the general nutrition then tending to suffer and the kidney being in turn injuriously affected. The largest quantity of protein along with other foods that can be assimilated without giving rise to undue nitrogen retention is desirable.—The *Lancet*, May 20, 1916.

Disease Among Workers in Hemp Cultivation.

Dr. G. Slaviero draws attention in a recent issue of *Il Morgagni* (Part I, Nov. 30th, 1915) to the evil effects attributable to the process of maceration to which the dried hemp plants have to be subjected in order to prepare this commodity for manufacture. For this operation a kind of rectangular basin is used about 1½ metres in depth, the dried bundles being placed in the water and fixed there by various appliances. During the maceration the surface of the water is covered with putrefying detritus, becomes turbid and assumes a dirty-green colour, has a bitter salt taste,

and exhales an acrid, pungent, and nauseating odour which poisons the air. The macerated bundles have to be removed by workers immersed, sometimes up to the waist, in a crouching position, and wet through in all parts of the body except their backs. The bundles are then exposed to dry in the sun, when they are ready for spinning. This process, in use in Italy at the present day, is eminently anti-hygienic, not only on account of the nauseating surroundings but in a greater degree from the conditions under which the work is performed, with the limbs bathed in the mud and with water up to the waist, resulting in such interference with movement and a useless expenditure of energy rendered necessary by the constrained position. Hence it is very common to find among the workers a large number of cases of lumbago, arthritis of the right shoulder and radiocarpal joints, and rheumatic neuritis, while pharyngitis and tonsillitis are very common. Among women, too, the conditions seem to induce disturbance of the sexual functions and to favour prolapse of the uterus. After the bundles have received their final drying they are carried away, and fine particles which fall on the uncovered parts of the body, particularly the neck, chest, and arms, produce a kind of pruritus which easily becomes converted by scratching into an infective dermatitis in which staphylococcal elements abound. Lesions are also caused by the irritating putrefactive material brought into contact with the skin through the water during the process of maceration. If it were possible to carry out the removal of the bundles after maceration by mechanical appliance, the problem of disease connected with the manufacture of hemp would be in a large measure solved. However, Dr. Slaviero found that the majority of agriculturists interrogated by him were very sceptical about mechanical removal of the hemp from the macerating basins, and were of opinion that human labour was, and always would be, indispensable for the reason that it was impossible for the uniform work of a machine to take the place of a kind of labour, entirely *sui generis*, in respect to the degree of maceration, the conditions of the macerating basin, and of each particular bundle of hemp.—The *Lancet*, March 11, 1916.

The Human Ostrich.

Dr. C. J. Van Houweninge Graftdijk describes an interesting case of pica, or the craving for unnatural articles of diet that is not rare in certain forms of insanity. The patient, a wharf labourer, aged 32, had shown increasing general debility for two months, which was attributed to failure of appetite; he had remained at work until two days before he went into hospital. For a month before his admission he had complained of pain in the left side of the abdomen soon after food, and frequent vomiting without hæmatemesis, though melæna had been observed. On examination he was found to be very thin, slow of speech, and during examination he passed water involuntarily. The abdomen was somewhat distended and rigid, and did not move on respiration; some peristalsis was seen in the left side of the abdomen, was dull on percussion, while the right side gave the normal resonant note. No signs of free fluid in the peritoneal cavity were made out. The left hypochondrium and flank were tender on palpation, and tenderness and resistance were found per rectum on the left side of the pelvis. On the next day a hard but indefinite mass was palpated in the left flank; examined bimanually this showed ballottement, and emitted audible clashing sounds or coin sounds resembling those elicited by the palpation of an abscess cavity partially filled with gas. The patient appeared to be sinking from inanition; the diagnosis was doubtful, and so an exploratory laparotomy was made below the left costal margin under local anæsthesia the same evening. It was found that the stomach contained 3 lb. 11 oz of metallic objects, varying in size from a cold chisel, weighing 11 oz. and 5 inches long, down to a collection of coins, bolts, nuts, rivets, wire nails, tin-tacks, screws and hooks; there were also half-a-dozen small flints. The man made a good recovery and left the hospital after six weeks. Six months later he returned, with the same complaint of weakness and loss of appetite. Examination with the X rays showed an opaque object in the ascending colon; this was removed by operation, and proved to be a piece of tin-plate 4 inches long, and a piece of slate pencil. The patient was watched while in

hospital, but he succeeded in swallowing a piece of soap and 2 oz. camphorated spirit, neither of which did him any harm. He again recovered from operation and was removed from the hospital to an Asylum. But there he died a few days later, with fever and signs of inflammation of the mediastinum and right lung. At the post-mortem examination the œsophagus was found to be acutely inflamed from the level of the larynx down to within 4 cm. of the diaphragm, and at the level of the sixth dorsal vertebra it contained three metal screws, and a tinplate box 1½ inches in diameter and ¾ inch high. The œsophagus was adherent to the hilum of the right lung; the upper two lobes of the right lung were soft, light-grey-red in colour, and contained numerous cavities exuding pus on pressure. The stomach was not enlarged, thick-walled, or ulcerated. The patient had received asylum treatment for dementia præcox on several occasions before he came under Dr. Graftdijk's observation. The clashing or coin-like sounds elicited on palpation of the patient's abdomen when he first came under observation lend a colourable probability, if such a loan be thought necessary to the well-known account given by Mr. J. Hopkins of the child that swallowed a necklace of large black wooden beads and was treated in St. Bartholomew's Hospital in 1828. It will be remembered that the father had occasion to give "the child a shake to make him obedient, and such a rattling ensued as nobody ever heard before. Why, damme, it's *in* the child!' said the father; 'he's got the croup in the wrong place.' 'No I haven't, father,' said the child, beginning to cry, 'it's the necklace; I swallowed it, father.'" While the child was in hospital it was necessary, according to Hopkins, to muffle him in a watchman's coat for fear he should wake the other patients. Dr. Graftdijk does not seem to have found any such precaution advisable in the case of his patient, but he gives a remarkable and convincing photograph of the 132 foreign bodies removed from the stomach at the operation.—The *Lancet*, May 6, 1916.

Eugenics and War.

It has been asserted by some that war is a phenomenon necessary for the development of humanity and for social evolution—that collective assassination is a source of progress, since in the struggle the stronger races survive, while the weaker succumb and disappear. They regard war as a phenomenon of natural selection which justifies and confirms Darwin's theory, or as a hurricane which purifies the social surrounding, uprooting weak and parasitic growths, leaving the earth free to nourish only those more robust and worthy of living, and imparting ozone. Again, and from a more directly medical point of view, they consider war as a blood-letting process which depletes society, making the activity of each part more effective to the advantage of the whole. Dr. Dragotti, in a recent issue of *Il Policlinico*, combats this view, saying that it would be difficult to find at the present day, and in any part of the world, even in those countries which are immune from the scourge, anyone who would have the courage to affirm that the war imposed on the world by the sins of a military caste is a bestower of progress and benefit. There can be no doubt that war, and specially the present one, multiplies the disastrous effects of all the factors of decay in the human race. The sole advantage from the point of view of eugenics has been the suppression of alcohol, but it is doubtful whether after the war vodka, absinthe, and beer will not take their place again among the vicious habits of man. Toil, discomfort, and innutrition not only light up hidden foci of tubercle, but afford a favourable soil for the implantation of germs, the diffusion of which is greatly favoured by over-crowding in barracks and workshops. Still more serious in diffusion and effect are the neuroses. Oppenheim, who in the early period of the war found cause for congratulation in the extraordinary resistance of the nervous system in his compatriots, had afterwards to confess that in the space of a few months he had come across a number of neuropathics largely in excess of that observed during the whole of his career. Nor is the organism of woman, the static element and preserver of the characteristics of the race,

spared by war, which tends to lower the physical value even of the non-combatants. So far Dr. Dragott's thesis is difficult to assail, but his opinion that morality is not rendered more robust by war will not be universally shared. He argues that if the spirit of sacrifice reaches the sublime, on the other hand the men whom the war has turned into homicides, thieves, incendiaries, and violators cannot return to civil life as more moral beings. After the slaughter of the French Revolution and after the Napoleonic wars in France there arose a time of luxury. Men, satiated with blood and strife, gave themselves over to pleasure; the women, now in excessive numbers relatively to the opposite sex, increased their wiles and their vices; France abandoned herself to the most unbridled libertinage. A similar position, we must admit, has been observed after many collective disasters, and the phenomenon was witnessed after the earthquakes in Calabria and Sicily. Certainly history does not prove that victorious races are necessarily worthy of a greater civilisation, and the rest of Dr. Dragotti's arguments are incontrovertible. The struggle for existence in races is not shown only in a destructive competition between individuals of the same or allied species, but, in the human race, assumes rather the form of a struggle towards well-being, a struggle by which man tends to subjugate the forces of nature, and despoil them for the benefit of the community, a struggle in which the individual sacrifices himself for the general good. In war, on the other hand, man destroyes himself and his works and enfeebles the future generations in the conflict which they will have to wage against nature. War is antagonistic to eugenics. It is not like the storm that uproots parasitic plants, the hurricane which purifies the atmosphere, but is the whirlwind that shatters the forest trees, beats down the corn and devastates the fields where nettles will afterwards flourish. War is not a reviving blood-letting, but an exhausting hæmorrhage, which blanches the life-producing organs and prepares the soil for the development of pathogenic germs. War scatters the seeds of disease, sorrow, hate, and death, all of which cause the deterioration of the race.—The *Lancet*, March 25, 1916.

Gleanings from Contemporary Literature.

ALCOHOL IN ITS RELATION TO THE HUMAN BODY.

THE RELATION OF ALCOHOL AND ALCOHOLIC BEVERAGES TO NUTRITION.

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I. The Relation of Alcohol to Life.

Ethyl alcohol is one of the normal products of the life activity of the yeast plant. The yeast plant is a fungus. The method of reproduction used by this order of plants when all conditions are favorable to vegetative growth, is germination or budding. According to the plan of nature only those organisms which possess chlrophyll are able to build up complex food substances from simple inorganic compounds. Thus we find the green-leafed cereal grasses building up cellulose, starch, sugar, oil, and proteins from such inert compounds as CO_2, H_2O, and the mineral salts of the soil.

Organisms not possessing chlorophyll are unable to utilize the inert inorganic materials of their environment. They are dependent upon the chlorophyll-bearing plants for their food. Animals live upon the cellulose, starch, sugar, oil and protein elaborated by green plants for their own use. Fungi subsist in a similar though perhaps somewhat humbler way; the toadstool and mushroom appropriating the decaying vegetable matter of field and forest; the yeast plant consuming the sugar of decaying fruits; while moulds and bacteria are found wherever vegetable or animal matter is in the process of degenerative change; in fact it is the presence of these non-chlorophyll bearing organisms which leads to decay.

From the above we see that the fungus possesses many points in common with animals. Its life energies are liberated from the highly organized foods which it first consumes, then decomposes. The food of the yeast plant must contain nitrogenous matter, otherwise there will be a wasting away of the cell substance as shown by Pasteur. (Cited by Schurtzenberger in "Fermentation." New York, 1893.)

Besides the nitrogenous food there must be carbonaceous food which is represented by sugar. Then there must be water and salts. As these foods are soluble they may be directly absorbed by the yeast cells without the intervention of any digestive process.

The food thus absorbed by the yeast plant is in part built up into the substance of the yeast plant. A portion of the sugar may thus be utilized to furnish carbonaceous material for the structure of the yeast plant, however, most of the sugar is oxidized into carbon-dioxide gas and alcohol.

Every living organism absorbs certain foodstuffs, assimilates these, and either directly oxidizes them, thus breaking them down to simpler substances. Among the substances which leave the yeast plant are, carbon dioxide gas (CO_2), water (H_2O), glycerin $C_3H_5(OH)_3$ ethyl alcohol (C_2H_5OH) and a nitrogenous waste product.

But the matter which passes out of living cells may be divided into two groups: (1) Matter which is elaborated with the cells and passes in to the surrounding medium where it performs a function or serves a purpose advantageous to the organism. (2) Matter which has been more or less completely broken down and being useless to the cell, is cast out in order that its accumulation within the cell may not clog the vital processes or otherwise injure the cell.

As examples of the first group one thinks at once of the enzymes of the digestive glands elaborated from substances within the cell-plasm, passed out into the lumen of the alimentary canal, where they induce in the contents of the canal chemical changes which are highly advantageous to the organism as a whole. Then there is mucin, formed and passed out of the mucous secreting glands to lubricate and protect the delicate surface of the alimentary, and respiratory tracts and other mucous membranes. Also, oil prepared in the sebaceous glands and thrown out upon the skin to keep it soft and non-absorbent.

As an example of the second group one may name carbondioxide, a product of the oxidation of the carbon of the cell protoplasm. In the case of higher animals uria and uric acid, products of the oxidation of the nitrogenous matter,—are good examples of the second group. The line of division between these two classes of substances is a very clearly marked one.

The second group as enumerated above comes clearly under the classification, *excretions*. While the substances belonging to the first group come clearly under the classification, *secretions*. The medical

dictionaries define excretion as waste matter thrown out of an organism. The term excretion is used in this sense by physiologists generally.

In the light of the use and definition of the word excretion in the literature of nutrition, we can formulate the following definition which would be acceptable to any physiologist: An excretion is any substance; (1) which is the product of intra-cellular oxidation; (2) from which the organism has extracted the maximum energy possible for it; (3) which would injure the cells that formed it if retained in them; and (4) which is expelled by the cells soon after its formation.

All the substances (except water) mentioned above as leaving the body of the yeast plant fulfill these conditions and must therefore be classified as excretions. In no case could they or any one of them be looked upon as a secretion in a sense in which that term is generally used. No one has ever contended that the yeast plant makes any use of these substances after they are thrown out of its body. The fact is the yeast plant throws them out because it can get no further energy out of them. They are thus typical excretions.

The living organism throws out excretions for two reasons: (1) It can make no further use of them and (2) if retained, the substance poisons the organism. A clinical fact long known and frequently illustrated is that retained urea and uric acid cause profound disturbance of the nervous system followed by convulsions and death. It is a biological principle universally recognized that the decomposition products of any organism are injurious to that organism. Dr. Vaughan of Ann Arbor (*Ptomaines, Leucomaines, Toxines and Anti-toxines.* 1896, p. 549) expresses this law in the following words: "*The cells of the body, as well as bacteria, are injured when the product of their own activity (their excretions) accumulate about them.*"

We must now enquire whether or not alcohol is one of the constituents of yeast plant excretion which is injurious to that organism. A recent authority on fermentation, Carl Oppenheimer, (*Die Fermente und thre Wirkungen* Leipsig 1900, p. 276), says: "The question as to how far the cleavage products affect the ferment injuriously can be answered very easily in the case of alcoholic fermentation, since in this case one of the cleavage products, namely, alcohol is in a certain degree of concentration a protoplasm poison which injures the yeast and decreases the fermentation. When the

alcohol has reached a strength of 12 per cent. the growth of most species of yeast plants is much decreased, while with 14 per cent. all activity stops."

Not only will the excretion of any living organism poison the organism which produces it, but it will have a toxic action upon any organism of a higher rank, thus the excretion of a mammal might serve as food for some of the lower vertebrates and certainly for fungi and bacteria, while the excretion of the yeast fungus (alcohol) serves as pabulum for the bacterium of acetic acid fermentation. The excretion of the bacteria ptomaines are however, poisonous, not only to the bacteria which form them but to the yeast fungus which is an organism of higher rank. In a similar way alcohol is toxic to the yeast plant which forms it and to all animals and to chlorophyll-bearing plants. The relation of alcohol to life may thus be summed up: (1) Ethyl alcohol is the excretion of a fungus; (2) excretions which are toxic to the organism which excretes them are also toxic to all higher organisms; (3) alcohol is toxic to the yeast plant; and in conformity to the laboratory observations, as well as to the logic of the case alcohol is toxic to all animal protoplasm.

II. The Alcohol-a-Food Theory in the Light of Recent Researches.

All life activity is accompanied by oxidation and all oxidation by waste. Any sparing action which alcohol may possess is easily accounted for as being in harmony with its generally accepted narcotic action.

Narcotic action is followed by decreased activity, therefore decreased oxidation, therefore "sparing." No body has contended, much less proven, that this so-called sparing action is an economy of food material in connection with activity. With the influence of alcohol as without it, a given amount of life activity is accompanied by a given consumption of body substance. Morphine is oxidized in the body, it produces a strong narcotic effect with marked decreased activity, and decreased general oxidation. Incident to this decreased general oxidation there is a sparing of food materials. No one would for a moment contend that this sparing of food material under the influence of morphine would justify one in the contention that morphine is a food or has any food value. In a similar way it is insane and foolish to contend that the sparing action of alcohol due to its narcotic effect, should be accepted as an argument proving the food value of alcohol.

A. The Body Oxidizes Alcohol as a safety Measure.

When one eats a real food it is assimilated largely by muscle tissues and is oxidized for the purpose of liberating the life energy. When one injects alcohol it is carried by the blood to the tissues, mostly to the liver, where it is oxidized as any toxine would be for the purpose of making it harmless.

Its oxidization liberates heat energy but this energy cannot be utilized by the body, even for the maintenance of body temperature. If a food is defined as *a substance which, taken into the body, is assimilated and used either to build up or repair body structure, or to be oxidized in the tissues to liberate the energies used by the tissues in their normal activity;* then alcohol is not a food.

The fact that alcohol is oxidized in the body has been generally misunderstood. The first impression naturally was: Foods are oxidized; alcohol is oxidized; therefore alcohol is a food. As logically might one reason: Man is an animal; the lobster is an animal; therefore, man is a lobster. The fallacy must be apparent. Not all things that are oxidized are foods. Many poisons which from time to time get access to the body are readily oxidized in the body, but nobody has contended that these poisons because of their oxidation should be looked upon as foods, with the one exception of the protoplasmic poison, alcohol.

When a food is oxidized there is liberated the energy of muscular action, of gland action, or of nerve action. There is also liberated heat which maintains the body temperature, but the oxidation of alcohol disturbs muscular, glandular and nervous activity, and the heat which is liberated incident to its oxidation does not maintain body temperature.

If alcohol is not a real food what is the significanee of its oxidation? It has long been known that the liver produces oxidaces and that it is the site of active oxidation of mid products of catabolism of toxines, and of other toxic substances. Alcohol while usually formed as excretion of the yeast plant, as described above. is also found as a mid product of tissue catabolism. It belongs clearly then to the group described above as excreta.

On *a priori* grounds we should expect alcohol to be oxidized in the liver along with leucin tyrosin, uric acid, xanthin bodies and various other products of tissue oxidation. There have recently appeared two most important papers based upon extended researches

upon man and lower animals. These researches practically clear up this knotty question.

Dr. Reid Hunt, in one of the Government Laboratory Stations, undertook an extensive series of experiments to determine the defense of the system against bacteria and other toxines. Throughout his exhaustive research Dr. Hunt found uniformly that the ingestion of even small doses of alcohol was followed by a marked decrease of the defense of the system against toxines. This effect was due to the disturbance of the liver function.

The other research referred to was conducted by Dr. Bebee and published in the *American Journal of Physiology.* The subject of the experiment was a young man in good health and of regular habits, unaccustomed to the use of alcohol in any form. The diet was uniform throughout. Experiment 1 covered a 16-day period, divided into a 7-day control with all conditions normal, a six-day period during which alcohol was given and a four-day period during which observations were continued without alcohol.

The amount of uric acid excreted was accurately determined. The daily average of uric acid for the control period was 0·653 grams for the alcoholic period, 0·755 grams, and for the post-alcoholic period 0·615 grams. Note that during the alcoholic period the increase of uric acid was approximately 19%,—a notable increase. Subsequent experiments yielded similar results.

The author's conclusions are so important that I will give them in full:

"1. After these experiments there is no doubt that alcohol even in very moderate amounts causes an increase in the excretion of uric acid

"2. The following points indicate that the effect is due to a toxic influence on the liver, thereby interfering with the oxidation of the uric acid derived from its precursors in the food. Alcohol taken without food causes no increase. Alcohol is rapidly absorbed and passes at once to the liver, the organ which has most to do with the metabolism of protein cleavage products.

"3. The increased excretion means that a large quantity of urates has been produced and not that more of that which is already present has been excreted.

"4. If we accept the origin of the increased quantity of uric acid to be the impaired oxidated powers of the liver, the results of

these experiments will have greater significance than can be attributed to the uric acid alone.

"5. The liver performs a large number of oxidations and syntheses designed to keep toxic substances from reaching the body tissues, and if alcohol in the moderate quantities which cause the uric acid excretions impairs its power in this respect, the prevalent ideas regarding the harmlessness of moderate drinking need revision (Beebe)."

The value of this work and that of Reid Hunt can hardly be over estimated. In the first place, the rapid oxidation of the alcohol in the liver is explained. Alcohol itself being one of the toxic substances which reach the liver from the alimentary canal is at once attacked by the liver and if the oncoming tide of alcohol is not too great it will practically all be oxidized.

B. Bodily Defense cannot Resist too Heavy Assaults. But the hepatic oxidation of toxic substances other than alcohol, is impaired in the meantime so that they get past the liver to the tissues where they do injury. Some of these toxines are excreted unoxidized by the kidneys, as shown above by Beebe's researches and fully confirmed by Hunt's.

We may therefore accept it as practically demonstrated by these researches that the oxidation of alcohol in the liver is simply one of the defensive activities of that organs. That is, the oxidation of alcohol in the liver is a *protective oxidation* and belongs strictly to the same category with the oxidation of uric acid, xanthine bodies, leucin, tyrosin, and the amido acids.

The next question which arises is, why does the liver select alcohol first and oxidize that substance to the exclusion of other toxic substances, up to the limit of its oxidizing capacity? The answer is probably to be found in the chemical composition of alcohol.

Alcohol oxidizes very easily, much more so than any of the other toxic substances which gain access to the liver. Its early oxidation may be due to this fact alone, or it may be due in part to an actual selection by the liver.

C. The Energy from Alcohol not available. Is the energy liberated in the oxidation of alcohol in the liver available for the use of muscles, nervous system or glands? If this question is answered affirmatively then alcohol is a food. If negatively, then alcohol is not a food.

All body oxidation may be classified in two groups: (1) *Active Oxidations* which take place in the active tissues, muscles, nervous system or glands.—and take place incident to action. Active oxidations are under perfect control of the nervous system and are proportional to normal activity. (2) *Protective Oxidations* which take place in the liver. This class of oxidation process is wholly independent of the usual tissue activity and is proportional to the ingestion of toxic substances and independent of muscular action, brain action or gland action, (other than liver action).

If the oxidation of alcohol in the liver belongs to Class 1, the following consequences should be found: First, the ingestion of alcohol would lead to an increased muscular power and an increased capacity for brain work, and increased glandular activity. Second, the ingestion of alcohol would serve to maintain body temperature in the healthy individual subjected to low external temperature. Third, the increase of muscle, brain or gland activity would be proportional to the amount of alcohol ingested. Now laboratory observations and general experience show that none of these things are true. That is, the ingestion of alcohol decreases muscle, brain and gland work and depresses body temperature when external temperature is low. The oxidation does not therefore belong to Class 1.

If the oxidation of alcohol in the liver belongs to Class 2, the following consequences would be found: First, the ingestion of alcohol would be followed by its early oxidation in the organ in question. Second, if the oxidation capacity of the liver is limited this capacity may be overloaded by exceeding the physiological limit of alcohol. Third, if the oxidation capacity of the liver is taxed nearly to its limit, by the oxidation of uric acid, xanthins and other toxic substances, the ingestion of alcohol may seriously interfere with this protective oxidation by overtaxing the capacity. Fourth, if the oxidation capacity is overtaxed an excess of uric acid, xanthin bodies, and other toxic substances will get by this portal and reach the active tissues of the kidneys. Now all of these things take place, so we are forced to the conclusion that *the oxidation of alcohol is a protective oxidation.*

ALCOHOL IS, THEREFORE, A TOXIC SUBSTANCE AND NOT A FOOD IN ANY SENSE.

In the light of this presentation the significance of Dr. Hunt's work becomes very clear. The alcohol given to the animals taxed

the oxidation capacity of the liver to the limit and left the organism defenseless against bacterial or other toxic substances.

III. Alcoholic Beverages.

Alcoholic beverages contain from 33% to 40% of ethyl alcohol. Beers and ales contain the lower percentages of alcohol. Whisky, rum and brandy the higher percentages, while wines are about midway between.

No alcoholic beverage has so low a percentage of alcohol as to be without danger. The amount imbibed by the addict is usually so much that the alcohol taken exceeds the "*physiological limit*," that is,—there is more alcohol taken than can be oxidized in the liver, so that there is an escape into the general system not only of deleterious toxines, which should have been oxidized in the liver, but also of the excess of alcohol, which is carried to brain and to muscles, seriously disturbing their normal activity and decreasing their efficiency.

EFFECT OF METHYL ALCOHOL UPON THE HUMAN ORGANISM.*

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Methyl (or wood) alcohol is a deadly poison, and the sooner the inhabitants of this country become cognizant of that fact, the longer will they live to enjoy the benefits and glories of this great land.

When one considers that one out of every twenty artisans come in daily contact with it in the arts and industries, and that a still greater proportion, if we consider its use in the household, in cooking and in the form of extracts, liniments, patent medicines, jamaica ginger, which hazel, bay rum, hair tonics, Florida water and Eau-de cologne, which have been responsible for poisoning in drinking among women, the necessity for knowing about its poisonous qualities becomes at once apparent. Irrespective of its mode of entrance into the organism its action is the same. When its vapor is inhaled in a confined space it is just as prisonous as if the same quantity had been imbibed, as evidenced by the many cases of partial or

* Read before the American Medical Society for the Study of Alcohol and Narcotics, Washington, Dec. 15, 1915.

total loss of vision and death observed in workers varnishing the interior of beer vats, in closed rooms, lead pencil varnishers, hatters metal workers and others. While a greater number of cases of poisoning have resulted from drinking cheap whisky, etc., where methyl had been substituted for ethyl alcohol on account of its lessened cost, its poisonous effect will assume greater importance in the near future on account of the occupational health insurance laws about to be enacted, which will concern every industry in which it is used on account of the possible danger of poisoning from inhalation or absorption while handling it.

Many cases of poisoning by the imbibition of methyl alcohol have occurred among the foreign-born element of our population. Accustomed to the use of ethyl alcohol in their mother country, they bring their habits to the land of their adoption, and as they think that all alcohols are alike they buy methyl alcohol, which is cheaper and recommended just as good, to make their home-made wines whisky and cordials, by adding rose leaves, caramel and different coloring and flavoring extracts; and the results are well known to all ophthalmologists, as the majority of those affected suffer either from loss of vision or life, as the penalty for having imbibed it. The statement that methyl alcohol has been recommended by dealers as being just as good as ethyl alcohol appears difficult of comprehension, but it is an established fact which can be substantiated by noting the testimony adduced in the convictions obtained in New York City by the Board of Health, of druggists selling paregoric made with methyl alcohol, and others selling methyl alcohol not properly labelled, when ethyl alcohol was ordered.

One of the excellent results accomplished by the New York City Board of Health, and for which it should be higuly commended, is the enforcement of the law relating to the sale of methyl alcohol, which makes it unlawful to sell any article of food or drink, or any medicinal or toilet preparation intended for human use internally or externally, which contains any methyl alcohol; and, furthermore, that no person shall sell any methyl alcohol unless the container in which the same is sold shall bear a notice containing the following device and words conspicuously printed or stencilled thereon, viz:

Skull and Crossbones—Poison. Wood Naptha or Wood Alcohol. Warning. It is unlawfull to use this fluid in any article of food, beverage or medicinal or toilet preparation for human use, internally or externally.

Now, if the various city, state and national boards of health would follow their example there would be a diminution in the number of cases of blindness and loss of life, a large saving to the state in the cost of maintenance of the blind, a gain in the economic value by the conservation of life and vision, not counting the benefit to society by the preservation of the house-hold intact.

Formerly methyl alcohol was considered the least toxic of the alcohols, but recent researches and clinical observations have demonstrated that it is one of the most toxic and dangerous to mankind, especially the refined spirits, on account of the absence of any distinguishing odor to indicate its presence. This toxicity is due in no small measure to its slow rate of oxidation and to the fact that it is converted into formic acid which is many times more poisonous than the original methyl alcohol itself. Most drugs after absorption into the blood appear to have a specific action on special tissues; some undergo a chemical change in the liver, while others are retained for a time in the blood stream. Methyl alcohol apparently possesses all three characteristics, manifesting a selective action for the nervous elements, and it is especially observable in those of the eyes. While 90 per cent. of the ethyl alcohol absorbed is oxidized into carbonic acid and water in fifteen hours, and the remainder being completely oxidized later, only about 40 per cent. of absorbed methyl alcohol is oxidized in forty-eight hours, forming formic acid, 25 per cent. is eliminated in the urine, perspiration and breath, the remainder requiring a longer time for oxidation circulates in the blood stream producing a continuous toxic effect. The organism endeavors to eliminate a considerable part of it through the bile, after entering the intestines is reabsorbed, thus forming a vicious cycle.

Physicians at times fail to recognize cases of poisoning with methyl alcohol diagnosing acute cases as ptomaine poisoning; and chronic cases, on account of the possibility of their being masked under obscure disorders of the digestive tract and nervous system and being attributed to other causes by the patients, have been treated for chronic gastritis, hepatitis and enteritis.

There is undoubtedly a difference in the susceptibility of individuals to the toxic effect of methyl alcohol, due partially to the rate of oxidation which occurs, also to the condition of the individual at the time of absorption, whether the stomach is empty or full, and also to that condition known as the personal idiosyncrasy. The

quantity required for manifesting its poisonous effects varies accord. ing to the susceptibility of the individual, the ingestion of one teaspoonful has produced death in some, and in others the same amount has produced permanent blindness. The poisons formed in the system as a result of the introduction of methyl alcohol into the body are very diffusible and penetrate the eyes very readily. A short time after its ingestion the chemical reaction of the blood serum and aqueous humour of the eye is changed to acid reaction, as a part of a general acidosis due to the increase of the H-ion content of the blood. Symptoms deduced from personal experimental researches and clinical observation of methyl alcohol poisoning are dependent upon the intensity and rapidity of the toxemia produced. In acute poisoning headache, vertigo, nausea, cardiac depression, profound muscular weakness, dyspnœa, dilated pupils with loss of light reaction, loss of vision, varying grades of optic neuritis, edema of the retina, hypotension of globe with diminished sensibility of the cornea, are present, while lowering of the body temperature is marked, which is due to the profuse clammy perspiration, dilatation of the peripheral vessels, loss of mobility and the interference with the temperature-regulating mechanism of the body; loss of consciousness, coma and death may follow from respiratory paralysis.

If recovery ensues vision improves followed later by a diminution in the visual acuity, with changes in the visual fields and central scotomata for colors, especially red and green, due to partial atrophy of the optic nerves with degeneration of the ganglion cell layer of the retina.

In chronic cases the symptoms are milder and apt to be more obscure generally. Usual complaints are of headache, nausea, vertigo, weakness, color of voided urine very dark, with occasional obscurations of vision and confusion in distinguishing colors, vision subnormal with central scotomata for green or red and scattered scotomata or contraction in visual fields. Fundi of eyes show slight degrees of retrobulbar or optic neuritis, both are usually affected, one a trifle more intensely than the other.

In acute cases the changes in the blood comprise an increase in the erythrocytes, leucocytes, hemoglobin and polymorphonuclears, with a decrease in the lymphocytes. The acidity, specific gravity, electro-conductivity and viscosity are increased, while the coagula

tion time is reduced. Congestion with minute hemorrhages in brain, stomach, intestines, liver, spleen and kidneys are found at autopsy. In the chronic cases fatty degeneration of the tissues ensues, especially in liver, heart, kidneys and lungs, with congestion and inflammation of the meninges of brain and of some nerve centers.

The effect produced in the eyes is especially interesting on account of the opportunity afforded of observing the changes occurring in the tissues with ophthalmoscope, both in the acute and chronic forms, and in the ability to postulate therefrom the effect on the nerve cells in the brain.

The difference in the intoxication produced by ethyl and methyl alcohol is that the one produced by ethyl commences quicker and subsides more quickly, while that produced by methyl is slower in its incipiency, more profound and persistent and slow in recovery, and is decidedly more toxic.

While the past treatment for poisoning by methyl alcohol has been unsatisfactory, as a result of the better understanding of its action, hope of overcoming some of the evil effects produced by it may be entertained, if treatment is instituted early, and continued persistently, remembering that one is dealing with a virulent and cumulative poison. Treatment consists in elimination and stimulation, stomach pump, emetics, hydragogue cathartics, diuretics and diaphoretics, hot saline packs, high saline enemas, strychina, caffein, ammonia, oxygen and sodium iodide are recommended.

In conclusion, let us each and every one resolve to exert our best efforts toward enlightening the public as to the immense power to do harm which is stored within the liquid designated methyl alcohol and to emphasize the fact that it is unsafe to use either internally or externally, or if inhaled in a confined space; and, furthermore, to aid in formulating safety laws and regulations for those who are compelled to handle it in the industries; remembering that it is better and easier to preserve life and conserve vision than it is to restore them after having been lost.

THE EFFECTS OF ALCOHOL ON THE EFFICIENCY OF MILITARY MEN.*

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The possibilities which face the United States after peace has been restored in Europe, make it obligatory upon our nation to enter into a state of thorough preparedness. Not only should there be a material increase in the regular army, navy and the national guard, but every known measure should be adopted to increase the efficiency of their personnel.

The army and navy officer should be regarded as an expert of the highest class, whether charged with the purchase of supplies and ammunition, caring for the health of the command, the construction of dreadnaughts, or the command of troops and battleships.

In order to attain success in war, as well as in other walks of professional life, the individual must preserve his general health, which is the keynote to efficiency and success, and from an experience of over forty years as an army medical officer, I know of no factor which contributes more to the general health and efficiency than total abstinence.

Apart from its bearing on the health and preservation of the human race, temperance has become a cold-blooded business proposition, which is assuming great importance in the commercial world. Professional and business men everywhere have learned that the drink habit unfits men for the ordinary pursuits of life.

Railroad managers are generally prohibiting the use of alcoholic beverages among their employés, especially among locomotive engineers, train despatchers, telegraph operators and switchmen.

This is also true of steamship companies, street car systems, factory operators, schools, colleges, banks, and among artisans generally. Laws have been passed in many states regulating the alcoholic habit of chauffeurs in the interest of the public safety.

* Read before the American Medical Society for the Study of Alcohol and Narcotics, Washington, December 15, 1915.

At one time the War Department seriously contemplated the issuance of an order making total abstinence compulsory among army aviators. Flying, above all things, requires a cool head, clear eye and a steady hand, conditions which are absolutely impossible even with moderate drinkers. No one will ever know how many of the aviators who have lost their lives have alcohol to blame for the tragedy.

Many interesting experiments have been made by military men and others to determine the effects of alcohol on mental and physical efficiency. During one of General Wolseley's campaigns he divided some of his men into squads for marching experiments. The first squads was given a daily ration of whisky, the second a ration of beer and the third water. At first the whisky squad marched gaily ahead, but was soon overtaken by the beer squad, which, in turn, was passed by the water squad. The water squad followed an even gait, and after passing both whiskey and beer squads, reached its destination long before its competitors.

Lord Kitchener allowed his men no spirits whatever during his campaign in the Soudan. Lord Roberts was equally firm in encouraging abstinence from alcohol. Dr. Wahlberg, surgeon-in-chief of the Finnish army during 1877-78, said non-drinkers endured better and that the old drinkers were the first men to break down.

The Boers, whose endurance was generally commented upon favorably, used neither spirits nor beer. Sir Frederick Treves, who served at Ladysmith, says that the drinking men fell out and dropped as regularly as if they were labeled with the big letter "D" on their backs.

Lieut-Col. Edmond Monkhouse Wilson, Royal Army Medical Corps, says: "Exertion of the body is better borne without alcohol; this has been proven conclusively." That total abstinence is a great factor in maintaining the physical condition may be learned from the habits of all great athletes and pugilists, who make a success of their careers.

Even the Roman gladiators, who spent months in training for mortal combat, were total abstainers. Major Blackham, of the British Army, states that "alcohol is unnecessary in any form in any quantity, under any circumstances that may occur in military affairs."

During the Swedish alcoholic investigation among soldiers, a number of picked non-commissioned officers and men were selected for rifle practice. The tests covered a number of days, part of which time the men were tried out with small quantities of alcohol, about 1½ ounces of brandy. When alcohol was taken during the quick fire the hits were 30 per cent. less, though the men imagined they were firing quicker. During slow aiming the difference was 50 per cent. in favor of abstaining days.

During the marching test some of the men were allowed alcohol, while others were deprived of its use. The drinking men were found inferior in marching and enduring qualities; besides all of the sun strokes and heat exhaustions occurred among the drinking class. As a result of these series of experiments the Austrian soldier is not allowed to carry brandy on his person, as was previously the case.

A series of interesting experiments were conducted by Prof. Exner, of Vienna, to determine reaction-time of the brain with and without alcohol, and it was found that no one's intellect was at its best even under the moderate use of this drug. The experiment was conducted as follows:

The subject was placed at a telegraph table with finger on the key, and at the flash of light was required to press the key. It was proved that the reaction-time of imbibers was lengthened over that of abstainers, even when small quantities of alcohol were taken.

A number of complicated experiments were made on reaction time, involving color signals. A telegraph key was placed on the right and the left of the subject and signalized by alternating flashes of red and white light. It was proven that more mistakes were made after the ingestion of one glass of beer than before it was taken.

Other experiments were conducted with drinkers and abstainers on the reaction-time of reading letters through a slit in a revolving wheel. More mistakes were made by the imbibers than abstainers, and besides, the memory of the former was more impaired, as shown by their inability to repeat a number of letters after a short interval. Experiments made on this line show alcohol retards cerebration and has an important bearing on the work of the Signal Corps.

The countless experiments performed by Voit, Schumberg and Schaffer have proved that alcohol neither creates nor promotes brain

energy nor muscular activity. By means of the ergograph, Dr. Schnyder and Professor Dubois proved that an individual who imbibed one ounce of alcohol lost 8 per cent. of his muscular power when compared with normal labor without alcohol.

From the studies of Metchnikoff, Masset, Bordet and other investigators, we have learned that alcohol materially interferes with the immunizing functions of the leucocytes and the blood plasma against microbic injection.

Physicians especially are aware of the large mortality which results from pneumonia, erysipelas, typhoid fever and other diseases of a microbic origin among drinking men. A man from 40 to 60 should enjoy the most useful part of his career, provided he has led an abstemious life, especially with reference to eating, drinking and exercise.

Besides, alcohol has a special predilection for the central nerve cells of the gray cortex of the brain, which are directly associated with the highest intellectual processes. A painful and marked psychological change takes place in the intellect and mental attributes of the persistent drinker as the years pass The once brilliant intellect becomes common place, while ambition, energy and high aspirations fade away, to be replaced by absence of purpose, indolence and a lowered moral tone.

A marked contrast is usually observed in the physical condition of the drinking soldier and the abstainer who have arrived at middle age and always in favor of the latter. No one who studies statistics can fail to observe the large number of deaths which annually occur among men and women of social prominence between the ages of 40 and 60 years as a result of diseases of the heart, kidneys, liver and blood vessels, which are largely due to high living and alcohol.

The use of alcohol as a beverage among troops contributes more to camp diseases, and detracts more from efficiency than even poor camp sanitation. This was true during the recent Spanish war and Philippine insurrection, when at one time the admission sick rate generacy reached 3,000 cases per 1,000.

Especially was this true of venereal diseases, which stood for years at the top of camp diseases in our army and became a subject of congressional discussion. Alcohol plays such an important role in

the contraction of venereal diseases, that it is questionable whether more than 5 per cent. of this morbidity occurs among the abstaining class. Venereal diseases are intimately associated with two of the most prominent sociological problems, alcohol and prostitution, which together are the principal factors in the mental and physical degeneracy of the human race.

During 1898-1902 the Government permitted the unlimited introduction and distribution of all kinds of alcoholic beverages among the army of 70,000 regular and volunteer troops which were on duty in the islands during that period. As a result of which the admission rate to sick report run up four or five times as high as the present rate in the United States.

While a large amount of this sickness was no doubt due to climatic influences and poor sanitation, at least fifty per cent. of the excess was due to the use of alcohol. Hundreds of the men were invalided home on account of intestinal and stomach troubles, insanity, neurasthenia and other forms of neurosis, due more or less to alcohol, ninety-five per cent. of whom recovered before they had reached San Francisco during the month's voyage of return.

Mental diseases, expressed by certain forms of insanity, were exceedingly common among our soldiers during the Philippine Insurrection, and while it is difficult now to trace the etiological factor in each case, I am satisfied that 90 per cent. of them were directly or indirectly due to some form of alcohol. Many of the cases recorded on the sick reports as "heat stroke" or "heat exhaustion" resulted primarily from alcohol.

Besides sickness and loss of efficiency in the army as a result of alcohol, we know that practically all of the crimes and military offences committed in military circles are due to the use of intoxicants. All of the murders, suicides, court-martials and dismissals of officers, prison and guard house sentences of the enlisted men, fights, brawls and desertions are usually confined to the drinking element.

In permitting the use of alcohol beverages in our military services, the Government has not only handi-capped the efficiency of both army and navy, but has added unnecessarily to the burden of the retired and pension lists. For without question alcoholic excesses were responsible for the broken down health of many of our officers

and men who were retired or pensioned while still in the early or middle ages of life.

From a careful study of the effects of alcohol on the human organism I find that:

I. As a beverage it lowers all the mental faculties, such as judgment, memory, perception, thought, comparison, caution and quickness of action.

II. It lessens working capacity, marching endurance, accuracy and rapidity in rifle firing, ability to command troops or navigate ships, to act as members of military courts or boards, or to perform the higher administrative duties of official life.

III. It causes sickness, impairs health and usefulness, adds greatly to the non-efficiency of officers and men, increases the burden of the medical department in times of piece and war, deprives the government frequently of the services of those who drink, and increases unnecessarily the retired and pension lists of the army and navy.

IV. It lowers the moral standard, lessens self-restraint and is productive of unreliability, untruthfulness, dishonesty and crime.

March 18, 1902, the Secretary of War issued a circular to the army inviting attention to venereal diseases and alcoholic addiction, which was introduced by the following remarks: "The only really efficient way in which to control diseases due to immorality is to diminish the vice, which is the cause of these diseases. Excessive indulgence in strong drink is absolutely certain to ruin any man physically and mentally, while diseases due to licentiousness produce effects which are quite as destructive and even more loathesome."

All of the nations engaged in the great European struggle recognize the effects of alcohol on the efficiency and health of their troops, and have interdicted or curtailed its use. This has been the case with Russia, France, Germany, England and other nations among the lesser powers.

If the United States expects to stand as a great power among the nations of the world from a military standpoint, it will become necessary to enforce total abstinence among the commissioned officers of the army and navy before topnotch efficiency can be secured.

Besides total abstinence among the commissioned list, the necessity of strict temperance should be impressed upon the rank and file, and every measure taken to safeguard the men against the use of alcoholic beverages, especially during active service.

Medical officers, who are practically on duty at all times, should especially be prohibited from the use of alcohol, because it unfits them for the care of serious medical cases or the performance of important surgical operations.

Every officer in the army and navy necessarily relinquishes in part his personal liberty for the honor of serving his country and the compensation provided by the Government in the way of active pay and emoluments, or retired pay for age or disability.

For this and other reasons the government has a right to require every officer in the army and navy to safeguard his health against the ravages of disease or vicious habits. Officers and men are required to submit to vaccinations for small-pox and typhoid fever, prophylaxis against venereal diseases, and why not against the use of alcohol, which is one of the greatest factors in the reduction of efficiency and the general health of an army.

(*To be concluded*).

THE

CALCUTTA JOURNAL

OF

MEDICINE.

Vol. xxxv.] July, 1916. [No. 7,

SOME SURGICAL CASES, WITH COMMENTS.*

By JAMES EADIE, F.R.C.S.Eng.

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Once a month this Society, for its sins, subjects itself to the penance of a paper from one or more of its members.

It is the duty of the Secretary of the Section to provide a castigator, and, if he fail to get anyone else, must per-force take on the office himself. Such is my plight, and if, when I finished, you do not feel sufficiently scourged and mortified, I beg that you will think it is from no unwillingness on my part, and that you will be lenient and deal with me under the First Offenders Act.

The first case I propose to bring to your notice is that of a girl, aged 8, who was brought to the hospital, obviously very ill, on May 6, 1915. She was admitted to the children's ward right away, and I saw her the same day. She was then bordering on that condition to which the term "typhoid state" is

* A paper read at the British Homœopathic Society, January 6, 1916.

given. A preliminary diagnosis of rheumatic fever had been made by the outside practitioner. As far as one could elicit an expression from the patient, she had pains all over and not localized anywhere, but on examination we discovered a slight swelling over the upper end of the right tibia, which was doughy and somewhat tender. I formed the opininion there was pus subperiosteally, and that the patient's general condition was due to sepsis. She was anæsthetized and an incision made down to the bone of the tibial tubercle. The escape of pus confirmed the diagnosis, and I found the periosteum was stripped form the bone for some 2 in. or so down the shaft of the tibia. I chiselled into the medullary canal to make sure of the drainage for any pus in that cavity but there was not any found there. Dry iodoform gauze dressing was applied, a drain being left in the meduilary canal, and the patient was returned to bed.

The girl's general health was so bad at the time of the operation that for the next month her condition was somewhat precarious, and she exhibited the symptoms of septicæmia.

Seven weeks later the discharge from the wound was copious, but it was obviously not getting away as freely as was desirable, nor was her general condition showing the improvement I hoped. So on June 25 I had the patient in the theatre again and subperiostally excised about 3 inches of necrosed tibia from the upper end of the shaft. This left a cavity in the periosteum between the upper epiphyseal line and the remainder of the shaft, which I thought would permit the pus to escape more freely; no attempt, however, was made to remove all the dead bone of the shaft. Subsequent to this operation, we got the patient out into the open air of the balcony, and her general health now began to mend more satisfactorily.

Three weeks (July 16) after this operation, as the discharge still continued without lessening, and, moreover, the added sign of œdema of the lower part of the leg appeared, I decided to excise the whole shaft. I was loth to do this, in the first instance, as my hope was that an involucrum would form round the necrosed bone, from out of which I would, eventually, re-

move the scaffold represented by the sequestrum, and so minimize, if not altogether obviate, the deformity and disability that might ensue from excision of the shaft of the tibia.

However, consideration of the fact that the whole tibial shaft was obviously dead; that no attempt was being made to form an involucrum; that the general health was not improving as rapidly as it might; the discharge was copious and not perfectly free; and there was difficulty in keeping the wound as open as desirable for free drainage—all these considerations induced me to excise the whole shaft, allow the gutter in the periosteum to granulate, and then, when clear of the pus, transplant a new bone into this gutter in the periosteum. Heretofore there was no deformity,

Before going ahead with the operation of excision, I applied a plaster splint to the limb, with the object of being able to maintain the true shape after excision, especially to keep the foot in a good position and give eventually a useful organ. I then excised the entire shaft between the upper and lower epiphyseal lines, through a long incision down the front of the shin from the upper to lower end of the bone. I believed I had got away all the dead tissue, so closed the periosteal gutter with sutures taken right round without the periosteum. I left drains at the upper and lower ends of the incision, where the periosteal sac widened out, to be inserted at the epiphyses. After dry dressing, the limb was put into its plaster splint and no dressing was done for four days.

After this last operative interference, the improvement, in both the local and general condition of the patient, was very marked, and the incision healed rapidly, except at the lower end, where two tiny sinuses remained—due, I imagine, to ligatures; they eventually healed after scraping with a curette. As the plaster was strong enough to support the child, I allowed her to get up with crutches a fortnight later; the wound was then healed. The child was then boarded out at another hospital during the temporary closure of this in August, and when we re-opened she was re-admitted on August 28.

I was not a little surprised to find, when I came to examine her, that the site of the necrosed tibia was occupied by a firm body, either cartilage or bone. On having the leg radiographed, the plate exhibited a shadow where the tibia had been removed from; you will observe from the plate I now show you that it is not as wide as the original bone, and not so dense as that thrown by the fibula. Bear in mind that this shadow represents less than two months' regeneration of bone

Since Nature had obviously undertaken a process of repair which the surgeon had contemplated having to do himself, the latter resigned the case in favour of the former, and I was well content to put the limb into a new plater and send the child to an open-air sanatorium, where she has been up to the present.

The comments I should like to make on this case of osteomyelitis refer first to the difficulty of diagnosis. An appreciable number are put down as rheumatism in the first instance, more especially as the patient frequently does not help us much with localizing symptoms, and the slight œdema which presents over the seat of the lesion may readily be overlooked unless one exercises very great care in the examination. The general symptoms are often so very marked that the cases simulate meningitis or typhoid I need scarcely lay stress on the importance of early diagnosis and operation—it is not less so than in strangulated hernia.

It must strike everyone who has had any experience of the incidence of acute osteomyelitis how relatively rare that condition is in London compared with the West of Scotland—more particularly Glasgow, where rickets is also much more prevalent. Whether it has to do with the purity of the water-supply, especially the absence of salts of all kinds, I am not prepared to dogmatize, but that view is held by many.

It is possible, however, that a variety of causes contribute, and deficient amount of sunlight is not unlikely to be one as it is in rickets.

The chief interest of this case, however, to me lies in the fact that it demonstrates that one can get regeneration of bone inside

a periosteum that had previously been little, if any, better than a bag of pus with the dead bone lying bathed in it. Obviously, these circumstances were not sufficient to destroy the osteogenetic layer of the periosteum. I have not been taught to expect such regeneration, and have a shrewd suspicion that many of those cases in which bone transplantation into a similar periosteal gutter has been performed would have done as well, or better, if left to Mother Nature.

One of my juniors put it well when he remarked that, had this hospital not been closed for a month, the bone would have been grafted and the credit given to the process of grafting.

Your attention was drawn to the fact that I opened into the marrow cavity at the first operation, although I had evacuated pus from beneath the periosteum. It is a debatable point whether one should do this, on account of real danger of extending the infection should it not already have gone so far. I considered well whether or not to go into the medullary cavity. The bone was dead. The patient was seriously ill. If pus were in the medulla the incision down to the bone was inadequate, and valuable time would be lost while waiting to see if the result of the incision of the periosteum alone was sufficient to relieve the patient— if it failed, a patient in such a condition was doomed. If the medullary canal became infected, provided there was free drainage, the patient's life was not necessarily jeopardized, though that of more of the bone was. However, the first rule of surgical practice is that a patient's life must not be hazarded unnecessarily in any procedure, so I went into the medullary cavity; but I confess I do not now think it was necessary to do so in this case, though whether the patient would have done any better if one had not, one cannot say.

Nephrolithiasis.

I now propose to relate a case of calculi in a horseshoe kidney.

The patient is a butcher, whom I first saw as long ago as January, 1908. He was then aged 21, and came to my out-

patient department with symptoms which, I thought, pointed to vesical calculus. He was admitted under Mr. Wright, who crushed a large stone with the lithotrite.

Seven years later, on March 8, 1915, the man again presented himself at the out-patient department. At first sight I summed him up as being in the last stage of tuberculosis, and he appeared to require an undertaker rather than a surgeon. He is very tall, and was then thin and cadaverous-looking, with sunken eyes. His temperature was 104°F. He had been in Portsmouth Hospital and operated on for "adhesion." The scar is in the situation of a suprapubic cystotomy incision.

He complained of more or less constant pain in the right side of the abdomen and right loin. He had had it for the last three years. He stated that the urine was "muddy."

On examination, I found the right kidney enlarged and tender. The urine boils almost solid with albumin and the guaiacum test for blood is positive.

The patient was radiographed, and a report returned: "No X-ray evidence of calculi."

My diagnosis was right pyonephrosis, possibly tubercular. I saw no hope for the patient unless he was freed from the toxins he was obviously absorbing, and yet I was not sanguine his condition would permit him to withstand the shock of the operative measures necessary for this relief.

In May I performed a lumbar nephrotomy on the right side. I found a considerably enlarged right kidney, which I was unable to deliver into the wound on account of its lower pole being fixed. On palpating with a hand in the wound fixation was found to be due to a bridge of kidney tissue joining the two lower renal poles. Palpation also revealed the presence of large calculi in the kidney, with a distended renal pelvis. I incised the organ, and from the renal pelvis evacuated some very offensive pus and all the calculi I could feel, of which there were several (ten). Having passed a long probe down the ureter to satisfy myself no stone was impacted there, I introduced

hæmostatic catgut sutures into the kidney and, leaving a drain, closed the wound.

During the subsequent seven days the patient's condition was grave. Then he began to pick up rapidly in strength and weight. While recovering from the operation, the patient from time to time mentioned slight aching in the left loin, so I had him again radiographed. This time the plate showed shadows in the left kidney region, and also towards the lower pole on the right side. The patient was discharged to a convalescent home on May 31 to report on his return and come in for left nephrolithotomy later. He was readmitted on August 30. During the two months following his last operation, his condition had improved out of all recognition, and I had not the same aversion to subject him to operative interference as in the first instance. In September I did a left lumbar nephrolithotomy and removed calculi from the left renal pelvis, incidentally confirming the horseshoe kidney from that side.

In spite of his greatly improved condition after the first nephrolithotomy, the patient again exhibited considerable shock for some days after the second; then, as previously, improvement was rapid and the patient was discharged on September 26. Since that date I have seen him from time to time and he keeps well and is doing clerical work.

My first comment on nephrolithiasis is: what a marked difference there may be in any two cases in the constitutional disturbance presented. We have all come across instances of calculi, especially large ones, being found accidently in one or both kidneys, and yet the patient complained of little or no constitutional derangement attributable to their presence. In the case I have just related we have the other extreme, and the man had all the outward appearance of advanced tuberculosis, which has entirely cleared off since he was freed from the offending bodies.

The shock in this case was more than I have experienced before, and may be partly attributable to the extremely low

condition of the patient and partly to the horseshoe kidney. It is not unreasonable to suppose that manipulation of such must disturb nerve plexuses more than like manipulation of the normal kidney.

The difficulty of dealing with stones in both sides of a horseshoe kidney and in the lower pole led me to consider the advisability of performing the operation of severing the bridge of kidney tissue uniting the lower poles. In the case I have related, however, our first concern was to keep the patient in this world—to relieve him as speedily as possible of the incubus under which he was suffering. Now that his general health is good I am inclined to advise division of the bridge, so that each kidney can be more easily got at.

Right Renal Calculus.

E. C., an unmarried woman, aged 31, was referred to me by Dr. M'Call in November, 1911, on account of pain in the right loin and flank. It was aggravated by walking, ameliorated on lying; very much worse during the catamenia. Micturition not affected. Two months previously she had been operated on, on account of this pain (August, 1911), in one of the teaching hospitals, for appendicitis, but on getting about afterwards found her pain no better. She did not have a skiagram taken prior to the appendectomy. The locality of her pain suggested renal calculus, and I had her radiographed and now show you the result. You observe a very large shadow, and I may say the radiographic screen was even better as a diagnostic measure than the plate, and showed the blackest shadow of a calculus I have ever observed. The right kidney was palpable and also tender.

The patient except for the pain was well, and would have no surgical interference for six months. On May 23, 1912, I performed a right lumber nephrotomy and removed one large and one small stone. She did well and was discharged eighteen days later.

Three and a half years later (December, 1915), she came back with slight pain in the other (left) loin this time. I can find

no definite evidence of further calculi, and the radiographic report was negative. She is inclined to be neurotic, but I am keeping her under observation.

This case is alluded to mainly to remind you of the possibility, not a remote one, of mistaking renal or ureteric calculus for appendicitis. Had the patient been skiagraphed before the first operation, so very obvious a calculus could not have been overlooked. I like to have all such cases radiographed as a matter of routine. In my opinion radiography is invaluable as an adjunct—I repeat the word adjunct—to diagnosis of urinary calculus. My cases illustrate that a shadow in the course of the urinary tract is by no means necessarily a stone, and one must regard it only as a valuable physical sign.

On the other hand, there may be no X-ray evidence of calculus when such does exist—witness my case of horseshoe kidney, in which the first report was: "No X-ray evidence of calculi." This report, however, was due, I suspect, to some technical error; because a few weeks (May 11, 1915) later the report was positive regarding both kidneys; and, moreover, I had the stones skiagraphed after removal, and they threw a very decided shadow. In the hands of a skilled radiographer these two classes are, in my experience, quite the exception.

Double Empyema.

F. G., schoolboy, aged 12, admitted into Hahnemann ward on September 21, 1915, with history that he was taken very ill two days previously with embarrassed breathing and was straightway referred to hospital by his doctor. On admission, his pulse was 134 and temperature 103·4°F. He had had his tonsils and adenoids operated on at another hospital three days previous to the onset of illness.

On September 29, eight days after admission, some fluid was drawn by syringe from the left side of chest and showed pneumococci in pure culture.

On October 2, eleven days after admission, the chest was tapped but no fluid was withdrawn.

On October 16, twenty-five days after admission, signs of pleurisy right side at back. Left side again tapped and no fluid withdrawn.

On October 22, thirty-one days after admission, I was asked by Dr. Fergie Woods to see the patient with reference to surgical interference for empyema of left side, and suggested immediate resection of rib. This was done under slight chloroform anæsthesia after confirming presence of pus by withdrawing a syringeful. Two pints of pus were evacuated and a flanged rubber drainage tube left in the pleural cavity.

On November 1, forty-one days after admission, resection of rib was performed for presence of pus in the right pleural sac, which was much less in quantity than had been evacuated from the left side.

The tubes were worn until December 14, when both were left out and exercises commenced. The left pleural sac was thus draining for fifty-three days and the right for forty-three.

By the courtesy of Dr. Fergie Woods I now exhibit the boy to you. My object in bringing forward this case is to try and elicit your views on the post-operative treatment of empyemata of the pleural sac, and to hear any opinions as to what becomes of the empyema cavity.

Appendicitis Simulating Renal Calculus.

A schoolgirl, aged 13, was sent by Dr. W. P. Purdom, on November 24, 1915, with the diagnosis of appendicitis.

Seven weeks prior to admission she had had pain in the right side of the abdomen, accompanied by constipation and nausea. The pain was not localized to McBurneys's point, and there were no urinary symptoms. This attack cleared up in a few days, and she had two subsequent attacks in the following six weeks, and was then sent into hospital. When I saw her she was in the quiescent period and I found nothing very definite from examination alone on which I could make a diagnosis.

I had a radiograph done—this I now show you. You will observe the shadow in the region of the right kidney. It might be a renal calculus, and was so reported to me just as I was about to operate. However, with characteristic contumacy I went for the appendix, through a gridiron incision towards the anterior superior iliac spine. At first I could not find the appendix, but eventually discovered it lying in front of the right kidney, with a distended bulbous tip. I had, much to my regret, to spoil my gridiron incision by extending it considerably upwards in order to get access to the diseased organ. The patient made uninterrupted recovery and was discharged within three weeks.

I bring forward this case because the diseased appendix was demonstrable by X-rays, and reminds me of a skiagram Dr. Pritchard, of St. Leonards, possesses, which is the first I had seen showing the appendix; also because the skiagram alone have misled one to diagnose renal calculus instead of appendicitis.

Caseo-calcareous Gland Simulating Ureteral Calculus.

A Territorial, aged 26, was referred to my out-patient department by Dr. Hall Smith, on July 22, 1915. He complained of pain in the right flank and groin of some month's duration. He was told by a military surgeon, so he said, that he had a stone in his bladder, and he was granted leave in order to come to London and have the matter dealt with in a London hospital.

On examination, I found no particular resistance in the right iliac fossa—the muscle was not "on guard," but I felt a nodule like a plum stone in the course of the right ureter. The urine was normal and on rectal examination nothing abnormal was discovered. I had the patient radiographed and I now show you the plate. The radiographer's report was to the effect that the shadow shown as lying in the course of the right ureter was a ureteral calculus.

I operated on September 20, 1915, making a gridiron incision as for appendectomy, and found the appendix exhibiting evidence of chronic inflammation. The shadow you now see was caused by one of the lymphatic glands, through which the appendix area drained, having undergone caseo-calcareous degeneration. I could find nothing abnormal about the ureter, so, after removing the appendix and the gland, I closed the incision. Some of the other glands were to a less extent enlarged. The wound healed by first intention and the patient was discharged in ten days. He reports from time to time and has remained well.

This case shows how a caseo-calcareous gland in the region of the ureter may give rise to a diagnosis of ureteral calculus.—*The British Homœopathic Journal*, March, 1916.

EDITOR'S NOTES.

The Diagnostic importance of the Ankle-Jerk.

In the *Journal of the Royal Naval Medical Service* for April is a paper by Temporary Surgeon Hildred Carlill, neurologist to the Royal Naval Hospital, Haslar, on the diagnostic importance of the ankle-jerk. While it does not contain any new facts, it serves a useful purpose in directing attention to a reflex the significance of which is perhaps not so widely recognised as it ought to be. No examination of a nervous case is complete unless the routine includes testing of the Achilles jerks. They may be regarded as normally present, and their diminution or absence is always of pathological import. The localisation of the Achilles jerk is the arc from the fifth lumbar and first sacral dorsal roots, through the corresponding cord segments, and so by the ventral roots to the muscles concerned. Lesions on either the motor or the sensory side may interfere with the integrity of the arc, and hence reduce or abolish the ankle-jerk. Surgeon Carlill has examined some 1052 sailors, who considered themselves in every way healthy; in 15 cases one or other, or both Achilles jerks were absent. There is apparently to seven of these cases sufficient evidence to justify a provisional diagnosis of early tabes dorsalis. Among the diseases producing disturbance of the reflex may be mentioned injuries and primary affections of the calf muscles, the sciatica nerve or its branches to the gastrocnemius and soleus, the dorsals roots mentioned above, the cells of the ventral cornua of the epiconus (fifth lumbar and first sacral segments). In both systematised and diffuse lesions of the cord, provided the epiconus is in part involved, the reflexes may be in abeyance. Surgeon Carlill quotes a number of illustrative cases. In two of these he notes that with deep reflexes otherwise exaggerated on one side, from hemiplegia, the ipsilateral ankle-jerk was absent, but he does not offer any explanation of this interesting observation.—*Lancet*, May 20, 1916.

Nitrogen: its virtues and its vices.

Persons who talk of the importance of chemistry in this war are usually talking of one thing only, though they may not know it—and that thing is nitrogen. The chief chemistry of the war is practically centred on nitrogen. Recognising this fact, it is strange to think that we live by breathing an atmosphere containing 80 per cent. of this element which in certain combinations is dealing out death on an appalling scale in all the fields of action. There are practically no useful explosives employed in which the action of nitrogen is not concerned. Without its aid the great ships at sea could not be sunk, or innocent victims on land killed, or property destroyed by the aeroplane and dirigible; while it serves to mow down whole columns of men in the field, for rifles, howitzers, machine-guns, and grenades are all dependent upon, and made terribly deadly by, the offices of nitrogen. We every day pass on to our lungs something like 450 gallons of nitrogen per 24 hours, which would be enough to make 30 pounds of tri-nitro-toluol, or 40 pounds of gun-cotton. In our early training in the elements of chemistry we were wont to regard nitrogen as a singularly uninteresting gas on account of its negative behaviour. It did not burn like hydrogen, it did not support combustion like oxygen, and, in short, its presence was generally assumed because of its inactivity and because it did not directly respond to any test. And yet this element is the greatest of all as a munition power; it is hardly an exaggeration to say that applied nitrogen is going to be a factor in deciding the issue of the war. It is remarkable, also, that this element forms the central figure in the protein group or tissue-repairing material of our foods. To say that without protein we die, practically means that without nitrogen we die. The gas without positive tests is as necessary in one form for our support as in other forms it is ready to destroy us. Nitrogen's power depends in the first place on the fact that it carries in oxygen to compounds which are thus rendered explosive, turning all the elements into a huge volume of gas, itself being set free. The very inertness of nitrogen, or its objection to affinity, means that

on the least provocation it will easily release its partner oxygen, handing this over to the combustion of other elements present, with the formation of volumes of gases, the nitrogen returning to what is apparently its congenial condition, the free state. As a fertiliser in the soil nitrogen acts as a stimulant and supplies the necessary nitrogen to the plant. In other words, it is a plant food. Thus the remarkable thing about nitrogen above all other elements is its power to destroy life or to sustain it according to the associates with which it is in company. With certain accomplices it forms death dealing explosives, with others it becomes a nutritive material. It is the essentially romantic element, devil or god, according to its associations.—The *Lancet*, April 8, 1916.

Japanese Charms and Amulets.

Satan in the Middle Ages was often conceived of as a fool, who might be deceived by saints endowed with the wisdom of the serpent. He could be frightened away from a house over the doorway of which a holy object or form of words had been suspended, and from the human frame his onslaughts and those of his myrmidons, the evil spirits, might be averted by the use of necklaces or other charms. The same principle is still at work to-day in folk-medicine all the world over, though the spirits whom it is sought to deceive, avert, or exercise are more often physical than moral tormentors. In Japan the nursery is still protected from the inroads of measles and other infections by means of an inscription over the nursery door stating with the exquisite urbanity characteristic of our far Eastern Allies that "this child is not at home." As often as not the inscription accompanies a true amulet ("hamalet," Arabic for something suspended), which may either represent the absent child (who is really at home all the time) or some spirit more terrible than the unseen visitor. In the Wellcome Historical Medical Museum a most fascinating exhibition is on view, illustrative of "Japanese charms, amulets, votive offerings and objects of medical interest," among which these nursery notices occupy an important place.

One of the exhibits, for instance, is the inky impress of a child's little hand on rice paper, with words to the effect that the owner is gone away, and another delightful one is the carapace of a crab, painted with a horrid face, fit to terrify the devil himself, and accompanied by the same message. Akin to these notices are the charms embodied as toys. A yellow tiger with a wagging head is now said to be a toy, but anciently it was a form of exorcism against palsy and numbness of the limbs. It is a question, indeed, whether in rural Japan, away from European influences, this pictorial tiger is not still used to combat functional paralysis—in our own remote villages analogous charms to word off evil are in constant use, to the despair or the amusement of the educationist. Dyspeptics of the old school in Japan still place "the beckoning cat" beside them while they eat their curry or raw fish and rice. The cat sits on its hind legs, as cats do, but beckons amiably with a front paw, which is curled over its left eyebrow. Thus it has the power of drawing Acidity, a very terrible demon, out of the eater's body. More modern atheists tend to regard the beckoning cat as a mascot to be set up in a shop, like the decorated phallus set up in a less reputable *locale*, in order to draw custom. The moderns aver that the cat is a toy, but the Old Knowledge knows better. A war, indeed, seems to be covertly raging in Japan between the old-fashioned users of amulets and the exponents of the modern spirit. The modern make out that amulets are toys. Thus the goodly "large coloured toy" called Inu-Hariko, just as Thor's club was called Miolnur, is now described as "a ceremonial present." This is a crimson animal like an elephat, on the back of which are tied a wisp of hemp and a drum-rattle. Pregnancy charms are in great evidence in the Wellcome collection. A picture of Jisu, who resembles Buddha, is to be carried to facilitate childbirth, and among a set of charms for an enceinte woman is a strip of coloured paper to be worn in the pregnancy girdle. This last is known all the world over, and was familiar to the Greeks and Romans. The nuns of a convent in France at this day are said to send to pupils from their school about to be mothers a gay ribbon, inscribed with a prayer, which will ease the pangs of

labour. Military amulets are akin to pregnancy charms. The Belt of a Thousand Stitches, each of which must have been put in by a separate sempstress, was worn by a soldier in the Russo-Japanese War, who came through many battles unscathed. Akin to this, again, is the joint of bamboo, pierced with 100 holes, to keep away the hundred-day cough (whooping cough). The medical portion of this Japanese collection contains some 70 exhibits, from bulb and stem of garlic, to be hung above doors to avert infections, to the coins which prevent bed-sores when put secretly into a bed, or the "Dosha powder" which relaxes corpses. We suggest to those of our readers who are interested in ethnology, and especially the ancient medical learning, that they should inspect the collection.—The *Lancet*, May 27, 1916.

School Books and Eyesight.

A further report of the Committee of the British Association for the Advancement of Science has been issued* giving an account of the investigations of the committee with the intent to obtain an objective measurement of the gloss of paper. Hitherto we have had to be content with a purely subjective test, and such a method had to be varied with each individual; a highly sensitive subject found the reflection of a very little gloss on the paper prevented comfortable reading and was trying to the eyes, while another of more lymphatic temperament found a gloss tolerable that would have driven the other crazy. The committee report that glossiness of paper depends mainly on specular reflection—that is, reflection as from polished metals; such reflection is apt to interfere with binocular vision. The ideal surface for books would exhibit no specular reflection; all the reflected light would be scattered or diffuse reflection, equal in all directions and independent of the direction of the incident beam. In practice it is found that when the specular reflection does not exceed the diffuse reflection when the light is incident at 45 degrees, the paper is satisfactory; when the specular reaches 56 per cent. and

* London: British Association for the Advancement of Science, 1915. (Price 4d).

the diffuse only 4½ per cent., then there will be injurious glare, especially by artificial light. The apparaus devised by Mr. A. P. Trotter, one of the members of the committee, for the measurement of these qualities is ingenious in its simplicity. It is a clever adaptation of the principle underlying the photometer and the Wheatstone's bridge. A box about the size of an ordinary microscope case has a slot in the lid along which an electric lamp within the box can be slid. Just below the lamp is a screen which prevents the direct light of the lamp reaching the bottom of the box; at each end of the screen is a mirror set so as to reflect the light round the screen and illuminate one half of a hole cut in the bottom of the box. The paper to be tested is put beneath this hole. At the ends of the box, just clear of the mirrors, are two peep-holes fitted with double prisms; through these, the hole in the bottom and the paper to be tested can be viewed. By shifting the lamp from end to end a balance of the specular and diffuse reflection from the paper can be obtained, and the relation read off by the position of the lamp in the slot. The reading from one peep-hole can be checked by that from the other; both should agree in their proportions. It would be of interest if the committee would put a series of papers to the test and issue a table of results. The earlier reports of this committee, which dealt particularly with the print of school books, are exerting their effects upon printers and publishers. The Cambridge University Press have recently issued a new *Textbook of Arithmetic*,† by the Head Master and Assistant Master of the Royal Naval College, Osborne. The publishers call attention to the large type used for this book, which conforms to the standards laid down in the typographical scale of the British Association Report. They have further graded the type of the different parts of the book, using larger type for the earlier chapters which will be used by younger children than is necessary for the more advanced chapters for the use of the higher classes. There is, however, one defect in the get-up of the book: the paper is

† *Arithmetic*. By C. Godfrey, M.V.O., M.A., and E. A. Price, B.A. Cambridge: The University Press, 1915. (Post 8vo. up. 480; 4s. net.)

scarcely opaque enough to prevent the print of the reverse side of the page and also of the contiguous page from showing through to the page in use. This reduces the necessary contrast of print and paper, and renders the good type less legible. Also the surface of the paper is such that it will readily get dirty in the usage. We may commend the publishers for their attention to the typographical scale of the British Association, but the same report dealt with the density and surface of the paper. It is scarcely within our sphere to criticize the matter of a book on arithmetic, but we may call attention to a serious practical defect. A chapter is devoted to the subject of stocks and shares; it consists of two pages of explanation, two of examples, and two of set questions. The whole is inadequate, and if, it be considered worth while to include a chapter on such a subject in schoolbook—and we have no doubt it is—then it should be reasonably adequate. May be the inadequacy of this chapter is an indication of the general want of knowledge of professional classes on such matters, an ignorance which is to their serious disadvantage.—The *British Medical Journal*, March 18, 1916.

The Control of Malaria.

A conference, held in Sydney on January 21st to consider the best means of dealing with cases of malaria in soldiers arriving from New Guinea and other malarial regions in the Pacific, came to the conclusion (according to the *Medical Journal of Australia*) that anopheline mosquitos are not sufficiently prevalent in the greater part of the Commonwealth to make the risk of the spread of the disease from returned soldiers a serious one. It was considered that the epidemic spread of malaria is improbable, except in Overland Corner in South Australia, and in those areas where the disease already exists. It was recommended that all discharged soldiers now in Australia who have been infected should be concentrated in one place in order to go through a course of treatment. The United States Public Health Service, as the result of an investigation as to the prevalence of malaria in the South, has found that in certain sections 40 per cent. of the in-

habitants are infected. This estimate is based on 204,881 cases reported during 1914. The infection-rate among the white population was found to be more than 8 per cent., and among the coloured 20 per cent. A great reduction in the prevalence of the disease has been effected at thirty four places in nearly every State in the South. In some the incidence was reduced from 15 per cent. in 1914 to less than 4 or 5 per cent. in 1915. Over 2,000 anopheline mosquitos in malarious districts were dissected during the early spring months without a single infected insect being found; not until May 15th, 1915, was the first parasite in the body of a mosquito discovered. The Public Health Service therefore concludes that mosquitos in the latitude of the Southern States do not ordinarily carry the infection through the winter. This discovery, it is held, indicates that protection may be secured by treating human carriers with quinine before the middle of May, thus preventing infection from chronic sufferers reaching mosquitos and being transmitted by them to other persons. It is recognized that the eradication of the disease depends on the destruction of the breeding places of the mosquito, and a campaign with that object is recommended. —The *British Medical Journal*, April 15, 1915.

The Multiplying Medics.

By KENNETH MACGOWAN.

One little doctor
  Looks you through and through,
Can't diagnose your case.
  Then there are two.

Two little doctors,
  Failing to agree,
Call a consultation.
  Then there are three.

Three little doctors
  Poke you o'er and o'er,
Send for a specialist.
  Then there are four.

Four little doctors
  Wonder you're alive.
Another brings a stomach pump.
  Then there are five.

Five little doctors,
  Trying fancy tricks,
Order in an alienist.
  Then there are six.

Six little doctors
  Preparing you for heaven,
In comes a D.D.
  Then there are seven.

Seven little doctors
  Decide to operate,
Call in a surgeon.
  Then there are eight.

Eight little doctors
  Think it's in your spine,
Ask for a neurologist.
  Then there are nine.

Nine little doctors,
  All of them are men,
Send for Mary Walker.
  Then there are ten.

Ten little doctors,
  Standing by your bed,
Come to a decision:
  Find that you are dead.

—*Collier's Weekly.*

The New England Medical Gazette, May, 1916.

CLINICAL RECORD.

CURE OF A CASE OF CANCER OF THE STOMACH.

By Samuel King, A.B., M.D., Warren, Pa.

Mr. Philip W——, aged 35, of this country, came to my office three years ago. He stated that his aunt, whom I had treated for an epithelioma of the face, had asked him to call and consult me in regard to a growth which he had in his stomach. I drew from him the following history of his case:

He stated that for several years he had been working in the oil fields, but for two or three years past had been troubled a great deal with what he thought to be stomach trouble or indigestion. Three or four months before calling on me his condition grew rapidly worse, and at intervals he would have attacks of severe gripping pains extending back to his back, which seemed to be more than he could endure. His home physician pronounced his pain gall-stone colic, and another physician confirmed or agreed with the diagnosis. Both physicians advised an operation, and he went to the hospital where an operation was performed, but told me he did not know whether gall-stones were removed or the doctors had been mistaken. At any rate the pains and disagreeable symptoms of which he complained were not relieved by the operation, and one of his physicians advised him to consult a leading surgeon in Cleveland. The Cleveland surgeon diagnosed his trouble as a growth in the stomach but did not advise an operation for its removal, stating he did not think an operation would prolong his life. He returned home when his physician prescribed morphine for the pain and some tablets to aid digestion.

At the time he came to me, he had a gnawing, heavy pain constantly, but immediately on taking food the pain was so severe that he often threw up his meals before he was half through eating. The pain was a twisting, cutting pain, radiating in different directions, and especially back to the spine, which at times was most severe. He also had an intense burning in

the stomach like coals of fire, and his mouth filled with a sour fluid that set his teeth on edge. To control his pain and make life endurable he was taking one-half grain of morphia every three or four hours. He was very weak, emaciated and sallow, and had lost rapidly in weight.

On examining the region of the stomach, a growth could be easily felt near the cardiac end. It produced a slight elevation which was very tender to the touch: in fact, he could not touch it. It had a base of over three inches in diameter, hard and irregular. The pulse was weak and rapid, and the tongue showed a dirty brown coating. He was an inveterate cigarette smoker, had had trouble with his wife, who finally left him. This last stated fact had caused him a great deal of worry and anxiety, and I simply mention it because worry is very favorable to the production of cancer; in fact, worry and cancer go hand-in-hand. And finally he had been a drinker.

TREATMENT.

I contend that cancer in the stomach or in any part of the body is nothing more or less than the out-cropping of a uric acid condition due to an overloaded blood; that cancer of the stomach is a uric acid tumor having its seat in the walls of the stomach which have been weakened by a long period of abuse and indigestion, which, when it breaks down, is nothing more or less than a uric acid ulcer. A causeless tumor never existed or continued to exist, when the cause of its origin and growth had been removed by the proper diet and remedies; and yet I realize that there comes a time in the growth of every malignant tumor or ulcer when no remedy selected to meet the indications seems to produce any apparent result. But that there are reasons for these failures to which I believe I can lend a little light in some later articles on the subject. To substantiate the above I would like to add the following clipping from a New York paper.

London, Nov. 11.—Seven patients suffering from cancer have been cured "by assisting nature's efforts," says D. Robert Bell, head of the cancer research department of the Battersea General Hospital.

"We have been able to demonstrate beyond doubt," Dr. Bell added, "that the healing powers of nature, if sufficiently assisted by regulating the diet regimen of patients, together with the administration of therapeutic agents, has proved, in many cases, quite competent not only to overcome the disease, but to bring about complete recovery."

Therefore, to act upon the tumor I gave five drops of *Acetic acid* ix dil., and three grs. of the *Fluoride of calcium* 6x, once in four hours because *Acetic acid* has a tendency to dissolve the uric acid cell and the *Fluoride of lime* has a tendency to soften and dissipate hardened knots, glands, kernels and tumors in all parts of the body. Also for the catarrhal condition present and its tonic effect upon mucous membrane, I gave twenty drops of colorless *Hydrastis* and three grs. of *Nux vomica,* 4x once in four hours. But as lime salts are neutralized by acids I gave the *Calcium fluoride* and *Hydrastis* together and the *Nux vom.* and *Acid* together, alternating the two combinations which would make them two hours apart.

For burning pain in the stomach I gave three drops of Fowler's solution once in three hours until this symptom had disappeared which in this case took nearly two weeks.

For nervousness, melancholy and discouraged feeling I gave three grs. each of *Kal. phos.* and *Silica* once in three hours. These were continued for one month or more.

For the hæmorrhage from his stomach and flatulence of both stomach and bowels I gave him *Carbo veg.* 3x, three grs. once in two hours.

For the griping, cutting pains in stomach and bowels *Dioscorea* was given, one teaspoonful with about five grs. of *Magnesium phos.* 3x in one-half cup of hot water and sipped But at times during the first two weeks of the treatment I had to depend upon one-half to one tablet of Abbott's H. M. C.

This line of treatment was kept up for three months dropping out certain remedies when the symptoms calling for them no longer existed. During the last month of treatment, in addition

to the *Acid, Hydrastis* and lime, he was given the triple arsenates with nuclein, and to clear up his complexion and as a glandular alterative, the syrup of *Phytolacca.*

Locally, across the stomach and especially over the region of the tumor, I ordered, applied as long as he could, conveniently each day, a compress wet with a solution of epsom salts or acetic acid 1x, and I preferred him to use each of these compresses for a time each day, which he did. The epsom salts solution dissolves the urates in the skin and in the tissues beneath and also opens up the pores, and, therefore, purifies the blood and increases the circulation, while the acid acts upon the tumor locally in much the same way as it does in the stomach. This was continued until the pain was gone and the digestive powers of the stomach had much improved.

DIET.

He was ordered to take nothing into his stomach but ice cold buttermilk and milk until he was to keep warmer foods down, which was for several days. Then followed malted milk, Eskay's food, graps nuts, over which was spread pineapple juice, fruit of all kinds except bananas, and many of the vegetables and soups.

I forbid coffee, tea, meats of all kinds, eggs, fried articles of all kinds, fats and greases, alcohol in any form and morphine.

The patient gained in strength and weight, and the last I heard of him was three or four months ago when he was perfectly well and was working on the street car lines in Jamestown, N. Y.

And in conclusion I would like to state that this man had been condemned to die by good physicians, that he himself had given up, and only came to me as a last resort, that he had no money, not even enough to pay his car fare, and this I sometimes paid. If he got well and was able to go to work again he was to pay me for my time, money and treatment all of which I furnished. He is alive and well to-day, and has never as much as thanked me for what I did. I make this last statement for the benefit of

those who may have occasion to treat some of these cases of cancer; that you will find many patients like the one whose case I have just described. This is due, in some cases by the doubt and remarks passed upon the case by the home physician who has been taught that such conditions are incurable, and he ridiculed the patient for even believing that he had been afflicted with cancer and was now cured, and rather than believe or admit that any physician outside of the allopathic school can and is curing cancer along rational and humane lines, he will admit that he must have been mistaken in his diagnosis. Just one example:

A man in a nearby town could get no help from his home physicians and was advised by them to consult two specialists in Buffalo. Both agreed that he was in the last stages of cancer of the stomach, and told him in his own words to me: "We would not be surprised if you did not live to get home." He did live to get home and to call on me the next day. He is alive and pretty well to-day after five years. A year or so after coming to me, I asked a man in his neighborhood who was in a similar condition to call on him in order that he might verify my statements in regard to my experience and treatment in his particular case. The former patient was very indignant, and told the gentleman that he did not know that he had ever had cancer of the stomach, and, furthermore, he did not approve of my sending people to him. This was the first and last patient sent him.

The treatment in these cases is that laid down by Dr. Eli G. Jones.—The *Homœopathic Recorder*, April 15, 1916.

CASE REPORTS.

BOSTON UNIVERSITY SCHOOL OF MEDICINE.

Professor Frank W. Patch submits the following cases which have been reported to the Department of Materia Medica of Boston University School of Medicine by upper class students working in the Out Patient Department.

The quality of the work both in the taking of cases and in the prescriptions is an interesting commentary on the uniformity of results in the application of the law of similars whether applied by a beginner or a master.

It must not be supposed that the whole history as taken is here recorded, but only those leading symptoms which led to the indicated remedy.

Case I. Woman, 30 years of age.

History: Father dead; mother well; four brothers, three sisters, all well.

Had measles at twelve years. Always well, but not strong. Sedentary habits; eats simple food; no tea nor coffee; Began menstruating at thirteen years, always regular, no pain.

Present symptoms: For over a month has had much gas in stomach, no pain, only feeling of fullness, frequent belching with no relief. No headaches, never nausea nor vomiting. Feels hungry but can eat only a little, as food causes feeling of fullness; wants clothes loose around waist.

Daily bowel movement: abdomen somewhat distended after meals but no pain, only soreness, tenderness; relieved by passing gas; worse from 4 to 5 P.M.

Lycop. 3x prescribed.

Patient seen again after two days; much improved. After one week medicine stopped, as patient felt well. Patient came again after five days complaining that gas was troubling her as before. Lycop. given same as before, for ten days. Saw patient one week after had stopped Lycopodium; she seemed quite well.

Case II. A man about 40 years old; about 6 ft. tall and weighing 160 pounds; Occupation, clergyman; single.

(Chest involvement.)

He suffers with sense of constriction of the chest, especially at night. There is considerable thirst; mouth dry and appetite poor. Vomiting not incessant but occurs shortly after drink. He likes cold drink.

The patient is disinclined to talk and somewhat irritable. The cough dry and with scanty and semi-solid sputum.

Treatment: Phosphorus 3x every half hour. Patient relieved in less than two days.

Case III. Jan. 4, 1916. Man; Age 42; born in Nova Scotia; has resided in the States for five years. Occupation, farming.

Father died of tuberculosis at age of 30 years. Mother still living, 65 years old.

Patient had measles when seven years old.

Habits: Drinks coffee, little alcohol and is a light smoker.

Present symptoms: Dry cough, voice slightly affected; thinks he has a sore throat; feels a tightening in the chest; worse in the evening. Vomited once or twice; does not like warm foods but likes to take cold drinks and foods. Bowels occasionally constipated. Has lost fifteen pounds in six months.

Patient is tall, poorly nourished, narrow chested. On percussion there is dullness in upper posterior surface of left lung. There are some fine rales. Heart neg.; liver, spleen, etc., neg. Pulse 80; Temp. 99.

Diagnosis: Tuberculosis of left lung.

Presc., 'Phosphorus 3x every three hours. Hygiene and diet corrected.

Jan. 11, 1916. States that the cough is not so severe, voice slightly improved. Thinks he feels better.

Prescription repeated.

Case IV. Boy 16 years old, student who worked quite a lot mentally. He complained of a gnawing pain in stomach, and opening and shutting sensation in brain especially in occipital region.

Did not sleep very well and experienced a muscular soreness. Better when in a warm room. There was some photo-phobia and pain in eye balls.

Cimicifuga 3x one tablet every three hours was given, and the condition was relieved.

Case V. Woman 60 years of age, presenting a dirty, nasty appearance; clothes shabby, stained and filled with grease spots. Skin presented an oily look with foul smell; bad smelling feet.

Complained of having early morning diarrhœa, driving her out of bed. Stools were loose and watery. Complained of an "all-gone" feeling in stomach about 10-30 to 11 A.M.

Burning sensation in top of head; this condition had lasted for a period of six to eight weeks before I saw her.

Presc., Sulphur 30x, one tablet every hour for four days, the second week one every two hours, and the condition cleared up in one week with no further disturbance.

Case VI. Dec. 28, 1914. Mrs. L. B. H.

Past history: One child living (5 yrs.), well. One miscarriage, one blue baby, one abortion; Rheumatic fever 18 years ago; Accident, struck in back with brick. Carried arm in sling one year after accident. Hysterical; constipated, takes laxatives. Two weeks ago had a severe illness; tonsillitis (?) Temp. 104. Culture neg. for diphtheria.

Present symptoms: Hands, knees and back of neck swollen and tender. Cervical glands enlarged. Pain in hands and back of neck; cannot turn head around without severe pain. Restless; dreads changing position but is better moving about. Better from warmth.

Rhus tox 3x given.

Dec. 29, 1914. Rested well until 11 P.M. Was wakened by severe pains first in hands, then in neck. Swelling all gone

but cervical glands quite prominent. Temp. 99, pulse 93. Heart irregular. Mitral murmur not clearly transmitted.

Presc., Caulophyllum 3x (30 drops in a half glass water tsp. every two hours).

Dec. 31, 1914. No pain when still or from moderate exertion. Wants to stretch, but this brings back the pains. Ankles slightly swollen (this had not been investigated before). Temp. 98·6; pulse 8. No medicine.

Jan. 2, 1915. Feels well. Discharged.

In addition to the above treatment the patient's joints were well wrapped to keep them warm, her diet was restricted, meat excluded and fruit and water given in abundance.

The case proved to be one of post-scarlatinal arthritis.

Case VII. Woman, 43 years of age; Married: Weight 97 lbs. (has weighed 130 lbs.); Dark hair; muddy complexion; slim, straight and angular build; Has longstanding pulmonary tuberculosis of fibrinous type. Right lung much involved and contracted; heart displaced to right about two inches; some morning cough but not very severe. Appetite and digestion were usually good; previously constipated but entirely corrected by diet and exercise. Has gained 12 lbs. in weight in past four months.

Had ordinary diseases of childhood; typhoid fever at about twenty years; One child, difficult delivery (forceps); lacerations, ultimate complete recovery; history of a curettement about six years ago; flow established at fourteen years, somewhat irregular until married, afterwards approximately normal.

Present symptoms: Gradually increasing menstrual difficulty with each period. Marked aggravation of all symptoms a week before and continuing for week after period (during past year).

Mental: Agreeble yet rather easy to take offense and to form dislikes; like company; depressed during menses; weepy tendency, ameliorated by cheerful company and conversation. Easily influenced.

Head: Headaches of heavy, throbbing type, especially in temporal and frontal region, during menses, apt to be continuous and quite distracting; occasionally has slight vertigo upon rising.

Tongue: Apt to be coated slightly (white); breath a little foul.

Stomach: Appetite and digestion usually good but much impaired during menses; feeling as of "lump in pit of stomach" —a "bearing down feeling"; quite distressing.

Abdomen: Occasional slight distention; occasional flatulence but not great; not constipated at present.

Pelvic: Heavy, bearing down pains with an all-gone feeling; weakness (excessive) in back, desire to lie down and keep quiet (headache also). Considerable leucorrhœa, only slightly excoriating. Scanty flow.

Treatment: Pulsatilla was given during two periods, with marked relief of all symptoms. During the next period the symptoms came on as usual. Pulsatilla was given with amelioration of the head and gastric symptoms but the pelvic symptoms continued and increased, viz., excessive weakness in back, heavy, severe, dragging down pains radiating from the loins. Pains shooting from the vulva to lumbar region, sharp and excruciating,—a feeling as if everything would be dragged out of the vagina, must lie down and "keep tight." The mental state became more irritable and less responsive to persuasion.

Sepia was substituted for Pulsatilla. Marked relief followed in twelve hours; at the end of twenty-four hours she expelled a clot; a second clot was expelled at the end of forty-eight hours; this was followed by further relief and recovery from the period in about ten days.

Sepia was continued in reduced doses during the following interval. With the approach of the next period it was given in increasing doses, with the result that the patient had a period of about six days with little discomfort and few symptoms.

Case VIII. Girl, aged 19, was taken sick on Saturday morning; general malaise and headache all day. Felt hot; slight soreness of throat on swallowing. No history of exposure.

Throat red and dry; Tonsils inflamed;

Skin hot, dry and burning;

Temperature 103·2; *Pulse* 96; *Respiration* 21.

Patient very restless and nervous; though she was going to have pneumonia.

Aconite was given on Saturday night; Sunday morning, throat red and dry; slight irregular, yellowish-white deposits on left tonsil, in nature of film, easily removed; bad taste in mouth and foul odor of breath.

Temperature 101·6; *Pulse* 84; *Respiration* 20.

Diagnosis.—Follicullar tonsillitis.

Treatment.—Proper diet and hygienic regulations; Merc. bin. 3x every two hours.

Patient improved. On second day *temperature* 98, *pulse* 76, *respiration* 19, and patches on tonsil had almost entirely disappeared. On third day everything normal and patient was up, appetite returned and case discharged.

Throat was washed with a gargle of Hydrogen peroxide and water equal parts.—*The New England Medical Gazette*, May, 1916.

Gleanings from Contemporary Literature.

ALCOHOL IN ITS RELATION TO THE HUMAN BODY.

THE PSYCHOLOGIC INTERPRETATION OF ALCOHOLIC INTEMPERANCE AND ITS PHYSIO-PSYCHIC TREATMENT.*

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(Concluded from p. 264).

By way of introduction to the theme that has been assigned me, I beg your leave briefly to describe the weapon with which I strike at the physiopsychic complex involved in every case of alcoholism.

There exists in human beings a mass of latent unused power—a reserve fund of energy, or capacity for performing work, which is applicable to emergencies, to extraordinary demands on the fortitude, exalted control, innate aptitude, or regenerating faculty of the individual. It is this power that may be incited to control the psychic elements in all diseases, and so effect the cure of those that are functional and the alleviation of suffering in those that are organic. It is this power that commands the output of thought, the projection of genius, the material expression of all that is best in the man. It is this power which, dynamically directed and applied, regenerates the outcast, sobers the drunkard, rescues the drug-fiend, restores to normal thought and feeling the distraught and suicidal, the perverted and the obsessed.

Its expression implies the existence of a personal, immaterial, intelligent element in which it inheres. Something lives and rules outside, and yet pertaining to the man we see and know and associate with, that conditions his intellectual and moral expression and controls his very will. And this something is other than God. It is variously known as the subconscious mind, the sub-

* Read before the American Medical Society for the Study of Alcohol and Narcotics. Washington, December 15, 1915.

liminal self, the superior spiritual personality. Granted supersensible power immeasurable and universally applicable—accepted it latent residence in the superior cosmic human self, how is it to be exploited? How can this abeyant efficiency be harnessed and made available in the work-a-day world? The answer is, through suggestion, which is nothing more than an earnest, straightforward, dynamic appeal to the higher self. The object of suggestion is to establish self-control in physical, mental, or moral relaxation; to impart pluck, push, nerve self-reliance to the mortal mind; to strengthen the will; to bring into personal touch with the truth, which always emancipates. Suggestion, in other words, makes efficient, and efficiency in a state of perfect action is happiness.

There is no subjection to the will of another in psychotherapy. Nobody but a fool would submit to such treatment, were this possible; and nobody but an unprincipled operator would practice, even for the relief of suffering, a method that makes a fellow-being his automaton. My subjects do what I urge them to do, *not because I urge them*, but because they are made clearly to see that the course suggested conjugates with right, truth, expediency, necessity.

One of the most important applications of psychodynamics is its combination with rational physical attention in the treatment of drink and drug habits. The results here obtained are without parallel, dependent as they are on the automatic operation of a superphysical control rendered active by a resistless appeal. The drink and drug cures so extensively advertised fail utterly to impart the great essential to radical regeneration and lasting abstinence—viz., spontaneous undesisting moral sway. They evoke not those forces of the soul that are a thousand times stronger than appetite or desire. Hence about 70 per cent. of drinkers who seek relief at the sanatoriums are sobered only for a time and sooner or later relapse. The drink habit cannot be cured by nauseating the victim with lobelia, purging him with drastic cathartics, blinding him with belladonna, or vomiting him with apomorphia. Such treatment creates a revulsion in the patient. He soon recovers from the effect of the physic used to find his craving unchanged and his powers of resistance as feisonless as ever. *Drug cures leave the moral nature uninfluenced.* Dr. Partridge of Clark University convincingly contends that no drug can reach the heart of the intoxication impulse.

To all such treatment, which turns absolutely on the faith of the patient how incomparably superior must be that which enthrones the image of the Eternal in the man, the god part which stands behind that faith and makes it possible. This elevation of the Ego to sovereign and consummmate power is what exalted suggestion accomplishes. In the speaker's experience, covering 1,200 cases of alcoholic inebriety, and according to reports in foreign medical journals, at least eighty per cent. of those who accept it may be saved; and if all who seek transfigurement could be persuaded to carry out unremittingly the directions given until the damage done the brain should be repaired, that percentage might be raised to 100. Of the 1,290 cases treated psycho-vitally by me, 20 per cent. seemingly failed to respond. Of these a number cannot be traced; a number indifferently submitted to one or two treatments out of deference to the entreaties of friends, and hence there was no objective self-surrender; a few, through their excesses, had entered the syndrome of alcoholic dementia; some were society women, who, in my experience, are almost without the pale of hope. On the whole, however, in no other condition that I have been called upon to treat by suggestion, am I warranted in saying to the sufferer: "If you sincerely desire to be cured of this malady, and will carry out my instructions faithfully for a year, you can be cured beyond a peradventure."

The drink habit is growing, especially among city women, from shop maid and *nymph du pave* to the pampered dames of upper society. The punch bowl figures at functions, and proud-pied belles dip freely therein. Cocktails and highballs are everywhere on dress parade, and the wanton cordax has been revived by dance-maid, up-to-date Bacchantes amid the hock-tide familiarity of the roof-garden and the misnamed the dansant. Girls representing good families, conspicuously made-up, are not missing from the throng. Debutantes, not necessarily of the fast set, unblushingly assert a right to drink wine and smoke cigarettes at luncheons and levees, at high-priced cafes and in the corridors of the hotels; and not a few of this class, as well as y ung married women, have been brought to the writer's office in a state of intoxication. Such has become the vogue; and, worse than this, girls in their teens see no impropriety in drinking publicly with men companions. A few

years ago, a woman with a cocktail before her amid such surroundings, polluting the air with tobacco smoke, would have been set down as a cyprian. The abstinent, unobtrusive young lady of the past generation is giving place to the coarse boisterous, immodestly attired bon-vivant, controlled by unworthy impulses, and wholly unfit to fulfill her function in the community as an inspirer to meritorious action or her function in the home as a character-former, a wife and a mother. Verily, the *beaumonde* reflects a piteous state of preparedness for combat with the forces of evil that threaten to disrupt society. Verily the national force that is wasting to-day in America is woman; and she who prostitutes her obligation to her sex in a life of self-indulgence and demoralizing example should be brought to her senses by the thought that no nation can be truly great in which the rights of woman are not deservedly upheld, and her refined intellect is not respected as a directing agency and an impelling power.

What has been said is germane to the attitude of the well-to-do classes, for with the great mass of working people in the cities, the habit of drink is noticeably on the wane; and the saloon-keepers who have long absorbed a generous fraction of the laborer's hard-earned wage fear for the future of their nefarious business of "swapping the souls of men" for mammon. The poor or moderately salaried man is not only developing a knowledge of the perils of alcoholic indulgence through the strenuous efforts of both Catholic and Protestant educators, but he recognizes the necessity of economy, and has come to appreciate the superior attractions of the photo-drama. The moving picture-show is the great adversary of the saloon. In its comfortable parterre, a man may be entertained with his family an hour or two for less money than he would naturally spend in the card rooms that figure at the rear of every bar. These clubs of the poor, where the man of labor and the youth of the store pass their evenings in drinking and card playing, are dehumanizing our brothers of the tenement, aiming to destroy their capacity both for conferring and enjoying domestic happiness. The moving picture show offers a form of instructive entertainment that is cheap enough to be within the reach of all working people, and popular enough to drain the lounging-rooms of the cabarets. The saloon is out of step with the times.

But independent of the contingent of working people who are abjuring alcohol in the cities, the prevalent wholesale addiction to the use of stimulants—with its accompanying degenerations of organs; its pernicious influence in the causation of pulmonary disease; its marked action in increasing the mortality rate in the case of all diseases, about 15 per cent. of all deaths being due to such action, directly or indirectly; the part it plays in the induction of insanity, standing as the greatest single independent cause of mental downpitch; and its tendency to transmit to offspring not only epilepsy, deaf-mutism, and mental enfeeblement, but marked criminal propensity—is assuming proportions so appalling that it may justly be regarded as perhaps the greatest existing menace to American institutions.

The opinion of the medical profession in regard to the use of alcohol as a beverage and a therapeutic agent is distinctly unfavorable to-day. Physicians look upon it as a protoplasmic poison, and are advising against its employment where it was once warmly recommended, as, for instances in nervour depression, dyspepsia, insomnia and tuberculosis. We now know that alcoholic drinks interfere with digestion, predispose to cardiorenal and pulmonary troubles, and impair the elimination of toxins created in the body which are the cause of gastric acidity, sleeplessness and general neurasthenia, as well as of high blood pressure and premature arterio-sclerosis. Thus the use of alcohol indirectly contributes to the development of a form of arterial degeneration designated as hardening, which is directly due to auto-intoxication accentuated by the ingestion of this poison. The majority of people overeat and under exercise. Sixty per cent. of Americans work indoors at sedentary vocations and these drink moderately as a habit, and oversmoke as well, in response to the demand of the system depressed by a superabundance of food that cannot be disposed of, and of unnatural work that keeps up the demand. What these persons drink to reinforce nervous energy is itself a most dangerous compound made of crude grain or potato spirits, or fusel oil, and various "essences" manufactured in laboratories—a compound sixteen times as deadly in its effects on the brain and other organs is as ethyl alcohol in pure whisky. And the beer and ale of this country all contain sulphurous acid and other adulterants, much of its preservatives, rendering it antagonistic to digestion

which is form of fermentation, and constituting is a kidney and liver irritant which has to be reckoned with by the doctor and is taken into serious consideration by life insurance companies.

In spite of these accepted facts, drinking goes madly on. A discussion of the psychology of the habit would seem to imply a presentation of the various reasons advanced by intemperants for their addiction to "the Juice divine" (Rubaiyat).

Some drink to hide conditions that mortify, worry, depress, or agonize—business entanglements, loss of wife or finacee, blood-guilt. Like Omar Khaiyam, they drink inconsolate, not for pleasure or profligacy, nor to renege religion and good morals, but solely to drown care and escape from themselves. How often it has to be demonstrated to these deluded patients that obscuring conditions does not alter them, but merely renders the dupe less capable of coping with them. "To drink my wine and take my pleasure," said the Persian poet, "that is how I live. To care no jot for heresy or orthodoxy, that is my creed." Yet heresy and orthodoxy continue to exist, and the man's responsibility is none the less. Many men drink exclusively from habit and not from desire for intoxicating effects. Many again plead business necessity; others, lowered nerve tone, and whip themselves to greater effort, forgetting that in the lash of the whip is hiddon a scorpion's sting. And some fools who have been cured touch, handle and taste in cold blood to see whether they really are cured, often with disastrous consequences that are likely to follow playing with fire.

A popular fallacy with the alcoholic is the progressive conviction that, in consequence of a long period of good behavior, he is entitled to a spree. This applies to patients who are willing to take a six months' voyage on a sailing vessel innocent of liquor, or be interned in a sanatorium, perfectly happy and apparently without desire, but living on the expectation of "going on another whizzer," as one patient denominated it, as soon as the ship docks or the sanatorium doors are unbarred.

Many drink in spirit of conviviality for the frolic of it, on the principle that mad men only scorn the cup. But rendezvousers coochee the weaklings to periodical debauch. But no one cause explains all drinking. Perhaps the dominating impulse among intoxi-

cation motives is the desire for abandon, ingenital in every human being, that finds vent a felicitous season either in legitimate or illegitimate diversions. Some turn to wild nature and work sedulously for eleven months in anticipation of one beneath the branch or by the stream that chatters through the meadow—some to the ball games or golf links, or the voyage on a favorite yacht. This tendency to dissipation was conspicuously exhibited in the Elizabethan period by the great thinkers of the age who descended at times from their intellectual thrones at Oxford and Cambridge to debauch themselves in the moral mud of London. I once took to task a Boston clergyman of note, my angling companion, for profanely deploring the escape of a large trout, and was told by way of excuse that the utterer of oath was on a moral vacation. Similarly, multitudes of periodical drinkers abandon themselves at convenient intervals to moral vocations, whose mental delights they color with alcohol amid the psychological stimuli of a convivial environment.

Such is coney-caught human nature; and these are the psychic causes of alcoholic indulgence that an observer through many years of study has inferred. In conflict with the variform psychology, drugs are powerless. Objective entreaty, affection for wife and child, business interests, impending breakdown and threatened dementia—all take the foil in impotent protest. As the causes are mental and it is the mental effect the drinker seeks, the disease must be grappled with through mental instrumentalities. And there is nothing in the several psychological attitudes that offers the slightest obstacle to the currents of soul power when undammed by dynamic suggestion. The physical effects, the ravages of the poison, demand for their removal the intelligent and fearless application of remedial measures that long experience has provod to be operative. The drunkard temporarily cured of his thirst is not, in a rational scheme of treatment, to be turned loose into the world handicapped by toxins, crippled organs, or shattered brains. Months may be required fully to repair the damage inflicted and panoply the drinker against all danger of physical temptation. It cannot be done in days, as a hundred and one enthusiasts advertise. There is a great difference between sobering a drinker with cathartics and permanently curing him.

It has been shown that abundant adequacy exists in the man to any and all abnormal craving of his objective nature, and that this

dormant power may be awakened and exploited by suggestional appeal. The suggestions given in drink habit cases must be iconoclastic and uncompromising, for radical cure depends on change in the mental state.

The patient is conducted into the subliminal sphere, and then assured that, in accordance with his own desire, he has lost all craving for stimulants; that alcohol in any form is a virulent poison, and, as a safeguard, that he cannot swallow it, cannot carry the containing glass to his lips. The society of dubious trencher-friends is tabooed; the pleasures associated with drink and the glamour of the bar-room are pictured as meretricious and placed in vivid antithesis to the chaste delights of home life. The physical, mental, moral and economical bankruptcy that accompanies intemperance is held up with realistic cogency before the view of the sleeper, and he is forced to the conviction that begotten of this apprehension has come into his soul an abhorrence for drink and all that it stands for. He realizes presence of efficiency within him adequate to the enforcement of radical abstinence as the principle of his life; and he is rendered insensible, for the future, to any such combination of desire and opportunity as has usually constituted temptation. So he is constrained instantaneously to scorn recourse to alcoholic stimulants for any reasons, and to depend exclusively, under mental or physical strain, on the units of energy legitimately manufactured out of nutritious food, non-intoxi- cating drinks, air, exercise and sleep.

Constructively, the sub-personal mind is then directed to the occupation or the diversion, or both, as circumstances suggest; the idea that better work can be done under the influence of alcohol is dispelled; the nervous suffering and dangers that usually wait upon sudden abstinence are stood abeigh; and a career of wholesome activities and satisfactory success is imagined as the legitimate result of the abandonment of the compromising habit. The patient is left asleep an hour or more in the atmosphere of these convictions.

Your speaker has treated in this way persons who came to him unwillingly, who entered the sleep reluctantly with pronounced mental reservation, even men who defiantly sneered at his proffers of help. In many such cases, he has overridden a righteous impulse to eject them from the office, placing love for the sinner before hatred of the sin, has brought the subject into his own presence, made him

aware of his obligations with his power to meet them, and disclosed to him an earnestness and sincerity of purpose in the effort at reclamation. Such a patient generally emerges from the first sleep, always from the second, a changed being and happy in the change. The surly ruffian who had to be handled with the utmost finesse, is transformed into an affable and appreciative gentleman.

A psychological explanation of the difficulty experienced in regenerating certain persons is to be found in a change of personality in the subjects under treatment, with an accompanying change of behavior so marked as to intimate that a single organism is the abode of two distinct selfs. In offering suggestions, I have sometimes been interrupted by an alternating phase of the personality addressed, which replied to my impulsions in daring contradiction or threw the subject into a convulsive tumult. Two young women came to me last spring to be cured of alcoholic intemperance. Though only in the thirties, both had served a ten years' apprenticeship to excessive indulgence and both had seriously injured the brain. To each was given in a state of perfect suggestibility the uncompromising suggestion that whisky thereafter would be a deadly poison and its ingestion would be followed by vomiting and serious illness. As a rule, women who drink are more unreasonable than men, and more susceptible to the dictation of alternating phases. Both these patients, under the pressure of moral dejection, played the jekyl and Hyde act, both became dipsomaniacal at the bidding of a rebellious self-fraction, and both paid the penalty of the outraged suggestion above, through the active protest of an all-powerful, otherwise cohering personality. One reported at my office in a state of collapse, and was interned and cared for by my nurse. The other lady after drinking a half pint of whisky, was similarly affected at home, with the addition of lancinating pains over her whole body. She thought she was at death's door, sent for me, and was surprised to learn that she could not trifle with a suggestion accepted by her higher self without disastrous consequences.

The rational treatment of alcoholic addicts has been characterized as physio-psychic. This means that it does not lose sight of the necessity for physical repair. It recognizes the interdependence of brain and psychic offices, for in the light of modern science, "bodily and psychic functions are only different forms of the brain and nerve

activity." The successful carriage of the suggestions offered depends then on the integrity of these organs.

The pathology of alcoholic inebriety may not be discussed here. Be it understood, however, that the use of alcohol, at first stimulating, tends soon to diminish physical force as well as enfeeble mental faculties. Every debauch means a lowered sense tone, a partial functional paralysis of blood vessel sheaths somewhere or everywhere in the body, a deranged circulation with diminished absorption of nutrient substances and concomitant atrophic changes in cell protoplasm. Alcoholic patients also suffer from indicanuria. Putrefaction products, absorbed from the intestine, poison the brain and so render resistance to temptation all but impossible. The alcohol, moreover, inhibits the elimination of these toxins, and so is established a vicious circle of cause that promote organic changes, notably in the heart muscles. Constant alcoholic anaesthesia shortly leads to mental reduction and finally to dementia. Nothing can be more pathetic than the sight of a man, once brilliant and successful, prematurely losing his value in the business world and rendered utterly irresponsible by drink.

These physical conditions are not overlooked by the conscientious practitioner, and response to the treatment accorded them is always suggested by the psychotherapist.

The psychological cause for alcoholic excess is not unfrequently emphasized by the depression and nervous irritation resulting from the abuse of tobacco.

Physicians who have had much to do with alcoholic inebriates realize that there is a direct relationship between alcohol addiction and such abuse. The first effect of tobacco smoking is stimulating, with a rise of blood pressure; a sedative effect follows, with a fall of blood pressure; and if the smoking be continued, the nerve cells are depressed. The depression is cumulative in the system of the smoker, and after a varying interval (of days, weeks, or months), it creates an instinctive demand for the antidote to tobacco poisoning—and that is alcohol. The intemperate use of tobacco thus explains 75 per cent. of all drink habit cases. The alcoholic thirst is engendered and inflamed by smoke.

The real danger in smoking consists largely in the habit of inhalation whereby the volatilized poisons are brought into immediate contact with at least 1000 square feet of vascular air-sac walls in the lungs, and are thus promptly and fully absorbed to be diffused into the blood and carried on their disastrous errand to the several organs of the body.

These poisons include, besides the chief active constituent, nicotin—ammoniacal vapors that dry the throat and liquefy the blood, carbon monoxid or illuminating gas that induces a drowsy, dizzy condition and disturbed heart action, carbon dioxid or carbonic acid gas, prussic acid in combination, sulphuretted hydrogen, and irritant aldehydes—all virulent nerve poisons, capable in a concentrated conjoint action of paralyzing the muscles of respiration and so causing death. Of the aldehydes, the one known as *furfuraldehyde*, found in inferior alcoholic drinks and said to be fifty times as poisonous as alcohol, occurs in the smoke of cheap cigarettes. According to experiments recently made in London, the smoke of a single Virginia cigarette is likely to contain as much furfuraldehyde as 2 ounces of whisky.

Inhalers of tobacco smoke are listless, forgetful, undependable, backward in study, and conspicuously lacking in power of attention and application. A patient who began to smoke at seven and smoked all the time he was awake until as he described it he "got a jag on the smoke," at 35 could not "pin himself down to any business." As the habit is pushed, the habitue becomes excessively nervous, suffers from shortness of breath, muscular cramps and tremblings, rapid and irregular heart, nausea, giddiness, insomnia, irritable throat ("cigarette cough"), impaired digestion, and often from dimness of vision which has been known to culminate in blindness (tobacco amaurosis)—all which disappear with discontinuance of the habit.

Gravest of all the resulting evils is the lessening or complete loss of moral sensibility, with a conspicuous tendency to falsehood and theft. The moral propensities are eventually destroyed because of the destruction of those elements of the brain through which moral force is expressed. The victim degenerates into a sallow, unmanly, irresponsible incompetent, in splendid fettle for the penitentiary or the asylum. Such is the influence on character of the cigarette habit, which has developed into a form of moral insanity. Alcoholism cannot be cured until the inhalation habit is disposed of, and it cannot

be disposed of without objective authorization by the patient. If there be mental reservation on this point, the smoking will be resumed and relapse be practically certain.

The government has begun a most meritorious campaign against drug-taking in the enforcement of the Harrison law. But it has left unnoticed two habits that are doing infinitely more damage to the brains and physical constitutions of the people of the United States than all the drugs put many times together, viz., the drink and cigarette habits. Three times the amount of our national debt (about $3,000,000,000) is spent annually in the country on alcoholic drinks and tobacco. Twenty billion cigarettes, it is estimated, are smoked every year in the United States. Boys and girls, men and women, are permitted without protest from high quarters to destroy their mental faculties and moral propensities by this practice. Physicians have come to realize that those who abandon themselves to the double indulgence in tobacco and alcohol are practically committing suicide on the installment plan. They can never be at their best, and a cigarette smoker represents as hazardous a risk from the viewpoint of life insurance as a consumer of liquor.

In closing, let me insist on one fact, viz.—The ill-success of a given suggestionist in the treatment of an alcoholic or drug addict, does not imply that such a subject is incurable through psycho-dynamic influence. The sufferer should make trial of another personality. Especially is this to be considered in the failures of Emmanuelism, so noble in its conception and so successful in the hands of its founder, where cures are attempted by unqualified clergymen who are ignorant of the mental states in which receptivity is at its height, and apply extremely crude methods with faith in their efficacy. The same criticism applies to the quixotic efforts of theotherapy and the tedious procedures of psycho-analysis.—*Medical Times*, February, 1916.

THE

CALCUTTA JOURNAL

OF

MEDICINE.

Vol. xxxv.] **August, 1916.** [No. 8,

THE HAND AS AN INSTRUMENT OF DIAGNOSIS, AND TO FIND THE INDICATED REMEDY.

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The hand is the most *delicate* instrument for diagnosis that can be *conceived* by the mind of man *when* it has been educated when a doctor learns *how* to use it. To have his *eyes* at his fingers' ends. We all know how *extremely* sensitive are the hands of blind persons. If you place anything into their hands, they will tell by the *feeling* of it what it is. Men who are in the habit of handling much money learn to detect the difference between good and bad money by the *feeling* of it. In conversation with a doctor who made a *specialty* of the treatment of hernia, I asked him the question, "How can you tell the difference between a hernia and any other *swelling* in the abdomen?" His reply was, "By the *feeling* of it." When a blind person has some one near and dear to him, he wants to know how that person *looks*, he will pass his hand over this person's face, and thus with his *hands* draws a *mental* picture of just *how* that person *looks*. A doctor should have just as *sensitive* hands as a *blind* person. Then he can detect the *slightest* variation of the *pulse* from normal to abnormal. Thus he can

by delicate manipulations with his hands, over the abdomen, detect diseased conditions in the abdomen and *any growth* in the human breast and the *nature* of that growth. In my student days I was taught *how* to detect the different conditions of the os uteri by *digital* examination. When placing my fingers upon the os uteri I could if I had been an artist draw a good picture of the *diseased* condition existing there by the *feeling* of the parts to my *fingers*. In this way I could diagnose congestion, ulceration, enlargement, pregnancy, fibroid tumor, displacement and cancer by *digital* examination and *not* by *peeking* through a speculum. The Almighty gave us our eyes and hands to *aid* us in the diagnosis of disease and we should learn how to *use* them to the *best* advantage.

Nearly fifty years ago there lived an old physician in Augusta, Maine. He was a very blunt, plain spoken man, and was very apt to say just what he *thought*, in not very *choice* language. A young physician was called to a case of fracture. His excuse for not taking the case was, "That he did not have any *splints* with him," so they dismissed him and called the old doctor mentioned above. When they told the old physician what the young man said, he made the remark, "Well, he had his *paws* with him, why didn't he use *them*?" The story *made* a great *impression* upon my mind when I heard it, it was then I realized how important it was for a doctor to know *how* to *use* his *hands*.

Several years ago I was visiting some friends in New York City. While at their house a lady in the house (who was an "opium eater") took an *over*-dose. The result was a *coldness* of hands and feet, all the *blood* seemed to settle in the trunk of her body. The pulse was scarcely perceptible. I had no medicine, but I knew *something had* to be done and done *quickly*. I wrote out a prescription and sent a messenger for the remedy. Fortunately for the patient I had learned *how* to *use* my *hands* in desperate cases. I stood behind her, and with my *right* hand on her *heart*, with the left hand I began to make vibratory massage down the *spine*, followed by *long*, *firm strokes* with the hand down the whole length of the spine. My object was to *force*

the blood *through* the *heart*, and start the *circulation* of the *blood* throughout the body. In a very few moments her pulse began to come up, and she was practically out of danger *before* the medicine came from the drug store. It goes to emphasize the fact that a doctor should know something else besides the mere *dispensing* of *drugs*. A young man had been to a dentist to have an *ulcerated* tooth extracted. The dentist made a bad job of it, he did not get the *tooth* and the man was nearly *crazy* with *pain*. He came to consult me. I said, "I can put you to sleep and *stop* that pain." I knew that he had no *faith* in hypnotism, so I said, "I don't care whether you have any *faith* in what I am going to do or not, all I ask of you is to do as I tell you." I put him to sleep and made suggestions "that when he had slept an hour he would wake up and the *pain* would be *all* gone." In an hour he woke up. I said, "How do you feel now, does your tooth ache?" He said, "No," and went out about his business. A doctor *can't* read a patient's pulse and be holding a watch in his hand, and *counting* the pulse at the *same* time You *can't* do *two* things at the *same* time.

Counting the pulsations of the artery is a mere *farce*, it doesn't tell us anything about the *character* and *quality* of the pulse. In reading the pulse we have to take into consideration, first, the *temperament* of a person, for that affects the pulse, also whether patient is *excited* about anything, whether he has had any kind of *stimulants*, or *Quinine*, *Glonoin*, *Strychnia*, *Iron*, etc.

Sexual excitement, grief and mirth all write their language in the pulse, to him who can *interpret* it. We may have a patient with *high* grade of fever, *great* arterial *excitement*; the pulse is just the *kind* of pulse we should *expect* to find, it is *full*, *hard* and *quick*. The pulse of *Aconite*, and *that* is the remedy *indicated*. That stage of fever lasts only a *short* time and in *most* cases before we reach the bedside of the patient the pulse has *changed*, it is now *full* and *soft*, the pulse of *Ferri phos.*, and that is *the* remedy indicated. You may see a stout, plethoric woman, with *red* face, *almost* purple, a *dull* expression to the eye *red* veinlets in the *white* of her eyes. You don't need to ask

her if her head aches? For her *face* tells you that and her pulse is just what we should *expect* it to be, *full, bounding* pulse with *tension*, tells you as plain as *words* can tell you, "Give me *Veratrum vir., for it is what I need.*" We may see another patient with very *red* face, *bloodshot* eyes, *throbbing* of carotids; now place your fingers on the pulse, it is just the *kind* of pulse we should expect to find, *full bounding*, with a *globular* feeling to artery, as it strikes against the fingers. That indicates *Belladonna.* When you see a lady with *hollow* eyes, *dark* circles round the eye, a *pearly* tint to the *white* of the *eye*, you know that there has been a *drain* upon her system, and the pulse is just what we should *expect* it to be under the above condition, *irregular, weak* and *small*, and it points directly to *China.* In another case, a lady patient has *very pale* face, *ashy* pale—*blushes* at the *slightest* emotion, *pale* tongue, all *red*, parts pale. The pulse is just what we should *expect* it to be, a *small, thin, soft pulse*, and *Ferrum* is *the* remedy. Lady looks thin, *emaciated*, sallow, *oily skin*, eyes look wet as tears, melancholy. The pulse, when we read it, is what we *might* expect. It is *rapid intermittent*, the pulse of *Natrum mur.*

We sometimes meet with patients, very *pale* face, *blueness* of lips, eyelids and tongue, *veins* distended, *deep* sighing respiration, showing poor circulation of the blood and the pulse corresponds to the patient's condition, *very slow*, week, *irregular*, intermits every third, fifth and seventh beat. It is the pulse of *Digitalis.* A lady has a *startled* expression to the *face*, is *nervous*, doesn't sleep much, has had dreams that *frighten* her, pulse has more *sharpness* to the *strokes* than normal. This is the pulse of *Rhus tox.*, and *that* is the remedy she needs.

When we study carefully the appearance of the *face*, and general condition of a sick person, we can judge pretty near what kind of a pulse they *should* have. With our fingers on the pulse we think of the normal pulse, full, strong and *regular.* Then we think of the pulse under great arterial excitement, *full, hard, quick.* Then we think of the pulse, of *weakened* vitality, weakened *nerve* power. They will all occur to us with our hand on

the pulse. *Tension* to the pulse may mean pain in some part of the body, *nerve tension*, and *contracted* capillaries. A weak *discouraged* feeling to the pulse, more *rapid* than normal, means *weak* nerve power, *lack* of vitality, as found in *Cancer*, and in some *severe strain* upon the *nervous* system.

A good way to learn to *read* the pulse is to study the pulse of a case of well developed pneumonia, *read* the pulse, fix it in your mind, just how it *feels* to you. Then take a case of consumption, read the pulse of that, remember the pulse is *accelerated, full and soft*. Get a chance to read the pulse of a well developed case of cancer. It has a weak, discouraged feeling to it, more *rapid* than normal. Then take a case of nervous prostration, where there has been a *great drain* upon the brain and nervous system, read the pulse, *frequent, small, intermittent*. In this way *study* carefully the pulse of *each* disease, until you *know it*. When you read the pulse, forget everything else, *concentrate* your *mind* on what you are *doing*. Experience will be your *best* teacher.

Just as fast as you get the pulse of *one* diseased *fixed* in your mind, then study the next one. In this way, step by step, you will be learning something that will *help* to put you in the *lead* of *all* other physicians around you. If the professors in our medical colleges would teach their students *how* to *read* the eye, pulse and tongue, it would be a hundred times more *valuable* to them than squinting through a microscope. Our young men that are being turned out from the medical college "now-a-days" get the idea that surgery is the *main* thing, the "money-getter," that the physician is a "back number," a "has been." In these modern times he is merely an *agent* to furnish *material* for the surgeon to *operate* on. There *was* a time when the old family doctor was loved and respected in the community. To his patrons he was a "friend in need," a tower of strength in the sick room *prepared* to meet any *emergency* that might arise in the family. In these modern days the old family doctor has to take a back seat, "go way back and sit down," while the surgeon is *very* much in the limelight, but it will not *always* be so. When the physician is *fitted* to *heal* the *sick* he will "*come into his own*."

Our doctors should remember the words of one of the fathers in medicine, "*Surgery is the last resort of an incompetent physician*," he *cuts out* what he *can't cure*. A doctor can oftentimes relieve *pain* with his *hands*, when he knows *how* to place his hands. You should remember that the *right* hand is *positive*, the left hand *negative*; when you want to relieve *pain*, rub your hands together until they are *hot*, then throw them down and snap them as if you were throwing *water* off of your hands. By doing this you bring the magnetism *into* your *hands*. Now place the left hand (negative) over the *painful* part, the right hand on the opposite side of the limb or body. *Concentrate* your *mind* on what you are *doing*, and *will* the pain away; as soon as you *feel perspiration* in the palms of your hands, the patient will *feel* the good effects of your treatment.

When a part is *inactive* and you want to arouse it to action, place your *right hand* (positive) over the part and your left hand on opposite side. I have oftentimes helped my patients a good deal by telepathy. At night before I go to sleep I hold the face of my patients before my mental vision, and send out to them suggestion of courage, health, etc. I believe I have benefited my patients very much in this way. An earnest, heartfelt prayer to the All Good will make it a hundred times more *effectual*. A physician should love justice and mercy, he should be charitable and *walk humbly before God!*—The *Homœopathic Recorder*, May 15, 1916.

MEDICAL EDUCATION YESTERDAY AND TO-DAY.*

By J. Richey Horner, A.M., M.D.

Cleveland, Ohio.

The tendency along the line of education, as along many lines of business, has for a number of years been towards concentration, with the object of increasing efficiency in work. In business we see this demonstrated by the many small manufacturing plants scattered throughout the country which to-day are idle because the business has been centralized in the hands of a few and these few have built up their business in some one location rather than allow it to remain scattered over the country.

To-day there are found throughout the land plenty of small buildings which, through the poet have gone down into history as "the little red school houses," where possibly some of my hearers received their introduction into school life. These houses to-day are abandoned because the trend in education is towards concentration and centralization. A large school building has been constructed and equipped in a nearby town or village and all scholars within that district attend there. Under a state law the boards of education in the different districts are to-day compelled to provide conveyances for pupils, bringing them to school in the morning and taking them home in the evening.

The great universities of this country are developing individual schools on their own campus providing education along almost all lines. The university has to-day its college of fine arts, of sciences, of agriculture, of law, of civil engineering, of mechanical engineering, of architecture, of medicine of pharmacy, all as a part of the university life and, with the possible exception of medicine in some instances, all grouped about the university campus.

In medicine it goes without saying that there has been in the past twenty years a remarkable change which has affected all schools alike. You know as well as I that some of us attended

* Read before the Estern Ohio Hom. Med. Society.

colleges which to-day would certainly be classed as nondescript. As a matter of fact all that was needed to establish a medical college fifty years ago was the intention and cooperation of a few men who were willing to put in a little bit of their extra time two or three times a week, telling the assembled students what they were doing in their practice and how they were doing it. After listening to this five or six months a year for two or three years the listener was deemed qualified to practice medicine and sent abroad with the blessings of his *alma mater* ringing in his ears.

No one can claim that the doctors turned out in the sixties, seventies and eighties of the last century were all of them inefficient, incapable and unfitted to cope with disease. As a matter of fact, it is sometimes a question as to whether the doctors of those three decades were not just as good, just as efficient, as the doctors of the present day. The difference was, and is, that the field of medicine by reason of much investigation and many discoveries has broadened and enlarged to such an extent that a trained mind is required to understand and utilize these discoveries. It follows, of course, that the colleges have been more and more taking measures to determine whether or not the embryo doctor is thus trained, with the result that many would come but comparatively few are chosen.

It is hardly necessary for me to go into detail as to the difference between the requirements which had to be met fifty years ago and those of to-day. You all know that formerly a man could quit his work in September, attend college until the following March, go back to his work until the coming September and, after attending college the second term, graduate with the full degree of Doctor of Medicine. The progress to the present day requirements has been gradual and really not in advance of the demand. A three years' optional, graded course was soon followed by the required course of the same length of time. This, in turn, was followed by the four years' optional course, which soon was required.

To-day medical education, instead of being under the control of the individual college or university, is subject to the most stringent laws in every state in the union. Twenty-seven states require more than a four years' high school course in order that a man may begin the study of medicine. In several states a student cannot practise medicine for profit until his training has extended over a period of six years. He must have not only a pre-medical year but a post-medical year. The dean of one of our own schools, in speaking of this point, said that, had his college required this pre-medical year of college work before admission to the study of medicine, their class of students of 1914-1915 would have been reduced 80%, while the graduating class present, when he made the statement, would have contained just about one-sixth of the number which graduated this year. There can be no question but that the tendency is towards more stringent regulations rather than less, so that the future will promise for the medical profession a very meagre accession to its ranks.

Another natural sequence of this development of the broader medical field is the increase in the expense of maintenance due to a necessary development of different departments of instruction. The laboratory work of thirty years ago was generally a farce. The expense of maintaining it was nominal and the amount expended in no way compared with the large sums which must be provided for laboratory work in the present day medical school.

It becomes more and more difficult not only to establish new colleges but to keep open the doors of those already in existence. There was a constant fight for sufficient funds to meet expenditures, the inevitable consequence, in numerous instances, being that the fighters were tired of the unequal struggle and allowed colleges to die or become absorbed by endowed institutions which could command state aid To such an extent was this the case that during the past eight years more than sixty medical schools have disappeared and the number of medical students has been more than cut in half. In other words in

1907 there were 160 medical schools with 28,000 medical students, while to-day there are only 96 medical schools and these have less than 12,000 students. The percentage of decrease is practically the same in all schools of medicine.

There were reported in that year the following homœopathic medical colleges:—Homœopathic Medical College of the Pacific, San Francisco, Cal.; Westminister University College of Medicine, Denver, Col.; Hahnemann Medical College and Hospital of Chicago, Ill.; Hering Medical College and Hospital, Chicago, Ill.; College of Homœopathic Medicine of the State University of Iowa City, Iowa; Southwestern Homœopathic Medical College, Louisville, Ky.; Atlantic Medical College, Baltimore, Md.; Boston University School of Medicine; Homœopathic Medical College of the University of Michigan; Detroit Homœopthic Medical College; Kansas City Hahnemann Medical College of the Kansas City University; Homœopathic Medical College of Missouri, St. Louis, Mo.; New York Homœopathic Medical College and Hospital, New York, N. Y.; New York Medical College and Hospital for Women, New York, N. Y.; Cleveland Homœopathic Medical College, Cleveland, Ohio; Pulte Medical College, Cincinnati, Ohio; Hahnemann Medical College of Philadelphia.

The total number of students in attendance, as given in the official report to the American Institute of Homœopathy, was 867. This gives the total from fourteen colleges, three others having failed to report. To-day we have ten colleges, in the homœopathic school. During the past eight years seven of our colleges have closed their doors. Their work has been taken over by the existing colleges, their alumni being given full recognition and rating in the colleges by which they were absorbed.

Within a short time the Hahnemann College of the Pacific at San Francisco, Cal., becomes a part of the University of California. The Westminster at Denver, the Southwestern at Louisville, and the Atlantic at Baltimore discontinued their courses several years ago. The Hering of Chicago and the Chicago Homœopathic were absorbed by the Hahnemann of Chicago. The Detroit College and the Pulte College were

merged with the Cleveland Homœopathic College, which as you know, last year became the College of Homœopathic Medicine of the Ohio State University.

The colleges which now exist seem to be meeting the requirements with regard to an assured income outside of the income from the ordinary sources, such as fees of students. The Boston University has a large endowment not only in possession of the school of medicine but belonging to the Evans' Memorial Research Fund and the Massachusetts Homœopathic Hospital, of which two institutions the school of medicine is an integral part. The New York College is a part of a corporation which includes a hospital, and both of these institutions have large productive endowment funds. The Hahnemann College of Philadelphia and the Hahnemann College of Chicago are practically in the same category with the exception that the Hahnemann of Philadelphia, through the hospital, participates in state appropriations, while the Hahnemann of Chicago is in receipt of a large sum each year from an endowment interest established by its alumni. The Kansas City College is at present engaged in raising a million dollar fund to be devoted to the construction and maintenance of a hospital and college probably along the same lines as those we have in New York, Philadelphia and Chicago, the work of the College this year being made possible by a guaranteed fund established by the Board of Trustees of the corporation. Our other schools are Colleges in State Universities and their maintenance is assured so long as they maintain their present relations.

I take it for granted that all here are vitally interested in our recently established homœopathic college in the State University. If any are not thoroughly satisfied with the wisdom of this course, it needs but a visit to Columbus and a day spent with our faculty there to convince you that the college is in exactly its proper place. If in addition to this, as we might call it, external examination, you could penetrate to the inner workings of the university and realize the favor with which this new element of university work has been and is regarded by the

masters of the university, its president and its board of trustees, you would become thoroughly assured that not only was it a wise thing to transfer the college to Columbus, but that the establishment there means permanency.

I would not for a minute admit that, because of the college being in its first year in the university, the course of instruction given the students who attended last year was in any way inferior in quality to the best. The only thing that can be said is that the clinical material was not as abundant as it will be this year and the succeeding years.

To-day a hospital building is being constructed on the campus which will increase many-fold the capacity of the college for clinical instruction. As you know, with the inception of the college, a hospital was provided through the remodeling of a dormitory, thus giving to the faculty some twenty-five or thirty beds which have been during the past year fully utilized. Through the diversion to the university of funds resulting from the disposal of college property and interests in Cleveland and Cincinnati, with the addition and the appropriation made by the university authorities, a sum is assured sufficient to build and keep a hospital that will provide the clinical facilities required. It is interesting to note that the building is directly on the campus and an integral part of the group of buildings composing the university. As a matter of fact the students of the homœopathic college are receiving all of their training with the exception of their work in anatomy and pathology directly upon the campus of the university. The importance of this fact need not be emphasized to you.

Given a faculty of men, enthusiastic, in earnest, qualified, energetic and tireless, as the faculty of this college is, and a bunch of students equally in earnest, equally desirous of getting the best out of everything presented, equally determined to make a place in the university history for their college; couple these two factors with a willingness on the part of the president of the university and his trustees to afford to their new college all possible aid in establishing itself, you have a combination

hard to beat and one which makes for permanency, efficiency, reliability and strength. The college merits your approval. It merits your support. It is making good. It is there to stay.

There are several ways in which we may show our appreciation of the good work being done in our behalf in the university, for it is quite true that whatever is being done there will result in benefit to all of us because the standing of homœopathy in this state is certainly being raised every day that the college exists.

Students are needed. The more students we can send to the university, and particularly to the homœopathic college of the university, the better it will be for us and the more the authorities will be inclined to favor the college. The more patients we can send to the hospital conducted by the faculty under the auspices of the university, the more widely will be spread that good opinion concerning its work, and the stronger will be its influence in the state and in the community to which the individual patient may belong.

We should also make it our business to get into personal touch with the members of the legislators coming from our particular districts. The university as a whole exists through the appropriations made for its support by the legislature, and individual legislators must be made to understand that these appropriations are necessary and are wisely expended and that the good work being done by the university redounds to the credit of the state as a whole and of the citizens of the state.

So let us put our shoulder to the wheel and give our earnest efforts towards seconding the cause of university education and particularly the cause of medical education in the College of Homœopathic Medicine of the Ohio State University.—*The North American Journal of Homœopathy*, June, 1916.

EDITOR'S NOTES.

Treatment of Gonorrheal Epididymitis.

Henry H. Morton (*Texas Medical Journal*, March, 1916), for preventive treatment, has the patient wear a suspensory and keep as quiet as possible. No urethral instruments are passed and no forced injections given. When present, the patient is kept in bed, the scrotum supported with a handkerchief and bandage, and continuous hot applications are made—either of flaxseed or of lead and opium wash. Cold is apt to leave a hard, tough infiltration of the epididymis, which may cause sterility. If very painful, twenty per cent. guaiacol ointment is used, covered with cotton and heated. In recurring epididymitis or in very severe cases not responding to treatment, the Hagner operation is indicated. In tuberculosis of the epididymis, epididymectomy is done when the testicle is not involved; when it is involved, castration.—*New York Medical Journal*, April 8, 1916.

The Educational Menu Card.

The Educational Department of Public Health of the city of New York has opened a lunch-room for its employees at head quarters.

The object of this is primarily to provide a wholesome luncheon at cost price; secondarily, to educate the patrons in the subject of food and nutrition by the objective teaching of the lunch-room. The enterprise is being financed by the employees themselves; the city is put to no expense in its maintenance. The menu for the opening day is before us, and it sets forth not only the dishes but the quantity which is served and the caloric and protein value of each portion. Specimen lunches furnishing a balanced ration are given, one at a low and the other at a high cost.

The low cost luncheon is as follows:

	Price.	Quantity.	Calories.	Protein.
				Grams.
Cream of asparagus soup ...	2½d.	½ pint	230	7·0
Salade a la Santé	4d.	Average helping	370	2·0
Glass of milk	2d.	7 oz.	160	7·0
Apple pie	2½d.	One-sixth of pie.	300	4·0
Whole-wheat bread	...	2 slices.	140	5·5
Butter	...	½ oz.	120	...
	11d.	...	1,320	25½

The high cost lunch contained:

	Price.	Quantity.	Calories.	Protein.
				Grams.
Cream of asparagus soup ...	2½d.	½ pint	230	7·0
Roast beef	10d.	4 oz., lean	140	30·0
Mashed potatoes	...	Average helping.	150	4·0
String beans	2½d.	2 h. tbsp.*	10	0·5
Salade a la Santé	4d.	Average helping.	370	2·0
Apple pie	2½d.	One-sixth of pie.	300	4·0
Black coffee	1½d.	1 cup	...	...
Sugar	...	2 cubes	60	...
Whole-meal bread	...	2 slices	140	5·5
Butter	...	½ oz.	120	...
	1s. 11d.	...	1,520	53·0

* h. tbsp. = heaped tablespoonful.

The articles of food ready every day and those special for each day are set out with cost, quantities, calories, and protein values, so that the guest can select and calculate the nutritious value of his own lunch. We learn the following facts:

	Quantity.	Calories.	Protein
			Grams
Ginger bread	2 oz.	220	3·5
Ice cream	2 h. tbsp.	190	5·0
Tea or coffee with 2 cubes of sugar and milk.	1 cup	80	...
Ditto with sugar and 1 oz. cream ...	,,	160	2·3
Cocoa	,,	180	9·0
Baked apple	1 med. size	130	0·5
Ditto with 1½ oz. cream	..	250	2·0
Whole-wheat sandwiches with cheese ...	1½ oz.	340	16·5
Ditto with ham	,,	280	16·5
Egg (one) and ham	...	370	23·0
Potatoes (fried)	Average helping.	120	3·5
Boiled rice	3 h. tbsp.	330	8·0

The menu card not only gives the guest all this information but affords appropriate mottoes, such as "Since Eve ate apples much depends on dinner" (Byron); and what subject for conversation it gives? If every hostess would only add the calorie and protein value to her dinner menu card there would be no more trouble in making conversation, and distress for the shy and nervous partner. Discussion as to how we are going to make up our physiological allowance—dare we exceed it and by how many calories? how do the food values compare with those of Mr. Grundy's dinner? is our hostess right in her protein value for the quail? and surely the calorie worth of asparagus is too high for the portion we have been given?

We measure the miles we walk, the temperature of our rooms and bath, the medicine we take, why should not we have the exact measure of the food we eat? The quack pill and salts vendors make their fortunes out of the gross guzzling habits of the nation. Feed up your strength, avoid the slightest exposure to cold—these are tenets held as fast as parts of a religious creed. They lead to digestive disturbances and impoverished health. The metabolism is reduced, excess food is eaten and not utilized, and the bowels become the seat of bacterial fermentations, which lead to chronic intoxication and a host of complaints.

How many clerks, shopmen, etc., have in the last nine months been changed by military service from pale, dyspeptic, men, below par, unjoyous, into magnificent healthy soldiers full of the perfect enjoyment of life? This due to hard physical labour, and exposure to cold and wind, which enormously increases the metabolism and the appetite and favours the complete digestion and utilization of the food. For many sedentary workers the appetite overruns the bodily needs. For these the menu card, with the calorie and protein values set out, would be useful. Not only does the over-eating work much harm to the national health but the economic waste is enormous. Let us, then, in these scarce and dear times of war, spread the use of the Educational Menu Card.—The *British Medical Journal*, Saturday, April 22, 1916.

Recurring Colds in Children.

Peter D. McCornack (*Western Medicine*, March, 1915) says that recurrent colds are usually found in children suffering from the exudative diathesis, and treatment must be directed to the underlying condition. Such children usually eat more than they need, particularly of carbohydrates and fats. The diet should, therefore, be modified by the reduction or elimination of sugar, the use of skimmed milk, or the elimination of all milk, and the provision of carbohydrates only in the form of the usual vegetables, cereals, and coarse breads. Meat should be allowed

only three times a week. The clothing should be light and warm; the child should receive a warm bath daily, followed by a cool sponge bath and brisk rubbing; the bowels should be kept open; and children should live in the fresh air day and night. No expectorants should be given, but the lithemia should be attacked by large doses of sodium bicarbonate or salicylate. Thyroid extracts often proves of value merely as a tonic, and adrenaline gives relief in extreme attacks.—*New York Medical Journal*, April 22, 1916.

Filtered Rontgen Rays in Skin Disease.

Experience with both filtered and unfiltered rays in the treatment of a wide variety of skin diseases has shown Fritz M. Meyer (*Berliner klin. Wochenschr.*, Oct. 18, 1915) that filtered, hard rays have the following advantages: The result in many cases of chronic disease is more rapidly and more certainly secured with relatively slight damage to the unaffected skin. Certain skin affections previously uninfluenced by the ordinary rays, and others in which results could be obtained only at the cost of severe damage to the tissues respond to the hard rays without injury. The dangers of reaction are minimized, and when, reactions occur they are slight. By the use of larger tubes a greater area can be treated at a single exposure. Painstaking protection of unaffected skin is not necessary. Eczema, psoriasis, chronic lichen simplex, furunculosis, buboes, favus, etc., and hypertrichosis all respond favorably to hard rays.—*New York Medical Journal*, April 22, 1916.

Hydrotherapy in Cardiovascular Disorders,

J. H. Kellogg (*Illinois Medical Journal*, March, 1916) states that technic is of the utmost importance. In cardiovascular disease the best means for relieving the cantracted vessels is baths at 90° to 98° F. with rubbing of the skin to maintain the surface circulation. The baths should be of fifteen to forty minutes' duration, and sprays are of value also partial cold

rubbings with water at 65° to 75° F., and wet girdle packs and hot packs of the legs at night. Primary low pressure cases improve rapidly under cold baths, intermittent cold precordial applications being of great service in insufficiency of the right ventricle, while prolonged precordial compresses may be used in the lost compensation of the left ventricle in high pressure cases.—*New York Medical Journal*, April 22, 1916.

Viscosity of the Urine.

By C. Posner.—The effort was made to determine whether viscosity played any part in the factors which influenced the excretion of the urine. In normal urine it was found that viscosity often increased with an increase in the specific gravity, or concentration, but there was no constancy or parallelism in the relation of the two characters. Albumin in the urine did not alter its viscosity, and similar results were found relative to sugar and cystin. The presence of formed elements such as red or white blood cells, pus, cylindroids, and casts increased the viscosity materially and more or less in proportion to their abundance. Since concentration of the urine was shown to increase viscosity in the majority of cases, and since an increase in viscosity is known to produce a delay in the rate of flow of fluids, such a change would tend to the formation of calculi. When the urine was alkaline and contained albumin, its viscosity was found to be much increased, but if the alkali was present in excess the opposite condition was found, namely, a reduction in viscosity. This offered a logical explanation of the beneficial effects of the use of potassium iodide and the alkaline mineral waters in many conditions known to be associated with concentrated urine. The same fact explained their beneficial action in other respects than that involving urinary excretion, since the alkalies would also tend to a reduction in the viscosity of the blood and other tissue fluids, and thereby hasten the processes of metabolism.—*New York Medical Journal*, April 29, 1916.

The Aftertreatment of Fractures.

S. B. Rosenzweig (*Medical Adviser*, February, 1916) advises great care in the aftertreatment of fractures, massage and baking being the easiest and simplest measures. Daily applications of dry heat at 300° F. to 350° F. for a half hour, followed by massage and motion, give remarkable results. These measures may be instituted four or five days after reduction of the fracture, and of course the presence of a plaster cast is no impediment. Perfect x-ray results may be very poor functional results if immobilization is too prolonged.—*New York Medical Journal*, April 29, 1916.

New Method of Treating Tuberculous and Other Sinuses.

W. O. Smeek (*Interstate Medical Journal*, March, 1916) describes a method whereby air passed through rectified spirits of resin and subjected to an electric arc becomes a strongly germicidal gas, which is of value when applied to sinuses, especially those of a tuberculous nature. This gas is nonirritant when fresh and has no destructive action on tissue cells. Germicidal action is complete in twenty minutes with the fresh product and in three to five minutes with the aged product. In addition to its use in chronic sinuses, it has proved of value in fresh and infected wounds—*New York Medical Jonrnal*, April 29, 1916.

A New Method of Formaldehyde Disinfection.

Fernand Gand, at a meeting of the Academie dessciences (*Presse Médicale*, March 16, 1916), recommends, for the disinfection of clothing, commercial formaldehyde, poured into a saturated solution of potassium permanganate. The mixture soon becomes hot and gives off abundant fumes of high diffusive power, which rapidly penetrate the clothing. The procedure can be very simply applied by placing the clothing in a large barrel and connecting the latter by means of a tube or pipe with a small barrel in which the disinfecting mixture has been placed.—*New York Medical Journal*, May, 6, 1916.

Roentgen Ray Treatment of Skin Diseases.

H. H. Hazen (*Interstate Medical Journal*, April, 1916) writes that the modern method is to give one, two or three large doses carefully measured; thus there is no stimulation, action is rapid, and there is no chronic dermatitis produced. A hard tube is preferred to a soft one, as there is less danger of skin irritation. The skin conditions most benefited by x-rays are thick patches of squamous eczema, acne vulgaris, lupus vulgaris, tinea tonsurans, lichen planus, common warts, keloids, cancer. It is doubtful if radium can produce any effects that the x-ray cannot equal.—*New York Medical Journal*, May 20, 1916.

New Treatment of Small-pox.

Teodora Taboada (*Cronica Medica*, March, 1916) asserts that he has treated sixty-four cases of small-pox by a new method with a mortality of only 12·5 per cent., compared with twenty-one per cent. in 134 cases treated by former methods. He employed a ten per cent. solution of camphor in ninety per cent. alcohol as a local application several times daily, followed by painting with a mixture of iodine, one part, and glycerin, two parts. Warm baths with lysol solution were given daily. The spirits of camphor acted as a pronounced antiseptic and accomplished the difficult effect of neutralizing the fetid odor of the disease.—*New York Medical Journal*, May 20, 1916,

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Therapy of Cerebral Syphilis.

Morris J. Karpas (*Medical Record*, April 22, 1916) asserts in addition to the usual hygienic, dietetic, and tonic measures, the actual treatment consists of three remedies, namely, salvarsan or neosalvarsan, mercury, and potassium iodide. Where there are no contra-indication, salvarsan and neosalvarsan should be administered at once. The day following, salvarsan, mercurial injections or inunctions with potassium iodide should be given. Mercury salicylate injections are to be preferred from a stand-

point of cleanliness and rapidity of action, and from two to three grains a week may be given, increased to the point of tolerance. Potassium iodide should be given in increasing doses. Intraspinal treatment with salvarsanized or mercurialized serum is efficacious, and the cerebrospinal fluid examination is quite as important as the Wassermann.—*New York Medical Journal*, May 20, 1916.

Antityphoid Vaccination in the Insane.

G. Vidoni (*Rassegna di studi psichiatrici*, November-December, 1915), from many observations, advices against antityphoid vaccination in mental cases except in the event of urgent necessity. The reaction is very marked and is in relation to the severity of the mental derangement. Practically all mental conditions were made much worse by the injections, especially epilepsy. The local reaction was also more intense than in the mentally normal.—*New York Medical Journal*, April 8, 1916.

Acupuncture the Best Method of Vaccination against Smallpox.

H. W. Hill (*Canadian Medical Association Journal*, March) says that acupuncture bids fair to do away with the old scarifying, scraping, and scratching methods. The tip of a sterilized sewing needle is used, the punctures are one thousandth of an inch deep, not a shred of epidermis is removed, and the pain is so slight that the operation may be completed before the patient knows that it has begun. The arm is washed with soap and water, then with alcohol, and finally with ether. A small drop of vaccine is deposited on the clean surface. The vaccinator's hand is closed upon the arm from behind so as to draw the skin tight in front, and the point of the needle, held slantingly nearly parallel with the skin, is pressed against the skin through the drop of vaccine. Then it is that one thousandth of an inch of the point enters the upper layer of the skin, carrying the vaccine

with it. The needle is withdrawn, another similar puncture is made close beside the first, and then others until six have been made. As a rule it is best to make three sets of punctures, one at each angle of an equilateral triangle having sides two inches long. The remaining vaccine is wiped off with a bit of sterile gauze and the operation is finished.

If the vaccination does not take, nothing happens. If the patient has been vaccinated successfully before, or has had small-pox, the punctured surface will redden, swell slightly, and become itchy for a day or two; this is an anaphylactic reaction. In most cases in which the vaccination takes, nothing will show for four or five days, then the spot will redden, swell, and a single smooth, pearly button arises about the size of a large green pea. In ten days or so this will shrink and become a dark, dry button, which will fall off in about ten days more, leaving a small, round scar. Ordinary areolæ develop, and there is some tenderness of the axillary glands. Over sixty students were vaccinated recently by this method. All who had been vaccinated previously or had small-pox showed the anaphylactic reaction. The vaccination took in all the others giving 100 per cent. of success. There was not a bad arm among them, not an hour of work nor a meal lost. In two cases the anaphylactic reaction indicated that a previous attack of supposed chicken pox had really been small-pox.—*New York Medical Journal*, April 15, 1916.

Potency of American Digitalis.

L. G. Rowntree and D. I. Macht (*Journal A. M. A.*, March 18, 1916), using Hatcher's cat method of standardization, found that different samples of the infusion varied widely in activity, depending on the samples of leaf and upon the mode of preparation. American, English, and German leaves of high quality were compared; domestic leaves were the most active. They express the belief that the standardization of digitalis for clinical use is necessary and that the American leaf is superior to the foreign.—*New York Medical Journal*, April 8, 1916.

Economy in Paper.

The Royal Commission on Paper has issued a further appeal to the public drawing attention to the consequences of the restriction upon the importing of paper and paper-making materials which it has been appointed by the Government to carry out. The restriction reduces the import by one-third, and newspapers, journals, and magazines must correspondingly be reduced in size or weight, both. The appeal is to the public to be economical in the use of paper, for the resriction of the supply of paper for printing has been for some time in force, and it has been necessary in the case of this journal, as in that of all its contemporaries, to reduce the number of pages and the weight of the paper. We would appeal to contributors to bear the fact in mind when preparing articles for publication. Our contemporary *Nature,* in its issue of March 23rd, announced that it has been found necessary to reduce the size of that valuable periodical, and made an appeal to its contributors to "confine themselves to essentials, points of prime importance, in order that our record of scientific work and events may still be as extensive as possible, though it must necessarily be less detailed." These words put the situation very well, and place the matter on a true ground. They are as applicable to medicine as to science in general. We are well aware that to be brief is troublesome, since it requires more concentration of thought and more labour in composition. It is well worth while to incur these extra pains in the interests of readers and of the advancement of science. The first draft of an essay almost invariably contains repetitions and redundancies, which can be eliminated not only with the saving of space but with increase in clearness.—The *British Medical Journal,* April 1, 1916.

Injuries and Diseases of Aviation.

From the medical point of view the Flying Service is not quite like any other, owing to the special demands it makes on those who take it up, and the special lesions to which it may give rise. Staff Surgeon H. V. Wells, R.N., has drawn attention* to these peculiarities, quoting a number of examples to illustrate them. These accidents of aviation are mainly those due to sudden stoppage of the aeroplane, when, owing to some accident, it falls headlong to the ground, or by some loss of control lands at too sharp at angle. Here the aviator is thrown violently forwards as the machine hits the ground: he is usually strapped firmly to his seat, and so his head and neck are jerked forwards, with the danger of his striking some portion of the stucture in front of him and injuring his forehead, or of straining the muscles of his neck, or even of fracturing a vertebra without displacement. It is thought that an abdominal belt should always be used to hold the aviator in his seat; the belt should have a quick release apparatus, and be fixed to the aeroplane rather than to the seat itself. In some instances the aviator has succumbed to profound shock without any obvious grave injuries after a fall; Staff Surgeon Wells suspects that there are numerous minor internal hæmorrhages in these cases, but it would be interesting to know whether fat-embolism is not the actual cause of death here, whether bones are broken or not. It is known that mere concussion of the bones of experimental animals can produce fat-embolism. In a few instances eye injuries have resulted from the working loose of some nut or bolt in a tractor æroplane, and the blowing of the piece of metal backwards, in the draught of the screw, into the aviator's face. Frost-bite of the face has occurred after aviation at high altitudes; partial anæsthetization by the vapour of escaping petrol used to be common, before a tap was fitted enabling the petrol supply to be controlled from the aviator's seat. The exhaust gases from the motor have been known to reach the pilot in quantities large enough to cause

* *Journal of the Royal Naval Medical Service*, London, 1915, i, 55, and 1915, ii, 65.

headache and sleepiness. So far as the selection of candidates for aviation is concerned, several interesting points have been brought to light by recent experience. Some pupils are found on trial to have no genius for aviation; they are not lacking in nerve, but cannot acquire the involuntary spontaneous co-ordination of hand and eye that is indispensable for the aviator, and are never comfortable when flying. The name suggested for this condition of mind is "ærosthenia," surely a misprint for "ærasthenia." It is an immediate disqualification for aviation. So far as age is concerned, it is now found that boys of 18 or 19 are not too young to learn to fly; the age of 30 is the limit at which pupils should be taken, except in rare instances. Pupils who have to wear glasses should be rejected; an interesting case quoted is that of a pupil with full vision in each eye separately and with both eyes together, who could only land with difficulty and with one eye closed. He was found to have "a concomitant squint," preventing him from judging his landings. It is essential, too, that the aviator should have free movements in his knee and ankle joints, otherwise he will lack delicacy in his control of the rudder bar, a matter of supreme importance. During 1912 and 1913 researches were made into the effects of flying on the pulse-rate and blood pressure of the aviator. The results were inconclusive; nearly all the cigarette smokers seemed to have rapid pulses, as was, perhaps, to have been expected. Quite recently this question has been gone into again by Dr. G. Ferry,* who finds that his own pulse becomes small and rapid in proportion as he ascends, becoming slower with the descent. So far as the arterial blood pressure is concerned, the maximum pressure varies during ascent, generally falling a little, the minimum pressure falling 10 or 20 millimetres of mercury. During the descent the maximum arterial pressure usually falls and the minimum pressure increases. Speaking generally, the arterial pressure is lowered after a flight. Dr. Ferry concludes that aviators should be chosen from those who have no disease of the circulatory system.—*British Medical Journal*, March 11, 1916.

* *La Presse Medicale*, Paris, February 14th, 1916, p. 65.

The Influence of sex on disease and Mortality.

The fact that sex *qua* sex creates a predisposition to certain diseases is of course a commonplace, but we do not perhaps recognize at how early an age this physiological influence of sex makes itself felt. As soon as the fetal heart can be heard it is found to beat more rapidly in the female than in the male, though the difference is too small to enable the sex to be foretold, being in point of fact less than the difference observed between individuals of the same sex. At birth, boys on the average weigh four or five ounces more than girls. It has been suggested that the determination of sex may be dependent upon nutritional conditions affecting the mother, but in so far as this hypothesis assumes an abundant food supply to be favourable to the birth of males it is not supported by statistics. It is even asserted, though not, we believe, on any sound statistical evidence, that there is a marked excess of male births in poverty-stricken countries and those ravaged by war and famine. We referred in the *Journal* of January 15th, p. 105, to some interesting investigations by Dr. R. J. Ewart bearing on the subject, and cannot pursue it further now. It seems clear, however, that the superiority in weight and size of male infants at birth is not due to better conditions of nutrition. At birth there are morphological differences, slight it is true, but still quite recognizable; for instance the antero-posterior diameter of the abdomen is distinctly greater in male than in female infants, while the anterior superior iliac spines are more prominent, and the ischia more widely separated in girls than in boys, and so on. After birth these differences become more and more pronounced, so much so that even before puberty the boy and the girl have developed into two very distinct organisms, differing morphologically, functionally, and psychologically—differing, indeed, even pathologically. Those who advocate co-education do not seem to have considered this aspect of the question. A parallel education is conceivable, and even desirable, but the differences between the sexes is too great for any uniform system to be applicable. Boys and girls do not spontaneously play the same games. Girls are more precocious

than boys, and their individuality asserts itself earlier. It is therefore not surprising that the two sexes should, from childhood onwards, display different pathological predispositions. The first indication of a distinct pathological predisposition is shown by the greater mortality among male infants, so much so that even though more males are born, by the end of the first year of life females may predominate. Tetany is said to be more frequent in boys and convulsions in girls, and the latter display an overwhelming liability to suffer from chorea. It may be argued that the larger size of male infants at birth renders them more liable obstetrical traumatism, but this would only account for the excess of male mortality during the first few days of existence, whereas the excess persists throughout early childhood. The difference cannot be due to any lack of care affecting the male infant; on the contrary, in most countries the birth of a boy is the source of special congratulation. No influence can be invoked to explain this excess of male deaths except a less resistance to disease, a proclivity that operates in all latitudes. Taking the coefficient of mortality among female infants as 100, that of boys has varied from 123 in England and 121 in France to 110 in Serbia and Japan. This proportion holds good even in countries with a high all round infantile mortality, and the ratio is much the same during the age period 0-5 years. In the age period 5-15 the rates for the two sexes are almost identical, but after 20 years of age the mortality among females again falls in spite of the risks entailed by pelvic affections, pregnancy, and labour. Speaking generally, it may perhaps be said that the boy reacts more violently to disease than the girl, is more easily knocked over than the latter, does not recuperate as quickly when the illness takes a favourable turn, and does not offer as much resistance when suffering from chronic affections.—The *British Medical Journal*, March 25, 1916.

Suppression of Quackery by the German Army.

It appears that in Germany the quack has attracted the unsympathetic attention of the military authorities. Indeed, if the measures directed against him are as effective in practice as they appear on paper, there is every prospect of his being dragooned out of existence by the provident Prussian. In some military districts unqualified practitioners are totally prohibited from advertising, and they are forbidden to print "puffs" of methods of treatment, apparatus, and tonic and prophylactic remedies. In other military districts the unqualified practitioner is no longer allowed to treat venereal diseases of the skin and abdomen, under which heading he has in the past caught many a patient suffering from venereal disease. The advertisements of abortifacients and conceptional preventives, thinly veiled under such headings as "Discreet advice," "advice for women," etc., have also been suppressed. Even the anti-vaccinationist has not eluded the "verboten" list, for publication and distribution of treatises, handbills, and other vehicles of agitation against prophylactic inoculations in the army are forbidden. We have already referred to Hindenburg's drastic regulations against venereal disease. So far no uniform system has been adopted throughout Germany, and each military area seems to have independent regulations. Indeed, in some commands no active measures have been adopted. But on the whole the suppression of quackery by the military authorities during the war seems to have proved very effective, and the hope is expressed* that the prohibition of quackery, which has proved so successful in war time, will be continued in a modified form after the war.—The *British Medical Journal*, May, 13, 1916.

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* *Therap. Monatshefte*, January, 1916, (Reported in *Norsk Magasin for Laegevidenskaben*, April, 1915.)

Electrical Methods in Surgery.

In a lecture at the Royal Institution on May 5th Sir James Mackenzie Davidson contrived to bring within an hour's survey the various respects in which electrical science is proving to be the handmaid of war surgery. Chief among the electrical methods, of course, was that of x-rays, and the lecturer showed very skilfully, by means of experiment, at once the value of the skiagraph and its possible fallacies. He exhibited two x-ray pictures of exactly the same subject, but taken with the tube in slightly different positions, with the result that in one case a bullet appeared to be lodged in the right lung, and in the other in the left. The single x-ray photograph, he said, however realistic it might appear, was not like an ordinary photograph, from which the relative positions of objects could be inferred with some accuracy; it was a shadow-picture, and therefore might be very misleading. To obviate the fallacies, he recommended the stereoscopic method, which, however, was still inadequate for exact localization, which required some system based on precise measurements, such as the cross-thread method. The lecturer also showed that electrical means were available, not only to ascertain the position of the bullet in the body, but to guide its extraction. Of these methods he instanced the telephone attachment, by means of which a click or rattle was communicated to the receiver whenever the surgical instrument touched the foreign body—the telephone forceps, with x-ray screen in combination, and also the Bergonié electro-magnet. He concluded with a tribute to that shadow army—from ambulance worker to surgeon general—who followed the movements of the combatants with the same precision and assiduity as the shadow, in some experiments he had been showing his audience, had followed every change in the position of the lamp.—The *British Medical Journal*, May 13, 1916.

Gleanings from Contemporary Literature.

TREATMENT OF ACUTE ARTICULAR RHEUMATISM WITH INTRAVENOUS INJECTIONS OF COLLOIDAL GOLD.*

By M. H. Grenet.

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The first of the series of cases, of which the summarised record is here presented to the reader, is that of a patient (Obs. I.) who had been suffering from a malignant form of acute rheumatism. The approach of death appeared to be inevitable and rapidly nearing, despite the intensive treatment with *Salicylate of soda* which had been adopted; when I administered an intravenous injection of *Colloidal gold.* After the succeeding stage of rather violent reaction, the temperature subsided; on the following day it was normal, and never rose again. The patient thus entered at once on the stage of convalescence—retaining only the double mitral lesion which had developed under my own observation during the period in which he was undergoing the salicylate treatment. The very remarkable success thus obtained in a case which had almost been *in extremis* incited me to follow out a course of systematic trial of the same therapeutic process in the cases of other rheumatic patients.

The second of this series of cases which I have had under clinical observation was that of an infantryman who had been attacked by a form of rheumatism of medium severity. He was quite cured after a few days. The third case was that of a lieutenant, who had reached the sixth day of a serious attack of rheumatism, presenting hydarthrosis and continuous pain in both knees, accompanied with pronounced anæmia, pallor, and albuminuria in large amount. On the very evening of the injection he declared himself greatly relieved;

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* Reprinted from the *Medical Press.*

The use of gold as a remedy is familiar enough to Homœopathists but it is only recently that the orthodox have adopted it. We think our readers will take considerable interest in this article.—Ed. H. W.

on the following day he moved his limbs with facility, and the albuminuria had completely disappeared. After eleven days from his entry into hospital, he walked a distance of three kilometres without difficulty.

I have now accumulated a total record of eighty-four rheumatic patients who have been treated after this method of procedure. I have been also able to compare the results, individual and collective, obtained in the cases of fifty-four patients who were treated with *Salicylate of soda*, and I believe that I am in a position to affirm the therapeutic superiority of that with *Colloidal gold*: the latter remedy calms the pain, shortens the duration of an attack of the disease, and prevents the development of complications. And it is above all in the cases of rheumatism occurring among young subjects, and in the markedly acute forms, that it presents its maximum of therapeutic efficacy. We will subsequently recur to a description of its mode of application, and the *rationale* of its curative effects; but at the outset a summary of some of the more significant cases and a description of some thermometric curves should prove more convincingly eloquent than long general commentaries.

Obs. I.—*Rheumatism of Malignant Type.*—F. (Jules), æt. 29, artillery soldier. Had formerly suffered from three critical attacks of acute articular rheumatism: the first at the age of 14 years, the second at the age of 18, and the third when he was 22. He entered hospital on April 30th, 1915, on the fifth day of his illness. The temperature was 39·4° (102·9° F.). Pain and hydrarthrosis in both knees; pains in shoulders; slight albuminuria. On the following days a series of complications developed in succession: great pericardial friction; double pleuro-pneumonic congestion; mitral endocarditis with enormous cardiac dilatation, ameliorated by administration of *Digitalin*; hypertrophy of liver; albuminuria in great quantity; transitory spinal phenomena (pains in the back and legs; Kernig's sign, cephalo-rachidian fluid normal). From April 31st till May 24th had received eight grammes of *Salicylate of soda* daily. On may 18th we administered an intravenous injection of 5 cc. of *Electragol*: no reaction, no subsequent result.

May 25th. Intravenous injection of 2 cc. of *Colloidal gold*. The injection was administered in the morning, and was followed by a

rigor, extreme tachycardia, and sweats. On the evening of the same day, the patient began to show indications of relief. On the following morning the temperature fell to 37° (98·6 F.). It never rose again. During the succeeding days there was extreme polyuria—amounting to four litres. The albumin had disappeared from the urine on May 30th. The patient left hospital on June 17th. He was then suffering from no symptoms whatever, but retained a double mitral lesion, well compensated.

Obs. II.—Br. (Jean), æt. 35, infantry soldier. Had entered on the eighth day of an attack of medium intensity (shoulders, left elbow, articulations of fingers of left hand, hydrarthrosis of left knee). Had not taken any *Salicylate*. Persistence of some pains in the shoulders after the first injection. Complete cure after an interval of forty-eight hours following the second puncture.

Obs. III.—S. (Henri), lieutenant, æt. 39, first crisis. Had entered on the sixth day of his illness. Pains in all the limbs; hydrarthrosis of both knees; œdema of right hand and wrist; intense pallor; copious albuminuria. Injection of 2 cc. on May 29th. After twenty-four hours, complete disappearance of all pains and swelling, also of the albuminuria. The patient arose from bed on June 3rd, and took a walk of three kilometres, without any pain whatever, on June 8th.

Obs. IV.—S., æt. 20, infantry soldier. Had entered on the sixth day of his illness. The crisis was one of marked intensity (hydrarthrosis of both knees; œdema of right wrist; pains in shoulders; notable proportion of albuminuria). Injection administered on May 29th; subsidence of temperature and disappearance of albuminuria on the following day. Slight relapse (pain and œdema of right wrist) on June 7th. Complete and lasting cure after second puncture.

Obs. V.—D. (Alphonse), infantry soldier, æt. 24. Had entered on the third day of his illness. The crisis was one of medium intensity (hydrarthrosis of both knees).

Obs. VI.—R. (Louis), infantry soldier, æt. 44. Entered on the sixth day of his illness. Crisis of Medium intensity.

Obs. VII.—D. (Claude), infantry soldier, æt. 21. Had entered on the fourth day of his illness. Crisis of medium intensity; slight hydrarthrosis of both knees; œdema of ankles.

Obs. VIII.—C. (Ferd.), corporal æt. 19½. Entered on the fourth day of his illness, crisis of medium intensity (knees, œdema of ankles).

We do not wish to add unnecessarily to the length of this article by multiplication of recorded observations and descriptions of thermometric curves bearing a general family resemblance. But there are five cases which deserve to be placed on a prominent position on account of the fact of having been each accompanied at the outset with the characteristic signs of endocarditis.

Two of those patients had entrered hospital with muffling of the sounds of the heart and a slight prolongation of the first sound; the third presented a slight systolic bruit at the apex, of organic source, which lasted for two days; in the fourth case, there was also a mitral systolic murmur, which presented a rasping character; in the fifth case, we detected the presence of a pericardial *frottement*, and a systolic murmur located over the apex. Every one of these patients was treated with *Colloidal Gold*, and after some days there actually remained no traceable sign whatever of cardiopathy. We will merely sketch the course of two of these cases:—

Obs. IX.—P, (Henri), æt. 20, infantry soldier. First crisis; entered hospital on the eighth day of his illness. Had already been treated during four days with *Salicylate of soda* (three to four grammes). Moderate fever (38°—100·4° F.). Pains in knees and shoulders; vertebral rheumatism, with extreme rigidity of vertebral column. Suffering greatly; is completely helpless and incapable of the least voluntary movement. Softening of the cardiac sounds; slight prolongation of first sound. July 16th; injection of 1·5 cc. of *Colloidal gold*; on following day considerable diminution of the pains. But we discovered at the apex a slight systolic blowing murmur. Although the fever had subsided and the pains had disappeared we administered a second puncture on July 18th, hoping thereby to cure the endocarditis which was then in the course of evolution. On the 20th, the bruit had diminished; on the 21st it had ceased to exist: a little of the muffling of the sounds of the heart persisted for some time, but it gradually disappeared. We kept the patient under observation for some time, and his chest was auscultated by several of our colleagues; but not the least further trace of cardiopathy was ever discovered subsequently.

Obs. X.—B., æt. 28. First attack. Entered hospital on the ninth day of his illness. Violent crisis (knees, elbows, shoulders). Muffling of cardiac sounds; pericardial *frottement* in the mesocardiac region; slight murmur at the apex. Injection of 2 cc. of *Colloidal gold* on August 4th; persistence of elevation of temperature; slight subsidence of the cardiac symptoms. August 6th: the cardiac sounds still remained muffled; the *frottement* and murmur have disappeared. Second injection administered on August 6th; rapid fall of fever; complete disappearance of all signs of endopericardiitis The patient left his bed on August 8th. Silght relapse from 13th to 16th of August, which was rapidly extinguished by administration of another injection.

The above series of examples demonstrate the clinical fact that by the administration of intravenous injections of *Colloidal gold* we, as a general rule, bring about a rapid fall of temperature, and shorten the duration of the rheumatic crisis—and more especially of the convalescence—while at the same time we avoid cardiac complications. In our cases we habitually got the patient to leave his bed at an early date—at the close of two or three days of apyrexia.

In some of our cases, a copious intra-articular effusion persisted. Accordingly, it was necessary, after the fever had subsided, to puncture with all the precautions of asepsis. Then we found, as a general rule, that there was no further tendency to the collection of the fluid; and we proceeded to raise the patients from bed one or two days after the evacuation. The two following cases present in this connection demonstrable observations of special value.

Obs. XI.—L., (Alexis), æt. 40. First crisis. Entered hospital on June 26th, on the sixth day of his illness. Acute rheumatism, with hydrarthrosis of both knee-joints. The fever subsided in eight days after four injections of *Colloidal gold.* The patient retained the bilateral hydrarthrosis, although now quite apyretic. Puncture of both knee-joints (thirty-five to forty grammes of citron-coloured liquid in each) on July 6th. Left bed on July 7th. No recurrence of the articular effusion; no muscular atrophy.

Obs. XII—R. (Rene), æt. 30. Second attack. Entered hospital on July 19th, on the twelfth day of his illness. Temperature 39° (102·2° F.); muffling of the cardiac sounds; hydrarthrosis of both

knee-joints. Two injections of *gold* (July 19th and 20th). Disappearance of cardiac signs (apyrexia) on July 22nd. July 20th we had punctured both knees (125 cc. from right joint; 110 cc. from left). No reproduction of the articular effusion; no muscular atrophy.

In the subacute varieties of rheumatism, in chronic cases of old standing, and in aged patients—also in those cases who have reached the tenth or fifteenth day of the disease, and after insufficient treatment, our method are still effective; and prove superior to *Salicylate* treatment in all the more unfavourable varieties of cases. The cure is however, less rapid and it is often necessary to administer five or six injections; a little of the stiffness and swelling of the joints may also persist for a considerable period. Nevertheless, we have seen many patients who had still continued, after a prolonged course of *Salicylate* treatment, to present a high temperature, and pains which were aggravated by the slightest movement; yet in whose cases a rapid cure was effected by the administration of one or two injections of *gold*

As in the case of all medicaments of pronounced activity, *Colloidal gold* may provoke serious accidents, and we have ourselves had to deplore the occurrence of *one fatality.*

Obs. XIII.—P. (Benoit), æt. 30. First attack. Entered hospital July 24th, on the fifth day of his illness. Polyarticular rheumatism (knees, tarsal regions, wrists). Great suffering. Rapid heart's action. No albumin in urine. Axillary temperature 39·5° (103 1° F.). Injection of 2½ cc. of *Colloidal gold* on July 25th at six o'clock. Violet reaction; extreme agitation; screaming; delirium. At the end of two hours the patient falls into a state of collapse; wretched pulse, cold extremities, and coma. Death took place at 11 o'clock at night, five hours after the injection.

At the autopsy we discovered a great variety of pathological conditions.

1. *Recent Lesions,* associated with the acute terminal stage; meningeal and cerebral congestion; vascularisation of the meninges; punctiform hæmorrhages in both grey and white substances of the brain; puntiform hæmorrhages in both leaflets of the pericardium; slight serous pericardial effusion; renal congestion.

2. *Lesions of older standing*: heart soft, flabby, and fatty; inflammatory thickening of mitral and tricuspid valves. These alterations are undoubtedly referable to rheumatic infection. But over and over them we also discovered *renal lesions of old standing.* Both kidneys are small, lobulated and sclerotic, sclerous bands penetrating from the capsule in the direction of the parenchyma. The cortical substance was atrophied, especially in the left organ. The pyramids were destroyed and replaced by sclerous tissue in the left kidney, down to the level of the inferior pole.

Thus the patient presented old renal lesions of a nature which had made him exceptionally susceptible to the influence of any form of intoxication. Besides, when we commenced to treat him he had already been suffering from high fever; we also administered a large dose of the medicament—more than the 2 cc.—as it had occurred to us that by increasing the dose we should secure a more rapid and complete effect. We have now arrived at the conclusion that the quantity should not exceed 1 or 1·5 cc. We feel quite convinced that by acting with prudence and after carefully testing the individual susceptibility of the patient, we will be enabled to avoid the recurrence of a similar accident. But the occurrence of a single unfortunate result, however deplorable, should surely not induce us to abandon the use of a therapeutic agent which has proved itself superior to all others previously known, and which appears capable of successfully warding off all cardiac complications.*

By the record of those few observations we have indicated the principal effects of intravenous injections of *Colloidal gold* on the course of articular rheumatism. It now remains for us to describe in their entirety the *technique* and mode of action of our special treatment.

Technique and Mode of Application.—Injections of *Colloidal gold* may be employed to the exclusion of every other kind of treatment; at the utmost we merely have recourse in addition to wrapping up of

* We have now administered more than 200 injections of colloidal gold, not only in cases of rheumatism, but also in those of other infections, both medical and surgical, including cases of gaseous gangrene accompanied by deplorable general conditions. The accident above recorded is the only unfavourable one we have hitherto met with.

the most painful of the affected joints in wadding, or some local applications of methyl salicylate. We have employed blue *Colloidal gold*, obtained by the chemical process, and containing 0·25 milligramme of the metal to 1 cc. This is the preparation known commercially as *collobiase d'or*.

The administration of the injection should be *intravenous;* intramuscular injections have but little effect.

As regards *dosage*, we advise the physician not to exceed, for the first time, 1 or 1·5 cc.; especially if the temperature is high, and the patient greatly agitated; as the intensity of the reaction cannot fail to be accompanied with danger. The subsequent injections may then range in amount from 1·5 to 2 cc.

A single injection suffices in some cases; but in the greater number it will be necessary to administer two, three, or even four. The successive injections should be given after intervals of twenty-four or forty-eight hours. If the temperature proceeds to subside regularly after an injection, we may await developments; sometimes definite apyrexia will be established in the course of three or four days, without repeating the injection; but we should always hold ourselves in readiness to repeat the injection on the slightest indication of reappearance of the fever or articular pains.

When the patient has become completely apyretic, and commences to walk, we must be prepared to deal with the weakness and pains in perhaps one or two articulations. At the commencement of one of our investigations, we were of the opinion that *Collobiase* was then of no further use; so that we proceeded to the administration of *Aspirin*, and submitted the patient to the application of various external medications (sulphur baths, local heating, etc.). But we are now convinced that the injections of *gold* are useful in this stage also, and that a puncture made every three or four days leads to a fairly rapid absorption of the exclude—which is a specially prominent feature in cases occurring after the age of 35.

If the patient has presented cardiac symptoms at the commencement of the attack, it seems to us to be beneficial to renew the injections, even after the fever has completely subsided; one or two punctures, made in the apyretic period, have indeed, in some of our cases, secured the complete return of the heart to its normal state.

In a case of subacute rheumatism, the action of *Colloidal gold* is, as a general rule, less rapid and less complete; it will be found necessary to administer at least four or five injections, at intervals of some days. But we have, nevertheless, obtained results which seem to us to be superior to those yielded by the use of salicylates in those always troublesome cases; and, more especially so, as we have always been able to obviate the occurrence of endocarditis.

The course of treatment of rheumatism with *Colloidal gold* is sometimes completed by having recourse to articular puncture. In most cases of the acute type, the hydrarthrosis rapidly disappears under the influence of the injections; but it sometimes persists in one or both knees, provokes the continuation of pain and undergoes absorption but tardily. If the effusion is copious in quantity, it will be necessary to evacuate it after the subsidence of the fever; in the majority of cases it will not recur; and we then do not hesitate to make the patient leave bed two days after the puncture. When the fluid withdrawn from a joint presents a marked polynuclear reaction, we may fear a relapse; but if the lymphocytosis is approximately pure (and that is what we most frequently meet with some days after the treatment) the probability of relapse is but slight; then the effusion behaves very much like a foreign body, which it is accordingly desirable to remove. On this account we always should after the subsidence of the fever, puncture any articulations which still remain tense. By this means we hasten the completion of the cure, and also obviate in great measure the appearance of consecutive muscular atrophy.

Action of Colloidal Gold.

Such are the rules which we believe appropriate for the treatment of acute articular rheumatism. Let us now see how the *Colloidal gold* acts.

(1) *Stage of Reaction.*—Fifteen or twenty minutes after the injection, a rigor of great intensity develops and lasts for a quarter of an hour; rapid elevation of temperature, which often rises above 40° (104° F.); abundant sweats. This reaction attains its maximum at the end of one to two hours; it is nearly over at the end of three hours.

(2) *Effect on the Pain.*—The intravenous injection of *Colloidal gold* exercises a very clearly defined analgesic action. The patients usually experience relief some hours after the puncture; they begin to move their limbs, which had previously been completely rigid. Those who had previously been submitted to the salicylate treatment are always the first to affirm the superiority of that with gold. One of our patients, indeed, who was infected with a grave type of rheumatism, and in whose case the fever persisted in spite of three weeks of treatment, was quite relieved from suffering for some days after the puncture had been resorted to; the *Salicylate* treatment had neither relieved the articular pain nor lowered the temperature; and this young man actually felt well despite the persistence of the fever; and, of his own accord, asked for a repetition of the injection when the pain recurred.

(3) *Effect on the Temperature.*—After one or two—sometimes three—injections, repeated at intervals of three days, the fever subsides, sometimes brusquely sometimes in course of three or four days. Such is the general rule; but we sometimes meet with rebellious cases, in which the injections have to be repeated up to the number of five or six. Such are, however, but the exceptions; and it appears, too, that the *Salicylate* treatment gives no better result in those cases.

(4) *Action on the Articular Effusion.* As a rule the effusions undergo rapid absorption; when they persist, puncture should be resorted to, as we have already said.

(5) *Action on the Complications.*—One of the most remarkable results of the *gold* treatment is the suppression of the cardiac complications. The presentation of some figures in this connection will give precision to our ideas.

We have treated fifty-four cases of rheumatism with *Salicylates.* In that series we met with thirteen examples of cardiopathy, of which six were cured (four cases of endocarditis, two of pericarditis). There were seven cases of organic, definite cardiac lesion (one double lesion of the mitral valve, five of mitral insufficiency, one of apparently pure mitral narrowing).

We have in turn submitted eighty-four patients to the *Colloidal gold* treatment. In eight of those cases, it was adopted only late in

the course of the disease; and of this number three had already developed a valvular lesion, which was fully established at the time of the first injection. Thus there remained a series of seventy-six patients who received timely treatment with the *Collobiase*; one of these died during the stage of reaction (Obs. XIII.). Among the others, five presented, at the time of their entrance into hospital, well defined symptoms of endocarditis in course of evolution. Those were all completely cured in some days. No one of our cases has ultimately retained the smallest sign of cardiopathy.

Thus, with the *Salicylate* treatment we had seven cases of definitive valvular lesion remaining among our fifty-four case; with the *Colloidal gold*, we had among the series of seventy-six cases who received timely treatment one case of rapidly occurring death, and one of definite cardiopathy.

In one of our cases—a patient who had previously suffered from a number of attacks, and presented a sub-acute form of the disease—we have seen rheumatic iritis develop after he had already received several injections and appeared to be fully convalescent. We proceeded to carry out local treatment (hot compresses, *Atropine Collyrium*) and administered an injection of 2 cc. of *Collobiase.* The improvement was rapid at first; then, as a slight relapse occurred, a second injection was given, and the cure was complete in three days. We have thus received the impression that the *Colloidal gold* in this case distinctly favoured the action of the local treatment.

Two of the cases that we treated with *gold* had presented spinal symptoms (rigidity of nucha, Kernig's sign); but these yielded at once to lumbar puncture (the cephalo-rachidian fluid was normal).

(6) *Action on the General Course of the Disease.*—The treatment with *Colloidal gold* produces a notable abridgment of the course of the disease, inasmuch as it enables the patient to leave bed sooner, since a grave relapse need not be feared. The fever often subsides in three or four days. But even when the antithermal action has not been so rapidly manifested, and the temperature has not subsided before the end of five or six days, the very important fact remains that we can begin to mobilise the patient very soon—after two days of apyrexia. In this matter we proceed in the following way. During the course of the crisis the patient is retained in bed, and is nourished with milk and eggs. The temperature having

subsided, after one day of apyrexia we all the use of legumes; on the second day, the patient sits up and is allowed to walk a few steps; the third day (when there is no albuminuria) the alimentation is made nearly quite normal, and we allow the patient to walk about a little in the bedroom. A good many of our patients even make a little promenade outside, and go down-stairs at the end of five or six days; a great number enter on the stage of convalescence fifteen-days after the commencement of the attack. There has never been a case of prolonged relapse; sometimes, indeed, after leaving bed a little too hastily, a slight elevation of temperature followed, accompanied with some swelling of the knees; but three or four days more in bed and a new injection always proved sufficient to strangulate any such attempt at relapse. Now, everybody knows how necessary it is to be cautions in mobilising rheumatic patients who have been treated with *Salicylates*; also, how frequently, in spite of all such prudence, relapses—many of grave character, too, are prone to occur. In this respect, the treatment with *Colloidal gold* gives very remarkable results indeed.

(7) *Contra-indications of this Treatment.—Colloidal gold* is an active medicament, which requires to be manipulated with a certain degree of caution; of this fact our own fatal cause may be taken as proof. When the temperature is very high, and the patient is greatly agitated, we should administer but a feeble dose; we are even of the opinion that, having regard to the intense, even although transitory, congestive phenomena which are produced by the injection, we should abstain from the administration in cases of hyperpyrexia or cerebral disturbance. Such conditions seem, indeed, to us to form the only contra-indications to this treatment. On the other hand, the occurrence of endocarditis at the outset calls for an immediate use of this remedy; when any asystolic phenomena are present, the dose administered should be a small one (0·5 to 1 cc.) it is also desirable in some cases to have recourse to a preliminary injection of spartein or of camphorated oil, from the fact that *Colloidal gold* produces an accentuated cardiac erethism, although but of transitory duration.

Comparison with other Methods of Treatment of Rheumatism.

We have already, in the course of the present communication,

indicated our reasons for concluding that the treatment of rheumatism with *Colloidal gold* is superior to that with *Salicylates*, so that we need not discuss the question again. We have also communicated our early results to the medical meetings of the physicians attached to the sixth army corps. Almost at the same date, MM. Loeper and Varham published the successes which they had obtained with injections of *Colloidal sulphur*. While admitting that the number of their published observations is but small, it appears to us that we have secured more rapid and constant results from our own use of *gold*. We have brought two points into prominent relief: the rapidity of convalescence and the suppression of cardiac complications; so that, far from contra-indicating the use of *Colloidal gold* a case of endocarditis in course of evolution actually demands it. We do not as yet definitely know whether the *Colloidal sulphur* will have the same preventive action in presence of the development of cardiac complications: but we are already satisfied that every appearance testifies to the fact of its having been established in the case of *gold*.

Besides, it is very possible indeed that the use of other colloidal metals may be followed by a corresponding degree of success, We have tried *gold*, and have unquestionably found it a superior remedy to any that we had previously employed, and we have proposed to ourselves to carry our corresponding clinical researches with *Colloidal silver* (*Electrargol*, which we employed in one case, gave us no result). It is certain that the colloidal state possesses as great importance in the success of the therapeutic procedure as the nature of the metallic element itself; we are also equally sure that in the matter of colloidal metals the mode of preparation plays a *rôle* of considerable importance, and this has been our reason for indicating specially the clinical fact that our own patients have been treated with the preparation known as *Collobiase of gold*.

Action of Colloidal Gold in the various so-called Rheumatic States.

The results which we have hitherto discussed were all obtained in the treatment of purely acute articular rheumatism, and in the subacute forms of the same disease. But we have also employed *Colloidal gold* in the treatment of two cases of seric rheumatism

(consecutive to injection of antitetanic serum), in two cases of blennorrhagic rheumatism, in one case of infectious mono-articular rheumatism, of undetermined nature, in one case of rheumatoid purpura, and in one case of arthropathy in a tuberculous patient who was suffering from dysenteriform diarrhœa. In every one of those patients, the injection of *gold* produced an attenuation of the pain, but did not appear either to abridge or otherwise modify the normal evolution of the disease; the cases of blennorrhagic rheumatism recovered slowly; the infective mono-articular rheumatism ended in a partial anchylosis of the knee-joint: the purpura yielded only to prolonged rest in bed; the arthralgias of the tuberculous patient recurred after a partial subsidence of some days. Accordingly, the *Collobiase of gold* is above all things a remedy of pure rheumatism. It may prove useful in the treatment of pseudo-rheumatic conditions, but only by functioning as an effective analgesic. And by acting in the same way, as an analgesic agent, it has given us satisfactory results as a remedy in two cases of rebellious sciatica.

Conclusions.

Intravenous injections of *Collobiase of gold*, when administered in cases of acute articular rheumatism, produce the following effects:—An analgesic action, which is constant; a fall of temperature which is often quite abrupt (this result is very frequent, but is not quite constant); abbreviation of the duration of the attack, not only as regards a rapid subsidence of the fever, but of otherwise special importance, because, after the lapse of two or three days of apyrexia, we may commence to get the patient out of bed without fear of producing a serious relapse; considerable abbreviation of the period of convalescence suppression of rheumatic endocarditis. The favourableresults of injection of *Collobiase* are specially manifested in the purely acute cases; but they are also displayed in the subacute, although in somewhat less degree.—The *Homœopathic World*, May 1, 1916.

THE

CALCUTTA JOURNAL

OF

MEDICINE.

Vol. xxxv.] **September, 1916.** [No. 9,

THE ORACLES OF COS.

By A. Ad. Ramseyer, Salt Lake, Utah.

Foreword.

[Many authors have sought to deduct a sure prognosis from the symptoms of the sick. No one has labored harder to establish these rules with exactness than Hippocrates. These are to be found in almost all his writings, but especially in his Prognostications and Aphorisms. Many have undertaken to explain them, but as their commentaries were founded upon their own systems and their preconceived notions they only have augmented the obscurity engendered by the laconic style of the Father of Medicine.

To restore to these sentences all the authority which they merit, and to prove their intelligence, Dr. Aubrey, in his work, "Les Oracles de Cos," has followed the example of Hippocrates, in deducting them from the facts, or comparing them with ascertained facts. The 42 clinical cases related in the first and third books of Hippocrates' Epidemics, the authenticity of which

is generally acknowledged, are the best proved facts. By deducting each rule from these cases, Dr. Aubrey has laid bare the Oracles of Cos, and made Hippocrates' writings as clear as if Hippocrates had commented on his own writings. After writing a first section containing the cases of the patients who died, a second section containing the cases of the patients who recovered, Dr. Aubrey made in a third section a recapitulation of all the symptoms, and justified each precept by examples taken from the forty-two clinical cases. This third section is the one translated now.—A. AD. RAMSEYER.]

That physician who can foresee farthest in the future of the disease is superior to the others in the healing art.

HIPPOCRATES, *Book of Prenotions.*

SOME GENERAL PREDICTIONS DRAWN FROM THE CRITICAL DAYS FROM THE SIGNS OF COCTION AND CRUDITY, FROM THE DIET, ETC.

Acute diseases, as pleurisy, pneumonia, brain fever, and all inflammatory diseases, with continued fevers are judged within fourteen days, whether for life or for death.

The days in which the sick die are precisely the same as those in which they get well. Very simple diseases, accompanied by very favorable signs, as those where there are signs of coction the second or third day,* terminate well the fourth day or before; on the contrary, those which are very malignant, and accompanied by very baneful signs, bring death on the fourth day, or before.

Thus terminates the first effort of nature; the second effort, or second critical day, is the seventh day; the other critical days are the eleventh, fourteenth, seventeenth, twentieth and twenty-sixth. In adding according to this rule, the first circuit is of thirty-four days, the second of forty, after which the other critical days happen only every twentieth day, till the one hundred

* From the day the disease begins, which is reckoned as the first

and twentieth, inclusively. (If the disease terminates on one of these critical days it is said to be *judged*. *A crisis* is an effort made by nature to bring a disease to an end, whether by recovery or death; also a change of symptoms, attended by an outward manifestation, such as sweat, vomiting, urine or stool, hæmorrage, expectoration, eruptions, tumors, etc. By dividing the medical month of 26 days and 12 hours by 4, we get 4 weeks of 6 days, 15 hours each; hence the crisis of the first week happens after the sixth day, viz., on the seventh; two such weeks added make 13 days, 6 hours; hence the crisis of the second week happens after the thirteenth day, viz, on the fourteenth; the three weeks being 19 days, 21 hours, the crisis happens during these last 21 hours, which is exactly on the twentieth day; four weeks added together give 26 days, 12 hours.)

When the diseases shall be long it is very difficult, in the first days, to differentiate those in which the sick will die from those in which they will recover; for their beginnings are very like; but by carefully observing every quatrain (see what follows) from the first day, it will not be long before one finds out which way the disease will turn.

To know what will happen on the seventh day one must well observe all the signs which will appear on the fourth. For instance, those who will have a favorable crisis on the seventh day, pass, on the fourth, urine of a good color, with reddish nebecula, else a white, even, and light sediment. Likewise the eleventh and seventeenth days indicate the occurrences of the fourteenth and twentieth days. The first, the seventh and the fourteenth days indicate what shall happen on the fourth, the eleventh and the seventeenth days. One must then at that time carefully observe the pepasmus, the crudities, and the other good or pernicious signs in the urine, in the dejections, in the sputa, etc.

It is very important not to confound these perturbations or critical symptoms with those of the disease; the first are salu-

tary, while the others are dangerous; the favorable symptoms appear after the coction, near the time of the crisis, and soon relieve; on the contrary, the unfavorable symptoms appear during the crudity, with pernicious signs, and at any time.

The *coctions* always announce an approaching crisis and a sure recovery. (Coction is a term meaning digestion, chymification; pepasmus means concoction maturity from the Greek word "pepaino," to mature.)

The crudities, such as aqueous humors, clear or without consistence, the bad coctions, as the heavy sediments, like coarsely ground barley, which change into bad abscesses, announce either a lack of crisis, or pains, or languor, or relapses, or death.

The symptoms remaining after the crisis cause relapses unless these symptoms are sequels which remain for the rest of the life.

When the sick are going to thoroughly recover, viz., without relapse and without sequel there are almost always some rudiments of good coction toward the middle of their disease.

When, on the contrary, the sick are going to die, one observes toward the middle of their disease an augmentation of symptoms, some putridity, or some other mortal signs.

When the third day of acute diseases is accompanied by dangerous symptoms, if the fourth is like it, the sick is in very great danger.

Those who in continuous fevers are worse on the fourth and the seventh day generally die, if there is no crisis, on the eleventh day.

Fevers which cease without signs of solution, viz., without signs of coction, and on days that are not critical, are apt to return.

A lack of crises and incomplete crises on critical days are not always mortal; but they always signify that the disease will be long.

When the sputa appear late in pleurisies it is a sign that they will be long lasting.

If in continuous fevers the whole body is covered with pustules which do not suppurate, it is a sign of death, unless an abscess is formed somewhere else which gives a sufficient quantity of laudable pus.

It is a sign of death if in the beginning of fevers delirium supervenes, or if a member becomes paralyzed, unless there be some other good signs or the sick have a strong constitution.

Blindness is sometimes critical in fevers.

Those who become cross eyed during acute diseases are in great danger.

Diarrhœa and constipation alternating indicate that the sickness will be long and dangerous.

A tense, dry and arid skin is a very bad sign.

Those who, being very weakened by the sickness, lose the faculty of seeing and hearing are near death.

[Observation of Dr. Aubry.—Galen has observed that crises are always more salutary when the moon gives her light in greater abundance, as in her first quarter, or when full (in opposition). I have noticed the same thing several times, and have often seen the sick perish in the decrease of the moon and at its conjunction (new moon), especially old people and worn-out persons, or such who had a feeble constitution, either in acute, or in chronic diseases. I can even certify that I have often predicted just these kinds of death; the whole art consists in examining well the good and bad signs, the acutenes of the disease, its quick or slow progress, and the strength of the sick; after having weighed and compared well all the signs, if it is foreseen that a crisis or a recrudescence of symptoms will take place near or at the time of the new moon, it is not difficult to establish a certain prediction. It sometimes happened to me, in treating old people of either sex, to announce their death five or six weeks in advance, to one day almost. Here is how I did it: I began by examining well all the strength

of the sick two or three days after a full moon; after that when I judged that they still had vigor enough to pass the time of the next conjunction (new moon), I fixed the time of the death about the decrease of the following moon.]

Accouchments. Lochia, Menses, etc.

Adequate and reasonable monthly evacuations heal ardent fevers.

Coition singularly increases (aggravates) beginning diseases.

The critical days for confined women either for life or for death, are precisely the same as those of acute diseases, viz., the fourth, the seventh, the fourteenth and the twentieth.

Acute diseases are fatal to pregnant women.

Women who have severe shivers before their confinement, and who afterward have an easy labor, have some difficult and dangerous sequels.

Diarrhœa is pernicious for newly confined women, whether they were confined at the right time or otherwise.

Shivers supervening after a miscarriage are pernicious.

Suppressed lochia in newly confined women announce that death is near at hand, if the humor settles on the brain or the chest.

Suppressed lochia indicate great danger; but if chills supervene it is a most pernicious sign, especially if there is a pain in the hypochondrium.

Restlessness.

When the sick are very restless in acute diseases they are in very great danger.

Convulsions, Hiccough.

Very severe headaches very often cause convulsions.

Continual agitation and restless sleep are ordinarily followed by convulsions.

Pains in the neck often announce convulsions in acute diseases. But it is not so if the fever is not acute, and if these pains are only occasioned by a tumor of fluxion.

Excessive sleeplessness in acute diseases causes delirium or convulsions, especially in women and children.

Convulsions which supervene in acute diseases are always dangerous, but much less so in the beginning than toward the apogee.

Sad and frightful thoughts in acute diseases announce a great danger, and generally lead on to convulsions.

When the convulsion of the lower jaw (which Hippocrates sometimes calls dentium stridor, grating of the teeth) supervenes in continuous fevers, it is a very bad sign which announces the approaching delirium, and very often the death; this symptom is absolutely mortal when it is joined with delirium.

When the head is heavy and aching, with drowsiness, convulsions are to be feared.

When delirium is joined with sopor it is often a sign of approaching convulsions.

Intense delirium accompanied with furor most always ends in convulsions.

When the hiccough appears in laborious fevers it is a very pernicious sign.

DIARRHŒA.

The most dangerous evacuations are the black, the fat and green, whether they appear all together or singly.

Bilious stools, high in color, foretell a grievous future, especially when they appear on a critical day.

Frothy, bilious stools are very suspect in acute diseases, especially to those who have pains in the loins.

Every reddish diarrhœa is very bad in acute diseases, but it is pernicious when there is insomnia and drowsiness with headache and backache.

Gray or white stools in acute and bilious diseases are mortal, especially when there is brain fever, delirium or an affection of the liver.

All liquid, watery stools which supervene to drowsy, torpid patients are very bad, especially when the sick are thirstless.

Frequent small, thin, dry, dysenteric, corrosive stools of pure bile are very suspect in acute diseases; but the more so if with these there is a tendency to phthisis.

(There are, however, some constitutions where the diseases are such as are judged by the dysentery; you know that dysentery is decretory, *i.e.*, critical, when the patients suffer it without much pains, and when it is not of long duration; by the cessation or considerable diminution of the fever and of the other preceding symptoms; when the stools are not very frequent; when the patient's strength keeps up, especially if the humors have been crude for a long time, and if the coction has not been entirely good; but the sick who are judged under these circumstances run the risk to have some sequels after the crisis; for instance, the sight may become dim.)

Loathing of Food.

The constant loathing of food is a mortal sign.

Delirium.

Insomnia, headache, dryness of the tongue and deafness foretell delirium.

Delirium, fear and discouragement are very dangerous in acute diseases.

Restlessness, insomnia and a respiration slow and deep prognosticate delirium and sometimes convulsions.

The sick who in the delirium feel about the bedclothes, the walls or scratch with their hands, or are picking flocks, are phrenetic and mortally afflicted.

In patients which have not lost the speech, a great delirium with silence is a mortal sign.

Pains in the Neck.

Pains in the neck are dangerous in all sorts of fevers, especially in those where it is feared that delirium may happen.

Pains in the Loins.

Aching of the loins or of the back makes the disease very serious.

During a fever lumbar pains cause liquid stools.

When the pains remove from the loins to the head and the neck, we may fear delirium, convulsions, or even some paralytic affection.

Pains in the Limbs.

If, during acute diseases, considerable pains supervene in the thighs, while the humors are yet in a state of crudity, it is a sign of malignity and of approaching delirium, whether there be a cloud in the urine or not.

If a severe pain begins with the fever and occupies a small organ, such as a finger, a toe, etc., it is suspicious, because these parts cannot contain a sufficient quantity of morbific humors.

If, during acute diseases, pains supervene in outward parts, remote from the vicera, and constantly remain there, it is a salutary sign, if these pains happen on a critical day, with some rudiments of coction, and if the parts which are the seat of the metastasis have sufficient capacity to contain all the morbific humor.

Pains in the Bladder.

The pains in the bladder are formidable in the continuous fevers; for they suffice to kill.

Pains in the Head.

Severe pains in the head which continue during the fever are mortal if there are at the same time other bad signs.

Cold and Livid Extremities.

When the head, the feet and the hands become cold it is a

very bad sign; but when the warmth is a long time in coming back the danger is still greater, and if it does not return, the disease is without help.

In the severe pains of the belly, cold extremities announce a very great danger.

It is a very bad sign when a patient has cold extramities and a warm belly.

When the fingers and the nails become livid death is not far.

Chills.

Chills which supervene in fevers on critical days with signs of coction and which are followed by noteworthy evacuations are salutary.

A coolness or chills which return often in acute fevers forebode much danger.

Chills, after which the patients cannot again get warm or only after long intervals, are most always fatal.

Nothing in acute diseases is more pernicious than a suppression of urine succeeding a cold or a chill.

Chills which happen on the sixth day of a continuous fever show much danger.

Nosebleed.

A copious bleeding from the nose rids from many ills.

A heavy head, insomnia, delirium, aching of the eyes, and a red face foretell nasal hæmorrhage, especially in burning fevers, and when the patients have not yet reached the age of thirty-five years.

When only a few drops of blood run from the nostrils in acute diseases, it is a very bad sign.

Icterus.

Icterus which supervenes on the sixth day of an acute disease is a very pernicious sign.

Hypochondria and Palpitation therein.

Painful tumors in the hypochondria are one of the most pernicious symptoms.

Pulsations or palpitations which, during acute diseases, supervene in the hypochondria often foretell a fatal delirium.

Tense or painful hypochondria, without being hard externally, are very suspicious in acute diseases, because it means that the inflammation is deep, as in the diaphragm, etc.

When there is only one hypochondrium affected, the pain is more dangerous on the right than on the left side.

Fevers which begin with pain in the hypochondria foretell malignity.

The immoderate drinking of spirituous liquors and the eating of beef in summer are the cause of serious diseases of the liver.

It is a sign of death when pain in the hypochondria is joined with stupor.

Forgetfulness. Loss of reason.

Those who forget to urinate, or who only urinate when urged to (by the attendant) are very ill; in this case the urine is like that of which the sediment has been stirred.

It is a good sign when those who have been in frenzy remember their ravings; the contrary is a very pernicious sign.

Deafness and a red urine, without sediment, with a light and thin cloud, show that the mind will soon be deranged. Where these symptoms happen to icterical patients it is a very bad sign, and if they lose their reason the danger is greater still, for they are deprived of speech without losing consciousness, and then they get a copious diarrhœa of crude humors of bad quality which leads to death.

Tongue. Thirst

A thick and dry tongue is a symptom of frenzy, especially when the patients drink little.

When excessive thirst in acute diseases is joined to dryness of tongue, it often foretells a nearing delirium.

When the thirst disappears without reason, it is a very bad sign.

An immoderate burning, unquenchable thirst is a very pernicious sign.

Parotitis (mumps).

When the mumps appear in acute diseases it is necessary that they dispel the fever according to the law of crises, viz., that they do not appear too early nor in great crudity; that they appear on critical days, and that they be accompanied or followed by a warm, general sweat; or that they undergo a coction and turn into laudable pus; or that a sufficient nasal hæmorrhage supervene; or that there be found a thick, copious sediment in the urine; or that a bilious, dysenteric diarrhœa supervene; or pains in the hips, thighs, knees. Without any of these conditions the sick are almost always sure to perish.

Loss of Speech.

When a patient who is very weak loses his speech, it is a mortal sign.

Those who in acute diseases palpitate throughout the body are in danger of losing the speech and of dying in that condition without being able to regain it.

Those who lose their speech after an incomplete, unfavorable crisis, or even after a lack of crisis, are in danger of dying with a tremor.

Those who after having been delirious lose their speech are near death.

Sleep. Coma.

In all diseases it is a good sign when the sleep does good, but when it is laborious and harasses the sick, it is a very pernicious sign.

When, in acute diseases, the patient does not sleep neither day nor night, if the sleepiness is not caused by severe pains, it is a sign approaching delirium.

Drowsiness is always bad, but it is fatal when accompanied by coolness.

Comatose sleep is pernicious in acute diseases

When sleep alleviates the delirium it is a good sign.

Sweat.

When fever patients sweat without a diminution of the fever it is a very bad sign.

A sweat which is only partial is of no help and troublesome.

Those who in acute diseases sweat on the head, and who at the same time are restless, or who are impatient, are in a bad plight, whether the urine be black or not, and if, besides, the respiration is affected, the danger is greater still.

Cold sweat is a mortal sign in acute fevers.

The sweat which supervenes in the beginning of the diseases, or before the coctions, is always symptomatic and of bad import.

A partial sweat about the head only or the neck, and under the nose is of very bad import; for in very acute diseases it foretells death, and a slow course in the less acute diseases.

The sick are in great danger when they have only sweats which do not alleviate the fever, and if there is at the same time tension in the hypochondria; but the danger is greater still when the affection of the hypochondria flows back toward the upper parts, as the chest, or the brain, which causes pneumonia, delirium, etc.

In acute diseases a good sweat is one that is abundant, warm and universal, which happens on a critical day, which cures or alleviates, or which enables the sick to bear their ills more easily.

Deafness.

Deafness is a bad symptom in acute diseases; it often causes (precedes) a furious delirium and sometimes death.

When there are severe pains in the lower parts, a supervening deafness causes them to cease, and reciprocally deafness leaves off or is diminished by pains in the lower parts.

Deafness, headache, tension in the hypochondrium, and a thin urine are threatening signs of parotitis.

If deafness supervenes in fevers it most always foretells a furious delirium, unless the fever cease by a crisis. But if a sufficient nasal hæmorrhage, or a bilious dysenteric diarrhœa, or pains in the thighs, knees supervene, the delirium and the deafness cease.

Urine.

The urine, which is abundant and has undergone the (physiological) coction, viz., is of a light yellow color, or of the color of a lemon, which deposits much white, light, uniform sediment, and which appears as such on a critical day, or a few days before, is the best of all.

A thick, muddy urine which does not become clear, although undisturbed for a long time, is very bad.

A thin, scanty urine, which does not correspond to the quantity of drink taken in is everywhere a very bad sign.

When the urine is suppressed in acute diseases it is a very pernicious sign.

A reddish urine which has a reddish sediment before the seventh day is a sign of cure for the seventh; but if it appear only after the seventh day, it is a sign of a tedious disease; however this urine shows great security for the sick.

A white, thin, transparent urine is of very ill omen in acute diseases, especially when brain fever or delirium is present.

A black urine in acute diseases foretells sinister events.

A black urine which deposits a black sediment is still more pernicious.

A black urine which changes into a thin, clear one is very dangerous.

A black urine is not always of mortal import, especially for those suffering of a spleen disease, or for those who get a copious nosebleed, or a hæmorrhoidal, menstrual, etc., evacuation, which flows adequately.

A black or thin urine, without color, with suspended particles, foretells the inflammation of the brain in the sick which have restlessness, insomnia, and are sweating.

The nubecula which remain suspended in the urine without falling to the bottom of the vase foretell the delirium in acute diseases, especially when there is deafness at the same time.

Any kind of urine passed with pain and in small quantity is of very ill omen.

The urine which is passed involuntary or without notice on the part of the patient is a fatal sign.

The urine which in acute diseases looks like oil of a dark red color, drawing to black or brown, is the most fatal, because it indicates the flowing back of the bile into the blood, and a feverish affection of the liver.

A urine on the surface of which are floating greasy pellicles like cobwebs, must be deemed bad, for it indicates colliquation,

When, in acute diseases, the urine has sometimes a white light sediment, or is sometimes passed clear, this signifies that the illness will be long and less safe, especially if in this alternative the urine is thin, bilious with a moderate and thin sediment.

The urines which vary in color and in sediment are suspicious.

The suppression of urine following after chills or a cold is fatal in acute diseases.

A thin, colorless urine is a sign of crudity, and indicates in the beginning of a disease that it will be long and dangerous, because the forces of the patient may not last long enough to make its coction.

If the coction of the urine takes place little by little, if it becomes complete about the fourth day, there is almost immediately a crisis which brings a happy termination of the disease.

Pericles of Abdore, the first day, passed a cloudy and white urine; the second day, it began to deposit; the third day, the sediment was copious and laudable; the fourth day there happened a warm, universal sweat which completely cured the sick.

The urine, the sediment of which is like barley meal coarsely ground, is a pernicious sign.—The *Homœopathic Recorder*, July 15, 1916.

EDITOR'S NOTES.

The relative proportion of boys and girls born during the war.

There is a widespread belief that the proportion of male births tends to rise under the conditions produced by warfare, and that this excess of boys has in the past been a useful factor in restoring the male population of a country whose manhood had been depleted by a long campaign. It has been contended that, since famine and hardship are conditions of its production, this excess of boys does not occur in the case of the larger nations of the present world-warfare, as these conditions are not present, at all events not yet. The phenomenon should be noticeable, if statistics were available, in occupied Belgium and Serbia, not in England or France. We have, however, seen a recent published statement to the effect that in France this year the number of males at birth greatly exceeds the number of females, and that in a Paris maternity hospital an overwhelming proportion of boys is being born. We do not know the authority for such statements, but the figures in our possession do not confirm them. At the Maternité Départemmentale in Châlons-sur-Marne, for which the matron in charge, Miss E. M. Pye, has furnished us the figures up to the end of May last, 122 boys and 140 girls have been born to women of the distressed area of the Marne, where, if anywhere in France, the conditions are those of want and of strain.—The *Lancet*, July 8, 1916.

Plantain Juice as an Antidote for Snake-bite.

I recorded recently a case of alleged cure of snake-bite at Colombo by the use of plantain juice.* A case of snake-bite at Serampore will therefore be of interest where plantain juce was used. A servant of the principal of the Government Weaving College was bitten by a venomous snake in the foot. The principal applied a ligature eight inches above the bitten part and then cut it with a lancet and applied permanganate of potash, making the wound bleed freely. He then extracted some juice

* The Lancet, April 1st, 1916 p. 746.

from a plantain tree and gave the patient about a cupful to drink. After drinking the plantain juice, the man seemed to recover a little, and the wound was washed. He was made to walk up and down, and in the morning, when the ligature was removed, the man was declared cured. The *Lancet*, July, 15, 1916.

Venereal Disease in Sweden.

In a paper by Dr. Sederholm on venereal disease, on which we have already commented in THE LANCET of June 17th, an interesting account is given of the distribution of venereal disease in town and country in Sweden. It is a matter of common knowledge that the venereal diseases are mainly the products of large towns and industrial centres with a dense population. But hitherto there have not been many investigations shewing how great the difference is between the incidence of venereal disease in town and country. When a modified form of compulsory notification of venereal disease was introduced in Sweden on Dec. 30th, 1911, this difference soon became evident. This system of notification did not supply the names of the persons concerned, but it did give the name of the place in which infection was supposed to have occurred. The figures for 1914 show that in Stockholm the incidence of new cases of venereal disease was 2·17 per cent. of the total population. The incidence of the disease for the three towns Stockholm, Gothemburg, and Malmö was 1·49 per cent. For the smaller towns it was 0·26 per cent., and for the country districts it was as low as 0·02 per cent. In the three large towns there were 1629 new cases of syphilis, 8168 new cases of gonorrhœa, and 1126 new cases of ulcus molle. While the total population of the three towns was only 665,638, the total population of the country districts was 4,156,717. Yet in the country districts there were only 121 new cases of syphilis, 666 new cases of gonorrhœa, and only 26 new cases of ulcus molle. It appears from these figures that the danger of infection from venereal disease is 75 times greater in the large towns than it is in the country districts, and that far more active measures are required to combat the disease in the crowded com-

munities than elsewhere. That the relative preponderance of venereal disease in the large towns coincides broadly with the incidence of prostitution is the inevitable conclusion from these facts and figures, and if the problems of venereal disease are those of prostitution it is only by reforms in the conduct of prostitution that an appreciable reduction of venereal disease can be anticipated. This, the moral of Dr. Sederholm's communication, is a point of view not shared by all the other members of the Board of Health to which Dr. Sederholm belongs. This body, apparently, is in favour of the abandonment of regulation of prostitution in any form, and relies mainly on educational methods and free treatment for every patient. The *Lancet*, July, 15, 1916.

India's Vital Statistics.

How fundamentally the health conditions of India differ from those of other countries of the world is brought out in a report issued by the Department of Statistics. This analyses the health returns compiled by the Indian sanitary authorities. It shows, for example, that whereas in practically all European countries there is an excess of female births over male births, in India the contrary is markedly the case, the mean number of male births in India, taking the female births as 100, varying from 126 in the North-West Frontier Province to just short of 101 in Coorg. Again, both the birth and the death rate in India are extraordinarily high as compared with Western countries. Like the West, India has a falling death-rate, the India ratio having gone down from 33 deaths per 1000 per annum in 1910 to just under 29 per 1000 in 1913. On the other hand, unlike Europe, India still has a rising birth-rate, the India ratio of births per 1000 of the population having increased from 35 in the quinquennial period 1886-90 to 39 in 1913. As regards provinces, the return shows Delhi as the most unhealthy, with a death-rate of close upon 40 per 1000 in 1913, the year taken for review, while Madras is able to claim to be the most healthy, having had in the same period a death-rate of a little over 21 per 1000. The *Lancet*, July, 22, 1916.

Treatment of Syphilis in the Secondary Stage.

Sigmund Pollitzer (*N. Y. State Jour. Med.*, April, 1916) advocates the attempt to abort syphilis when seen at the time of the appearance of the macular eruption. He excises the chancre, administers five injections of salvarsan in two weeks, and ten injections of salicylate of mercury in doses of two or three grains each week. If the patient is first seen at a later stage five doses of salvarsan at one week intervals and ten mercury injections are given, and this treatment, reduced to three and eight doses, respectively, is repeated at intervals of a couple of months for two years. This treatment is continued, even if the serum reaction becomes negative. If the patient remains negative to the Wassermann test after a provocative injection for one year after the end of the last course of treatment, he is discharged.—*New York Medical Journal*, May 20, 1916.

Luargol or "102."

M. Danysz, who has for some time past made a study of the cure of trypanosomiasis, has recently added to the therapeutic armamentarium a new product under the designation of "102," consisting of a bromo-argento-ammoniated arseno-benzol. The microbicide properties of silver salts have been long known, whence colloid silver has come into practical use for inunction and intravenous injection. The results of Danysz's experiments with this substance are given in the issue of *Il Morgagni* for June 14th, and show that it is more active than other arsenical preparations in trypanosomiasis, and that small doses frequently repeated give better results than the injection of the same quantity of the remedy in a single dose. Luargol is an orange-coloured powder, insoluble in water, but very soluble in sodic hydrate, with which it forms a dark-brown solution. Ten centigrammes are soluble in 1 c.c., or better 1·5 c.c. of normal sodic hydrate, and this may be used for injection diluted with sterile distilled water to 1 per cent. The apparatus supplied consists of a tube containing the dose of luargol, a flask with 20 c.c. of

the diluted sodic hydrate, and a filter in a glass tube. The contents, of the tube are dropped into the flask and shaken for five minutes until completely dissolved, the filter tube is then fitted on and the whole sucked up into a syringe of 20 c.c. capacity. For syphilis Danysz advises progressive doses of 15, 20, 25, and 30 cetigrammes up to a total of 1·20 to 1·50 gm., with intervals of two, three, and four days between each injection. The febrile and general reaction is certainly much less than with salvarsan. Intolerance is rarely observed; even slight arsenical erythema is infrequent. Herxheimer's reaction occurs "102," as with every other antisyphilitic remedy, as might be expected. Thus, a roseola treated with 0·10 gramme became more copious, red, and inflamed on the following day, while the temperature rose to 39° C., with the usual phenomena of Herxheimer's reaction, shivering, headache, and sweating; on the other hand, there was no vomiting or diarrhœa, the usual phenomena of intolerance. From the point of view of disagreeable concomitants, therefore, "102" seems to offer an advantage over and "606." There is, however, a possibility of the occurrence of slight venous thrombosis at the point of injection when the requisite technique is not rigorously carried out. Danysz attributes this thrombosis to insufficiency of soda in the solution, but these risks are reduced to a minimum by using the apparatus supplied commercially. Lastly, the therapeutic activity of luargol is decided, syphilitic manifestations disappearing with much greater rapidity than with "606" and "914," especially in secondary ulcerative forms in which "606" often fails. This new preparation marks a progress in the treatment of syphilis and deserves further extended trials. The *Lancet*, July, 8, 1916.

Spontaneous Rupture of the Malarial Spleen.

In the *Journal of the American Medical Association* Dr. W. E. Leighton, of St. Louis, and Dr. F. Moeller, of Chicago, have reported from the 23rd General Hospital of the British Expeditionary Force, France, a case of spontaneous rupture of the omalarial spleen—an occurrence which has been seldom recorded.

An artilleryman was admitted in August 1915, with the following history. He went to India in February 1912, and in August had an attack of dysentery which lasted a few weeks. After recovery he suffered from chills, which recurred regularly, one during the day and another during the night. After two days' treatment they disappeared and he remained well until October, 1914, when they recurred while he was on a transport returning to England. He again recovered under a few days' treatment. While at the front in France after a severe bombardment he had some nervous trouble for several days. On August 13th, 1915, he was taken ill with chills, fever, headache, and pains in the abdomen. There was no history of any injury. He was put to bed for six days at a casualty clearing station and felt better. He was then removed to the 23rd General Hospital. While on the train he was seized with severe pains in the epigastrium, which extended later over the whole abdomen. On admission the temperature was 97° F. He was emaciated and anæmic. The respirations were slow but sallow, the right chest moved less than the left, and its lower part showed an area of dullness extending ½ inch above the nipple. Over this area vocal fremitus and breath sounds were diminished. The left chest showed normal breath sounds but was hyper-resonant. Cardiac dullness was to the left of the nipple line and the apex beat was one inch from this in the fourth interspace. The abdomen was slightly distended but soft and there was no muscular rigidity. The region of the gall-bladder was very tender, especially towards the epigastrium, and there was some tenderness of the appendix region. Acute attacks of pain, simulating biliary colic but extending to the left upper hypochondriac region, occurred. The temperature ranged 101° to 102°. During the night of August 25th there was a severe attack of pain in the epigastrium, the temperature fell to 97·4° and the pulse rose to 120. The patient was collapsed. Exploratory laparotomy was performed in the right upper quadrant of the abdomen. Much old clotted blood and also dark fluid blood appeared. There were adhesions between the parietal peritoneum and the liver, but no gall-stones were felt. The spleen was enlarged and soft and the omentum was

firmly adherent to its convex surface. The adhesions were not broken down and the abdomen was closed, drainage being provided. Convalescence was interrupted by an attack of pneumonia, and after the crisis chills occurred and the malarial plasmodium was found in the blood. Though no bleeding point was found at the operation the evidence was clear that the source must have been a rupture of the enlarged spleen which led to the formation of adhesions.—The *Lancet*, July 22, 1916.

Paraffin Mask for Burns.

Attention was called recently by Mr. Albert Gray, C.B., K.C., Chairman of the French Wounded Emergency Fund, in a letter to the *Times*, to a method of treating burns by paraffin adopted at the St. Nicholas Hospital, Rue Ernest Reman, Issy-les-Moulineux, Paris, by Dr. Barthe de Sandfort, who described* to the Académie de Médecine rather more than two years ago. He was led by his experience of the mud baths of Dax to employ the method in rheumatism and arthritis in 1902; in 1903 he began using it as an application, after cleansing the parts, to ulcers and burns, spraying it on at a temperature of 80°, and even as high as 100°C., without inconvenience. He considered that one chief advantage of the method was that after the paraffin had solidified it exercised a slight but long lasting pressures upon the part. To increase its toughness and suppleness he added a certain proportion of resins, by preference oil of amber (oleum succini). He does not mention the proportion, but as an external remedy for rheumatism oil of amber has been used in the proportion of 1 part to 3 of olive oil or more, up to equal parts. It is to be noted incidentally that oil of amber is seldom found pure in commerce, and that much of it is made not by the distillation of amber, but by the destructive distillation of resins such as copal and dammar, and Dr. de Sandfort's reference to resins suggests that he may be using the commercial product. He stated in his paper at the Académie that under the paraffin

* *Bulletin de l' Académie de Médecine*, April, 14th 1914.

shell intense lymphocytosis occurs, followed by the appearance of islets of epithelium, which gradually extend, and asserted that cicatrization finally took place without contraction. Solid paraffin made fluid by heat has been used for preparing casts of limbs and various other parts of the body, including the head and face. The idea seems to have occurred independently to several people, for when Professor Peters of Toronto described in JOURNAL in 1898 a method in which a spray was used, Mr. Lawson Taid wrote to say that he had used melted paraffin, put on with a rough painter's brush, with the help of a sponge and some iced water, in 1864, and Dr. MacDowel Cosgrave of Dublin said that he had used a similar method devised by Mr. Lewis of Dublin. Professor Peters described and figured an apparatus with a special ejector. With it he rapidly put on a thin layer over the whole surface to be treated, and gradually strengthened it until it was about one-sixteenth of an inch thick; he then sprayed with iced water, which caused rapid solidification. With his ejector it was possible, when the first layer had reached its right thickness, to turn on the cold water, so that the two sprays acted together. "The instant a particle of paraffin," he says, "touches a particle of cold water the former becomes solid. The result is that a sort of sprongy tissue is formed with startling rapidity, in the cancellous spaces of which droplets of the cold water become imprisoned." The mothod in use in Paris seems to depend on getting a fairly thick solid mask which is spoken of as a "carapace." How long it should be left on is not stated, but it is said not to adhere strongly and to be easily removed, and this would no doubt be the case except in hairy parts, where special precautions would have to be taken.—*The British Medical Journal*, July 29, 1916.

The Insufflation of Sulphur in throat affections.

Blowing flowers of Sulphur on to a throat exudation was probably a not unusual remedy among medical men in the past, although on the authority of Professor C. G. Bäumler* it was first recommended by Legauterre in 1866. The proceeding seems to have fallen into disrepute in the metropolis about the time when the first hospitals of the Asylums Board were being opened in the "seventies." Sulphur, although attacked by living protoplasm, is probably quite unaltered by a mucous membrane—Bruce and Dilling state categorically that it remains unaltered in the stomach—and the application partook more of the nature of a rite than of serious treatment; it was akin to placing a stick of solid sulphur in a dog's drinking water which was at one time supposed to protect the animal from eczema. Doubtless the insufflation of sulphur persisted longer outside London and as a popular remedy. A letter in THE LANCET of Jan. 26th, 1895, compares the efficacy of sulphur and antitoxin in the treatment of diphtheria, concluding in favour of the former, and the following issue contained a statement by another correspondent to the effect that "sulphur is a most excellent remedy in all ulcerative throat affections." Quite recently Sir William Whitla states in the latest edition of his "Elements of Pharmacy": "Sulphur is a popular local application to the false membrane in diphtheria, either as a gargle or insufflation." It is therefore not altogether surprising to have a tragic reminder of its possible evil consequences in the report of a recent inquest at Newport (Mon.) at which medical evidence was given to show that the death of a girl of 9 years was due to asphyxia caused by the presence in the larynx of flowers of sulphur which had been blown there by the girl's mother who had heard of it as a remedy for diphtheria. Dr. Rees Morgan, who made the postmortem examination, informs us that the practice in question is still quite common in South Wales and Monmouthshire. Some sulphur is shaken on a sheet of paper, which is then rolled up into a tube,

* On the Use of Sublimed Sulphur as a Local Application in Diphtheria, *Brit. Med. Jour.*, March 3rd, 1894, p. 459.

one end of which is placed as far as possible down the patient's throat while the operator blows into the other end. Now that publicity has been given to the danger of the practice as well as to its uselessness, it will, we hope, die out altogether. The *Lancet*, July 1,1916.

Sir William Ramsay's Work.

Since Sir William Ramsay's career as a scientific investigator extended over a period of about forty-five years, and during the whole of that time he was almost continuously engaged in research, it is not possible to give here more than the mearest outline of the work which he accomplished, or to convey a really inadequate idea of the extent of the debt which science owes to him. Although a small proportion of the papers he published dealt with subjects belonging to organic chemistry, he shewed, very early in his career, a decided preference for investigations belonging to the physical and inorganic departments of chemistry, and the greater portion of his work is therefore concerned with the physical and chemical properties of inorganic substances. During the period of his life extending from 1872—when he returned from Germany—to 1893 he published a very large number of papers dealing chiefly with a somewhat wide range of subjects in the two branches of chemistry mentioned above, some of the more important being those on the atomic and molecular volumes of elements and compounds at their boiling points, the vapour pressures of certain liquids, and the preparation and properties of nitrous oxide and nitrogen peroxide. At the end of this time, however, while he was well known in the scientific world, he had not yet made any discovery of supreme importance, and had therefore not attained prominence in the public eye. In the year 1894, working, to some extent, in conjunction with Lord Rayleigh, he discovered that the atmosphere contains a small amount of a gas which differs from nitrogen chiefly by possessing a greater density and a much greater degree of chemical inertness, and at the annual meeting of the British Association the discovery was announced as a joint one,

the name given to the new gas being argon; the full details, however, were not published until a little later. During the course of the next year, in collaboration with Professor Norman Collie and others, he published a paper dealing with the discovery of helium in a number of minerals consisting of the salts of uranium, yttrium, and thorium; the element was already known, by spectroscopic evidence, to exist in the sun, but it had not been previously discovered upon the earth. A number of papers followed, dealing with the chemical and physical properties of argon and helium, and in 1898 and 1899, by the fractional distillation of liquid argon and liquid air, Ramsay discovered that the argon already obtained really consisted of a mixture of four gases—pure argon, neon, krypton, and zenon—in addition to small amounts of helium; the latter gas, however, had been discovered to exist in the atmosphere, just previously, by another observer. In 1903, working in conjunction with Professor Soddy, he showed conclusively that helium is produced by the breaking up of radium, and thus proved that the transmutation of elements is a scientific fact. After this extremely important discovery he carried out a considerable amount of work on the properties of radium emanation and the changes produced in substances exposed to its action, and in 1907 he published a communication in which he stated that he had succeeded in obtaining lithium by the action of radium emanation on certain salts of copper, while in similar circumstances an acid solution of thorium nitrate had yielded carbon dioxide. Details of further experiments affording similar results were given in 1909 and 1910. Sir William Ramsay will always be chiefly remembered for his work on the rare gases of the atmosphere, and on the production of helium from radium, but, as shown above, this forms only a small part of his total contributions to scientific knowledge. His death is a great loss to science, for, though in his 64th year, he was full of energy and planning new researches, until struck down some months ago by the illness which proved fatal on July 23rd.—The *British Medical Journal*, July 29, 1916.

Gleanings from Contemporary Literature.

ABDOMINAL MUSINGS WITHOUT METHOD.*

By T. Miller Neatby, M.A., M.D., Cantab.

Assistant Physician to the London Homœopathic Hospital.

As I have had little more than a fortnight in which to prepare this paper, I must crave more than ordinary indulgence for its defects. My little rushlight is designed to replace "the light that failed." Dr. Weir, the Secretary of the Section, disappointed in some bright provincial star, had appealed to many or most of the distinguished luminaries of our branch of the profession, but in vian, and he had to fall back in despair upon myself. His piteous "S.O.S." moved my bowels of compassion, and here I am.

Talking of bowels brings me at once to my first text, a very well-worn one—appendicitis. The problem of when to operate in appendicitis you might perhaps regard as being, like the payment of M.P.'s, "a stale and stinking bone of contention"; but the general subject of appendicitis being a text from which you can all preach a sermon, I need not apologize for its introduction. My attention has lately been drawn afresh to one of the diagnostic pitfalls of this disease. Abdominal pain, which may be localized to the region of the appendix, is not very seldom due to the thoracic condition, pneumonia or pleurisy, especially when situated at the base of the right lung. I remember quite well a case that I saw in the north-east of London a few years back, in which fever and constipation were associated with right groin pain, not strictly in McBurney's region, but rather suggestive of hernial obstruction; examinnation of the right side of the chest revealed pneumonia. In acute abdominal cases the chest should always be examined.

A case has lately been in the hospital two or three times—is, in fact, actually under Dr. Webr in Hahnemann Ward at the present time. This case is still something of a puzzle, although upon the patient's discharge in March of last year we felt pretty sure of its real nature. A schoolboy, aged 11, was sent in from the out-patient department in December, 1914, as an emergency abdominal case. Three or four weeks previously he was said to have had influenza. About two weeks before admission he had severe pain in the right side of the abdomen, continuing up to the time of admission. The

* A Paper read to the British Homœopathic Society, May 4, 1916.

bowels were active, but upon admission the abdomen was found to be very much distended with gas. The right side was tender and quite rigid. Rectal examination revealed nothing. There is no note as to the condition of the chest. The temperature was 98° F. rising by mid-night to 99·7° F.; the pulse was 90, rising to 100. enema was given with a very good result, and the patient felt better in consequence. Next day, the abdomen was not so distended, and neither pain nor tenderness was elicited. By 10 a.m., however, the temperature, which at 2 a.m. had sunk to 97·9° F. had risen to 100·4° F., and the pulse showed a slight disposition to rise. Operation was decided upon and duly carried out during the afternoon of the same day. The appendix was found "very slightly congested." The surgeon was no doubt rather disappointed, but putting a good face upon it (I was not present), he removed the appendix with his usual care and skill. The temperature sank immediately after operation to 97·4° F., but was up again the next day to 100 2° F. and remained more or less up for a fortnight at one time reaching 102° F. During this period patient had a cough. Then for three or four days the temperature was normal. This was the time when he ought to have been discharged. He was discharged about a week later, with temperature and pulse-rate travelling up, although not high (temperature 99·4° F. and pulse 112).

Now this was a case in which all, or most, of the right things were done. It was all *secundum artem*. The patient had pain, tenderness and rigidity in the appendical region, with slight fever. He is free from pain and distension is less the next day. This, of course, is the delusive lull. The temperature and pulse are rising. Therefore operation is called for. It is true that the temperature continues after the operation; but then he has a cough, and this, of course, may be due to the anæsthetic. It is true, again, that temperature and pulse are still above normal when he leaves the hospital. But then you cannot have everything; he has lost his appendix any way. A Scotswoman speaking to a sympathetic neighbour about her daughter, recently married, said: "Jeannie hates her mon, but there's aye somethin'." And there was "sometnin" in this case. Before passing on let us survey critically the case thus far revealed.

Can we say that the case was one of appendicitis at all? If a surgeon who has operated in the full expectation of finding some fairly grave lesion in the appendix admits that it is only "very slightly congested." I am disposed myself to think that there cannot

be much the matter in that quarter. But, in any case, I think it is evident that the "very slightly congestion" of the appendix was not the cause of his symptoms. These symptoms were certainly deceptive—particularly, I think, the rigidity. The right side of the abdomen was, according to the notes, "quite rigid." The pain and tenderness were due, I think, entirely to the gaseous distension, which was most marked, as it often is, in the cœcal region; they entirely disappeared after an enema had relieved the excess of distension. This I think an important point. If a patient has on one day pain, tenderness and rigidity *as the result of acute appendicitis*, he may have lost the pain on the next day (either by becoming much better or much worse), but I confess I very much doubt if he will have lost all tenderness on deep palpation in so short a time.

Another point perhaps calls for notice, although standing by itself it would not amount to much. The bowels were not constipated as they generally are in the adult victim of appendicitis, nor were they loose, as they so often are in the acute abdominal inflammations of childhood.

I have looked in vain upon the chart for any record of the patient's respirations. The late Mr. Lockwood some two or three years ago remarked, in reference to the simulation by pneumonia of the symptoms of abdominal disease: "I question whether the diagnosis would be difficult, if, in every case of supposed abdominal inflammation, the respirations were invariably recorded along with the pulse-rate and the temperature." And again: "When the respirations reach 35 or 40 per minute, it is time to look for a cause within the thorax." There is some truth and wisdom in this though I am not sure that Mr. Lockwood's axioms can be assumed too absolutely.

One more detail. A blood examination instituted about a week after the operation, in view of the persistent fever, showed a moderate leucocytosis of 10,560. To an eye fixed upon the abdomen in general and the appendix in particular, this might naturally appear disquieting. As the abdomen no longer furnished any symptoms and it was certainly known that there was no possibility of appendical abscess, this leucocytosis should perhaps have directed attention to the thorax.

You will, of course, have collected from my remarks and criticisms that the case was really one of thoracic mischief. Three

weeks after his discharge the patient reappeared in the out-patient department with a tale of woe. He had been queer ever since his discharge, suffering from shivers, short of breath, short of appetite and looking very pale. His temperature was 103° F. and pulse 120. You will probably from this description hazard a conjecture that he had some overlooked empyema, and I allow that the conjecture is plausible. A radiological examination of the chest showed a shadow on the right side, especially at the lower part. There was dullness here on percussion, a muffling of the breath-sounds, and signs of collapse of the lung. For about ten days the temperature varied between 101° F. and 103° F. Then for a few days it varied between 100° F. and 102° F. After the patient had been in about a fortnight, and when the temperature was evidently coming down, a needle was inserted in the right pleura, but only a few drops of serum were evacuated. He then improved rapidly. The recovery was not quite uninterrupted, as his temperature showed a disposition to rise to 99° F., or somewhere between 99° F. and 100° F. The breath-sounds returned in the collapsed right base, which, upon the patient's discharge, was almost, though not quite, as the other base. The medicines given were tuberculinum bovinum 30 and lycopodium 30. My own belief is that there was probably a pleural effusion (not purulent) of some size upon his second admission which became absorbed under treatment, the few serous drops obtained a fortnight after admission being the residuum. There was in consequence some collapsed lung, and quite possibly also some unresolved pneumonia. A curious sequel of the whole affair is that now, a year later, the patient has been readmitted with an apparently similar condition of the right base. Is this an illustration of lingering and latent pneumococcal infection?

When I plead for a record of respirations and a systematic thoracic examination in supposed appendix cases, I do not mean that the appendix is to be left alone when some thoracic mischief is discovered. Even if pneumonia or pleurisy be found there may also be appendicitis even an appendicitis requiring operation. A case that I reported about three years ago is in point. A clerk, aged 17, was seized with sudden acute pain, at first felt diffusely over the abdomen, afterwards localizing in the right iliac region. On being admitted the following day he presented a general distension, rigidity and tenderness of the whole abdomen and special tenderness of the appendical region, a temperature of 101° F. a pulse of 96, and a respiration-rate of 36. On the next day general

tenderness was less, but local tenderness was increased; the abdomen was rigid, the temperature was 99·8° F. (that is, slightly lower than on the previous day), but the pulse was 128, considerably in advance of the previous day's rate, and physical signs of pneumonia were discovered at both bases. Mr. Eadie operated the same day and found a condition of general peritonitis. Evacuation of pus and drainage were followed by a prompt fall in temperature and pulse, but the physical signs of pneumonia were appreciable for another two or three weeks. In this case the pneumonia, which was significantly bilateral, was septic, and actually due to the appendix trouble.

Two or three years ago, at the annual meetings of the British Medical Association, a surgeon related the following interesting experience: A little girl, aged 8, after three or four days of abdominal in the *left* hypochondrium, together with a slight rise of temperature, developed a sudden acute pain and tenderness in the left hypochondriac and umbilical regions. The temperature was 100°F., pulse 120, respirations 30. There was an inverted respiratory rhythm, and the breath-sounds at the right base were somewhat rougher than those at the left base. In spite of this the surgeon refused to believe that the case was thoracic. Having opened the abdomen in the *right* iliac region he came down on a mass of sticky stinking pus, gluing the coils of gut together. The pus contained, significantly enough, a lanceolate diplococcus, probably the pneumococcus. The immediate result was good, but ten days later the respiration became hurried, the right base was dull, and breath sounds were diminished. The right pleura was explored and pneumococcal pus evacuated. The child gradually sank and died. Here there was pneumococcal infection of both pleura and appendix, and it would be difficult to say that either was the cause of the other.

While on the subject of pneumonia and its abdominal associations, I may remind you that acute dilatation of the stomach is one of the dangerous complicatians of pneumonia, easily relieved if recognized, but not, as a possibility, sufficiently borne in mind. It is not one of the earliest symptoms, and as I cannot recall this complication in any case homœopathically treated that I have seen or read of, I think that our successful medication in pneumonia probably prevents its occurrence. Gastric lavage is the remedy.

The diagnosis of appendicitis is beset with many difficulties. There are recognized abdominal areas of hypersensitiveness found

in neurasthenic persons. One is immediately to the left of the middle line, in the vicinity of, if not actually including, the umbilicus. This I have recently seen well demonstrated in a man. Another area corresponds more or less closely with McBurney's region. This latter I have often observed, and it is obviously, important to bear in mind. Quite recently I have seen an overstrung, over-strenuous young woman, who complained of abdominal pain, and had this area of hyperæsthesia. The family attached the more importance to it as the patient's brother had just been operated on for appendicitis. I negatived the idea of appendicitis and told the relatives that the disease was not catching!

Chronic appendicitis or interval-appendicitis may, in the absence of a very clear history of acute attacks, be very difficult to diagnose. A young man, just home from the Straits Settlements, consulted me a few weeks ago. He said he had been sent home on account of appendicitis. Upon stringent examination of the abdomen I could not find the least evidence of appendicitis. I palpated him very deeply and firmly without eliciting the least tenderness. The history of acute attacks was, however, pretty clear. At the operation a large swollen kinked appendix was found, of a type fairly certain to give fresh trouble if not scotched. It has been suggested by a gentle Teuton that in doubtful cases air should be pumped in through the anus. No special pain, it is said, is experienced until the air reaches the cæcum. Then the sufferer from chronic appendicitis begins to call out, whereas the patient not so afflicted does not mind; at least so it is said—I have no experience. It is, at any rate, a diagnostic method easily applied, as a bicycle pump can be obtained in most households. The patient's consent should be obtained first of all.

The early diagnosis of acute appendicitis is so important and often so difficult that I may perhrps be pardoned for alluding to one sign, not often referred to, which seems to me of some value. That is, fulness of the superficial veins coursing over the right lower quadrant of the abdominal wall, such veins being, I suppose, chiefly the superficial epigastric and the superficial circumflex iliac and their tributaries. Such fulness is doubtless caused by some engorgement and temporary obstruction in the deeper veins. This sign, one would suppose, must be almost diagnostic of some inflammation in or about the cæcum, and its presence would certainly settle in favour of the appendix a doubtful case where the mind wavers between thoracic inflammation and appendix mischief. A surgeon

writing in the *British Medical Journal* two or three years ago said that, in his opinion, the sign could nearly always be seen, if looked for, in acute appendicitis, and that whenever he had observed it he had been able to confirm his diagnosis at the operation.

I proceed now to describe, in some detail, another somewhat puzzling case that was in the hospital about a year ago. On the whole, I think there is no doubt that the case was one of simple primary broncho-pneumonia. My house physician was, I think reluctant to believe that it was primary, but it was impossible to trace any antecedent disease. It is still common to believe that broncho-pneumonia is nearly always consecutive. So no doubt it is in adults and older children. But in infancy and up to the age of 3 or 4, primary pneumonias are nearly all broncho-pneumonic. Speaking of children of this age, Reginald Miller ("Medical Diseases of Children") says that, *post mortem*, it is very rare to find a true lobar pneumonia, even in those cases which during life have simulated that condition. So reluctant were the house physician and the sister of the ward to admit a primary broncho-pneumonia that they suggested that the disease had started as an atypical measles, for there was measles going about at the time and there were cases in the ward. The theory did not seem to me very plausible, as the child did not present a single symptom of measles. The chief interest of the case in the present connection lies in the abdominal symptoms.

The history given by the mother was that the child, whose age was 2 years and 11 months, had been taken ill ten days previously in the small hours of the morning with vomiting, pain in the "stomach" and a fit. This was attributed in the domestic circle to eating an orange. Neither vomiting nor convulsion had been repeated during the subsequent ten days, but there was constant complaint of pain in the "stomach," and during the last three days there was high fever—103° F. to 105° F. As the child was plainly getting worse, he was sent into the hospital. Upon admission he looked very ill. His temperature was 101° F. pulse was 160, and respirations were 68. The abdomen was very distended, and the child greatly resented palpation of any part of it. His lips and tongue were very dry, but he was not thirsty. *Per rectum* nothing was found. Heart and lungs appeared to be normal. Dr. Hey saw the child at 11 p.m., and recommended that he should be watched. He was put into one of my beds. The next morning, as I was walking into ward attended by the devoted band of students who receive

my words as the latter rain, I was told that there was a new case for me. I looked at the child and the chart, and at once perceived the teaching possibilities of the case. I was wrong in my deductions that day, but I have no doubt that the students learnt more than they would have done if I had been right. Here was a child of nearly 3 whose illness started with vomiting (attributed by the domestic oracles to an orange, no doubt because orange was seen in the vomit) and continued with persistent abdominal pain. There was high fever, there was also constipation. We inspected the abdomen. It was considerably distended. We palpated, and there was marked tenderness, especially in the region of the appendix. What more natural, I said to the students, than to diagnose appendicitis? But we must not be in too much of a hurry, and we must take everything into account. The respirations upon admission were 68 to the minute, and when we saw the child about 50. This fact by itself pointed rather to the thorax. If we followed Lockwood's dictum, we should certainly pay special attention to that part of the anatomy. Then, during the days immediately preceding admission, the temperature was said to have ranged between 103° F. and 105° F. There is not very much in such a fact standing by itself but in a general way thoracic temperatures are higher than abdominal. Abdominal temperatures are mostly under, say, 103·5° F. Temperatures above that are upon the whole more likely to be thoracic. But during the time the child had been in hospital, the temperature had ranged from 101° F. to 102° F., and that was perhaps all that we could be certain of. I told the students that abdominal pain and distension were not very uncommon in the pneumonias of children and were sometimes seen in adults. We must therefore carefully examine the thorax, and that in spite of the absence of cough However, the lungs proved normal; at any rate all the physical signs were normal. So we went back to the abdomen, and discoursed learnedly upon the inscrutable ways of appendicitis in children, and worked ourselves up into such a state that we asked Mr. Hey to see the child again. I may say that the child certainly seemed and looked exceedingly ill. Mr. Hey, however, was for holding his hand, and as the event showed he was quite right. He considered that there was not sufficient resistance in the region of the appendix to warrant us in bringing a railing accusation against that organ. The next day I found distinct dulness and hard crepitations over the left base, and students learnt a lesson in pneumonia and in the fallibility

of their teacher. Then for more than a fortnight the temperature swung violently, sinking sometimes to 96° F. and rising sometimes to 105° F. For three weeks more the child was very ill, but the temperature was subnormal, with four or five skarp but brief rises of temperature. During all this time the respirations varied between 30 and 40. During all this time also, the abdominal distension continued, though it was less at some times than at others. After this the temperature settled down to a rather subnormal level, and the respirations were between 20 and 30. He was discharged as cured after a stay of nearly seven weeks in hospital. Our chief difficulty in regard to the diagnosis after we had got over our fears for the appendix, was that the discoverable lesions in the lungs, a small patch at the left base and, later, a small patch on the right side, did not seem commenssurate with the other manifestations of disease. One may perhaps suppose that there were deeply seated patches of consolidation that yielded no overt evidence of their presence. As the temperature chart was consistent with acute pyelitis of children, and as the absence of urinary symptoms is by no means inconsistent with that disease, we investigated the urine. There was no pus or albumin. There were, of course, motile bacilli. Our laboratory contains a large stock of these, equal to all demands. On culture *Bacillus coli* was found. But mere coliuria did not seem sufficient to account for the symptoms on the chart. A von Pirquet test yielded negative results. A blood examination, made after the patient had been in hospital for five weeks, showed a moderate leucocytosis of 12,300. A differential leucocyte count showed only 37 per cent of polynuclears and 55 per cent. of lymphocytes, but this degree of lymphocytosis is perhaps not greatly inconsistent with the child's tender years; for in infancy the percentage of lymphocytes varies between 40 and 60. I asked for a bacterial investigation of the blood, but for some reason this was not made. Before leaving this rather interesting case, I may mention two other features of it: a white painted-looking tongue and an extreme irritability of the temper, features which strongly suggested antimonium crudum, the drug that appeared to have most influence on the case.

I pass to another form of abdominal pain. It is the pain experienced in *panniculitis*. Perhaps some of you have never heard of this complaint. It is said to be very painful, but not lethal. It is, of course, an inflammation of the panniculus. The panniculus is a thin sheet of muscle just under the skin and superficial to the

deep fascia, fully developed in the horse and other lower animals, but chiefly represented in man by the platysma myoides. In a paper read before the British Medical Association at their annual meeting two or three years ago, a Harrogate doctor described panniculitis, and mentioned it as an occasional source of acute abdominal pain, especially in nervous women with some abnormality of metabolism. He also spoke as if it were closely akin to, if not identical with, adiposis dolorosa. I do not altogether follow Dr. Durward Brown, I must admit, for I am not aware that in man there are any vestiges of the panniculus in the abdominal wall. Adiposis dolorosa, or Dercum's disease, is, I think, a form of what is called (rather barbarously) fibrositis, a disease that has been much studied by Stockman, of Glasgow, and Luff, of St. Mary's, and I doubt if the adiposity is really an essential of the disease. I exhibited some time ago to the Society a case of what I thought was Dercum's disease. Dr. Brown's abdominal panniculitis must, I think, be merely a form of fibrositis in which there is some tender and painful infiltration, perhaps even nodularity, in the muscles or their fibrous aponeuroses. It is the same thing as muscular rheumatism. But panniculitis is undoubtedly a "blessed" word (I am afraid, by the way that Mesopotamia will seem to us a less blessed word than formerly), and some of you, if you will add panniculitis to your medical vocabulary, find it a source of profit for these hard times. Muscular rheumatism is what most people get at some time or another, but panniculitis—my hat! Now this condition of fibrositis or myalgia may undoubtedly affect the abdominal muscles or their sheaths, and occasionally, as the result of severe unwonted exertion or of damp weather, a person may get severe pain in the abdomen. This pain may even be localized to one particular part of the abdomen. There is, of course, also considerable tenderness. There is no accompanying fever. Quite lately I have seen two cases in which pain of this kind was quite localized and low down in the groin. At first I thought there might be some incipient hernial obstruction, but upon examination I found that this was not so. There was some concomitant lumbago, it bore distinct relation to damp in the atmosphere, and it soon disappeared under the exhibition of rhus toxicodendron.

Talking of rheumatic fibrositis reminds me that some have believed that there is a rheumatic appendicitis. I do not know how this is to be diagnosed. Associated rheumatic symptoms may, perhaps, point to the rheumatic nature of the complaint. There is also the

therapeutic diagnosis by salicylates, which I mention for what it is worth. Dr. Eustace Smith says he has cured rheumatic appendicitis by giving salicylates. The remedy diagnosed while it cured, and cured while it diagnosed. This therapeutic test of rheumatism is greatly beloved by our friends of the orthodox school, though it seems singularly unconvincing to a homœopath. Is it not a little odd, by the way, that while the authories are now quite agreed that syphilis and yaws are two totally distinct diseases, nevertheless salvarsan is at present the orthodox remedy for yaws?

Most surgeons, I suppose, would say that it does not matter a button whether an appendicitis is rheumatic or not. There is only one treatment for the appendix—that is, extirpation. They remind me somewhat of the young rustic belabouring a poor toad by the roadside, and addressing it the while in these words: "I'll larn ye to be a twoäd!" So the modern surgeon, to whom it is enough that an appendix, seems to apostrophize that organ in these words: "I'll larn ye to be an appendix. Out with ye!"

Herpes zoster may be a cause af abdominal pain. This may seem hardly worth mentioning, because the characteristic eruption at once reveals the nature of the pain. I mention it because the pain sometimes precedes the eruption by several days, and in that case it may be very puzzling. I saw an out-patient a little while ago who complained of severe pain in a region that raised suspicion of appendicitis. A week later she was still complaining of the same pain, but in addition she said she had a rash. Investigation showed that she was suffering from shingles. Some time ago a patient, who had formerly suffered from undoubted gall-stone, complained to me of severe pain in the right hypochondrium and under the right scapula. He was himself convinced that it was his old enemy—he had had the pain before, and he knew; and he was, of course, in a terrible fright. I temporized, not feeling sure. Two days later there was a typical herpes eruption in the course of one of the lower intercostal nerves on the right side.

Gentlemen, I have now, I hope, provided the olives It is time for more substantial fare. Bear with me if I change the figure from the solids to the fluids. A gentleman from north of the Tweed was at a banquet in the degenerate south. He had drunk several glasses of champagne, but he was not satisfied. "Ou ay, he said, when asked whether he liked his liquor, "these mineral waters are a' varra weel. But when are they going to bring us the whisky?" Let the whisky of discussion now circulate.

Discussion on Two Preceding Papers.

Dr. Byres Moir said two admirable papers had been read before the Society that evening, and in both the teaching had been as to the value of diagnosis. A very striking instance of this had been given recently by a notable patient, which illustrated the methods used in America in making a diagnosis. The patient had been treated in Dublin and London for some time for dyspepsia. He went over to America, where he was taken into a sanatorium. The first thing done there was to make a very thorough examination of every organ and system of the body. In London the doctor had merely seen him and given him a prescription for acidity. Dr. Miller Neatby's remarks with reference to cases of abdominal pain had also been very interesting. With reference to the working of the Insurance Act, Dr. Moir though the profession was very much to blame. The days of club practice were over, and the profession should have stood out for centres where the necessary work could be efficiently carried out. A busy panel doctor could not have his cases examined bacteriologically, and there were no State facilities at present for X-ray or electrical treatment. He hoped that after the War, when the insurance scheme came up for reconsideration, the profession would insist upon the need for such centres, which were absolutely essential if medical work was to be carried on as it should be.

Dr. Roberson Day said he had been attracted by the title of the paper by Miss Tyler. There was one point which occurred to him which was not alluded to, and that was that many of these cases might fall under the category of the *malade imaginaire*. Some time ago a lady consulted him with one of those "irritable spines." Such cases were met with frequently in practice, and it was known how difficult they were to deal with. In the present case the origin of the pain was attributed to a fall from a dog-cart. The lady was sitting back to the horse, the horse started and she was shot out and fell on her back, and ever since then the spine seemed to be the one thing she lived for. She consulted numerous doctors, who all did something, but there was always something left for others to do. That lady was cured by finding a niche in life. She was of independent means, and suddenly thought she would do something for her fellow creatures; and since she did that the spine and all her other troubles vanished, and she was now doing a most useful work in connection with the care of school children in Birmingham. Dr. Roberson Day said that this case impressed itself very strongly on his mind, and he felt sure that many many people wanted sound

advice to take up something. Dr. Roberson Day related a similar case now under his care. The patient was a lady, also of independent means, who would never admit that she was well and always wanted some medicine. She would stay in bed in the mornings till after 11 o'clock. What that patient needed was some work to do. War-work had been suggested, that she should make munitions, and that would cure her straight away. The consideration of such cases brought one to the potent question of the influence of mind over matter, and if the doctor would exert that influence he had done a great deal towards the cure of the patient. Dr. Neatby's paper, of course, all expected would be entertaining, and they were not disappointed. Dr. Roberson Day considered that Dr. Miller Neatby had done valuable service by holding up to ridicule many of the new-fangled terms which were formed with the object of impressing the patient. He had a patient under his care some time ago who was satisfied with being told she had muscular rheumatism, but after having been at Buxton the lady contradicted his diagnosis, telling him that she had learnt at Buxton that she was suffering from fibrositis. Panniculitis was surely a word which might be noted in order to avoid it. "Kink" was another word to which he was sorry to say a distinguished member of the profession had attached his name. A patient had been made quite happy by the fact that there was a "kink" in the intestines, and that that was the cause of the whole trouble, which could only be relieved by the habitual use of purgatives.

Dr. Hall-Smith regretted that he had been unable to hear the papers read, but he had been very much interested in the discussion of Miss Tyler's paper, particularly with her reference to the discovery of the cause of abnormal pain, &c. Dr. Hall-Smith related a case he had some time ago, in which there was a good deal of difference of opinion as to whether the patient was suffering from hip disease or not hip disease. One element was always absent, however: the child had no pain. Finally he was put in a plaster splint for four months. After viewing the case from the point of view of osteopathy, the splint was removed and the requisite treatment adopted, with the result that the boy was now able to walk, had no pain, the muscles were increasing in size and tone, and there was every prospect of his getting perfectly well. The trouble was originally due to some fall which gave rise to symptoms resembling hip disease, but there was never the slightest trace of pain. Another point which interested him was the reference to back and spinal trouble.

In the out-patient department one came across any number of patients complaining of back pain, for which no cause could be found on physical examination. If one could only have the knowledge to put these right it would be a great blessing.

Mr. JOHNSTONE had expected that abdominal pain in children associated with caries of the spine would be referred to in the papers or the discussion. He had met many cases in which medicine had been tried for many months without success, but in which the X-rays revealed caries of the spine. Abdominal pain could often be much relieved by appropriate position of the spine when the condition was due to pressure alone. He recently had a case of abdominal pain due to curvature of the spine in an old lady of eighty. She had had a deformed back for many years, and when Mr. Johnstone was sent for she had been complaining of pain in the abdomen for several months. She had been staying in a seaside place and the doctor there had failed to find anything wrong with her. When Mr. Johnstone saw her she was in bed; he remembered that she had a crooked back and he thought the curvature of the back was worse than it used to be. The pain was in the abdomen, starting in the loin, corresponding to the concave side of an accentuated lumbar curve. He imagined that some of the intercostal nerves were being pressed upon at their exit by the vertebræ, and he therefore advised her to lie on the left side with a pillow in the left loin, with the result that the pain disappeared the next day. This was the antithesis of Dr. Tyler's case, as it was a case of pressure on a spinal nerve relieved by posture.

Dr. WOODS said he had studied osteopathy for a number of years and had been surprised by the number of cases that would yield to this form of treatment. When one examined the spine, ribs, &c., it was surprising to find how many displacements were to be found. Most people had sustained one or two falls, and also the use of instruments at confinements possibly often twisted or displaced the infant's spine. To take the question of chronic headache: if one examined the patients it could practically always be found that there was a displacement of the atlas. The patient should be lying on the back on a flat couch, and one should feel between the jaw and the mastoid. Normally the transverse process of the atlas should be equally prominent on the two sides, but it was often found to be more prominent on one side and missing on the other side. It was usually quite easy to put this right; a little manipulation, a sight "click," and the patient felt a difference and often lost the headaches. In

cases of children, Dr. Woods said he had been struck by the number of cases in growing children where there was some curvature of the spine, and it was often a very easy matter to put that right. He had had children with the quite marked curvature, and after a few months' osteopathic treatment the spine was perfectly straight. It was true that there might be a slight relapse on discontinuing the treatment, but it would be nothing like the first time, and another treatment would generally put it right.

Dr. NEATBY said he had been very much interested and impressed by the papers that had been read, which were of great practical value. There were certain classes of cases that were not available to medicinal treatment, and he felt it was an enormous gain to homœopathy when its followers recognized this and took a broad view of all methods of treatment; it was a gain also in that it removed the stigma that was liable to rest on the high Hahnemann school that they had only one idea, and that that was to give a few single doses of medicine. The question of diagnosis was now being pursued with more care, and cases were being differentiated; and if this point were fully realized, a great deal more confidence would be felt in medicinal treatment Dr. Neatby was very pleased to hear Miss Tyler's avowal, which he would take as representative of her school.

The trouble Dr. Neatby met with when trying to overcome his natural scepticism with regard to "bone-setting" treatment was that he was so slow in the "up-take" that he often could not see these lesions when they were said to be there. He would be told there was a dislocation, and he would look and feel for it, but unfortunately could not recognize it, yet he felt bound to allow, with or without the appropriate "click," the patients were very often better for manipulation. What he would like Dr. Tyler and Dr. Woods to explain, was how to diagnose these cases. If they could be shown by X-rays, it naturally proved that the lesion was there. Seeing went a long way towards believing, and the X-rays were a great help. From a pathological point of view they had been taught that when dislocations had been in existence for some length of time, the articular surfaces became so filled up or mdified that though they might be put into the position where the cavity used to be, they would stay there for a period of five minutes, or as long as they were held in position, but the parts were so altered that it was impossible to expect a permanent reduction. He believed that was so in cases like long hip-joint dislocations. Dr. Neatby had once

asked Mr. Eadie in connection with a patient suffering from dislocation, how long after an accident causing dislocation, there was any hope of being able to reduce a dislocated femur, and Dr. Eadie had answered, about eighteen months. Some of the patients referred to that evening had had their pains for eighteen years and yet it was claimed that after manipulation for about five minutes a "click" was heard and the result was supposed to be magical. If there could be some classes to enable one to see these things and be told how to do them, it would be an enormous benefit. Dr. Neatby felt that the medical profession had been very slow to take up this form of treatment, with the result that the reputation of the medical men suffered, and their pockets suffered also because patients went to unqualified men for treatment. Dr. Neatby was only too pleased that Miss Tyler had brought this subject forward. Such a subject would have to be approached with an open mind.

Dr. WHEELER said he would like to endorse what Dr. Byres Moir had said, that when the National Insurance Act came up for reconsideration they should throw whatever influence they possessed in the direction of obtaining health centres where such measures of treatment as were necessary should be carried out. There should be some national institution where one could be sure of getting the work done. Dr. Wheeler was particularly interested in the case of bronchial pneumonia related by Dr. Neatby, but he felt sufficient stress had not been laid on the remedy. It was a remedy extraordinarily indicated by the condition of the patient; the temperature always seemed to react to it, and he thought that it had a large part in the cure.

Dr. MARGARET TYLER said that she had been interested in Dr. Day's remarks, but the cases she gave *simulated* but were *not* disease. She feared that making munitions, as he suggested, would not put a rib into place, or strip off a pericolic membrane. What Dr. Neatby said was quite true in a number of cases. At first one was apt to think that one could do a great deal, and *at once*. But one soon discovered that there were a number of cases where, to do anything, you had to manipulate again and again; they could not be got right straight way. It was only recent cases that could be easily replaced, and very many cases were probably best left alone.

With reference to abdominal pain in children, when a child came up with pain in abdomen, Dr. Tyler said that she *always* looked at the spine for caries or displacements.

Dr. MILLER NEATBY said he had been much interested in the discussion on osteopathy. The other day he was riding on his bicycle and noticed that he turned several times to the right side, and every time he turned his head he heard a distinct "click," but he did not infer from that that each time a bone—previously dislocated—had gone back into its place? A "click" did not always mean that a bone had been dislocated and gone back; it might mean any one of several other things. He had heard these "clicks" in the out-patient department several times, and he must admit that he was not impressed by them. Enthusiastic persons had shown him that the atlas was out of place, but he could not himself find it out of place; if it could be shown by X-rays that would be a great help, and he thought the matter out to be taken up in a scientific way. He had heard it said that in a certain case of torticollis there was a dislocation of a vertebra, because the X-ray picture showed an irregularity of outline; but in anybody X-rayed with his head turned to one side the spinous processes would show this irregularity. Again, he did not suppose all backbones were symmetrical or arranged with geometrical precision by Nature. Undoubtedly some of these cases were extraordinarily mysterious, such as the cases related by Dr. Wheeler and Mr. Hey. An argument on behalf of the manipulative treatment was that the circulation had been altered by these small dislocations or subluxations, and that the movements restored the normal circulation, but he hardly thought that the benefit would be noticed in a few minutes. It did not seem possible to him that the circulation could be disturbed for years and years and then could be restored in this magical way. Of course the whole thing had been brought into disrepute by the quackery of the people into whose hands this practice had fallen. He (Dr. Neatby) had known personally a young girl who, after being treated, with no very rapid improvement, for tuberculous disease of the hip at one of our Metropolitan hospitals, was taken to one of the best known bone-setters of this or any other generation, with the result that she was very soon back in the hospital with a large abscess of the hip. A joint which should have been handled with the utmost gentleness, but which presumably the bone-setter failed to recognize as tuberculous, had been "manipulated."—The *British Homœopathic Journal*, July, 1916.

THE

CALCUTTA JOURNAL

OF

MEDICINE.

Vol. xxxv.] **October, 1916.** [No. 10,

AN ACCOUNT OF THE PRINCIPAL WORKS OF ATTREYA SCHOOL WITH THEIR CHRONOLOGY.

The object of the present paper is to lay before the teachers and students of the Ayurvedic literature certain facts which, it is hoped, would throw a considerable light on the subject matter, and facilitate the teaching and study of the subject. An attempt has been made here to ascertain the chronology of the more prominent Ayurvedic text writers, and their commentators thereof. It is needless to mention here that the chronology of the ancient Hindu Medical works is a vexed question, and it is highly desirable in the interests of the cause of the Ayurveda that the question should be discussed threadbare, and the materials for the solution of the question should be collected, assorted, and arranged, in proper order, with a view to settle the points at issue once for all. It is a matter of congratulation that many eminent thinkers, both Eastern and Western, have devoted much time and energy to the collection of materials to ascertain the chronology of the Ayurvedic works, and their

erudite researches have supplied many materials to work upon, and left ample scope for discussion. Besides, many points have been raised, and theories have been advanced, regarding the chronology. It is high time therefore to take the stock of our information on the subject, and test and verify the theories hitherto advanced, from the standpoint of the Hindu sages, and examine whether they can be supported by the internal evidence, and the learned expositions of the eminent commentators. I need hardly mention, at the outset, that many dubious theories regarding the chronology of the Ayurvedic works have obtained currency, and received support from the highest quarters, and I think, they should be discussed at the bar of the scholars, oriental and occidental. I should also mention in this connection that the Ayurvedic text-writers and the authoritative commentators thereof should be our guide, and evidence should be obtained from their writings.

From time out of mind the Indian sages specially conversant with the art of healing have come to be classed under two distinct orders or schools of Hindu Medicine (I) *Attreya*, and (II) *Dhanwantari*. Some of them who treated the diseases such as fever, diarrhœa, *i.e.*, the diseases that can be cured by medicines were physicians; and others who treated the diseases like boils, piles, fistula, etc., *i.e.*, the diseases to be cured by the application of surgical instruments, were surgeons. Besides these two, there was a class of the specialists in the diseases of the eye, ear, nose, head, etc. *Attreya* was the leader of class I, and hence it was known as the *Attreya* school. *Dhanwantari* was the head of class II, and it was known as the *Dhanwantari* school. The third and the last was known by the name of the "*Salakis.*" Now we shall deal with the works of the *Attreya* School of Medicine.

We can fix the two distinct ages of the Ayurveda:—(I) The Divine period, when the healing art was confined in heaven only; and (II) The Human period, when it was brought down from heaven for the good of the suffering humanity. But here we shall confine ourselves to the latter only.

Blessed be that day when more than fifty Rishis, glowing in asceticism, assembled at the foot of the Himalayas to devise means for the remedy of the ailments, detrimental to the practice of asceticism, and the study of the Shastras! What a happy day was it for suffering humanity, when the Rishi *Varadwaja*, having learnt the Ayurveda from Indra, came down to this earth and taught the same to *Attreya* and other Rishis! And what a day of exaltation for the Indian physicians, too, when *Punarvasu*, the son of *Attri*, surrounded by a conference of several Rishis, heard the six Tantras written by *Agnivesha*, and five other disciples of his, gave, in consultation with the members of the conference, permission for the propagation thereof. On this day of the descent of the Ayurveda to the earth favourable wind blew, the sky became clear, everything looked gay and beautiful, and fresh blown flowers were showered forth from the heavens. "आयुर्व्वेदोऽमृतानाम्'—The Ayurveda is the best of divine elixirs. On the day of the first descent of such a blissful thing, the gay aspect of Dame Nature was quite in harmony with, and befitting the happy occasion.

Before we deal with the works of the *Attreya* school, it is desirable on all hands that something should be said of to Attreya himself, who was the founder of the school. A doubt has arisen as to the identification of *Attreya*. Some imagine *Varadwaja* and *Attreya* to be but one and the same person. But this view can have no support, for nowhere in the Ayurvedic works has *Attreya* been called *Varadwaja*.* In the congress of the Rishis convened to find out the remedies for the diseases that stood in the way of practising austerities, we find the distinct mention of *Attreya* and *Varadwaja*. According to *Charaka*, *Varadwaja* is the preceptor, and *Attreya* is his disciple; while according to *Harita*, *Attreya* is the preceptor, and *Varadwaja* is his disciple†. According to *Vagvata*, *Attreya*, the son of *Attri*, was the disciple of

* "क्वचित् भरद्वाजात्रेययो रैक्यं मन्यन्ते। तद्ध, भरद्वाज-संज्ञया आत्रेयस्य क्वचिदपि तन्त्रप्रदेशेऽकीर्त्तनात्" (Charaka Tika by Chakrapani—Sutra, Chapter I.)

† चरोक्ते आत्रेयादिशुरुतया भरद्वाज उक्तः—(Charaka Tika—Chakrapani.)

Indra. However, it does not matter much whether *Attreya*, the preceptor of *Agnivesa* and others, is the preceptor or disciple of *Varadwaja* or the disciple of *Indra*, but if we cannot successfully distinguish *Punarvasu Attreya*, the preceptor of *Agnivesa* and others, from other *Attreyas*, difficulties will arise in ascertaining the chronology of the works of *Ayurveda*. There were how many *Attreyas*? In the congress of the Rishis there occur the names of three Attreyas—(1) *Attreya*, the son of *Attri*; (2) *Krishnattreya*; and (3) *Bhikshu Attreya*.

(i) *Attreya*, the son of *Attri*. His other name was *Punarvasu*. He was the preceptor of *Agnivesa* and five other physicians, and was the speaker in the *Charaka Samhita*, and the physicians are named after him as those of the *Attreya* School.

(ii) *Krishnattreya*—The Compiler of "*Vaidyaka Sabda Sindhu*" has committed a gross mistake in ascertaining *Krishnattreya* as the speaker of the *Charaka Samhita*. All through the *Charaka Samhita* the speaker has not been named *Krishnattreya*. The commentators have on several ocassions cited *Krishnattreya* by name. *Srikantha Datta* while commenting on the *Kavaladhikara* of the "*Siddha Yoga*" writes "शालाकिभिस्तु प्रतिदोषं पठितानि द्रव्याणि। तथाच कृष्णात्रेयः" (Anandasrama Ed., p. 600). Again while commenting upon the *Unmadadhikara* of the "*Siddha Yoga*" *Srikantha Datta* writes "चोरकघृतगुणश्चान्यः कृष्णात्रेय-परिभाषायां मन्तव्यम्" (Anandasrama Ed. p. 191). It is obvious from the above passages that *Krishnattreya* was the author of the *Salakyatantra* under the *Dhanwantari* School. *Sivadasa* has given an elaborate exposition of the eommentory of *Chakraparivasa*—"पञ्च प्रभृति यत्र स्युः" on the "*Dashamoolasatpalaka ghrita*" in the treatment of fever. *Gopura Rakshita*, *Jatukarna* have quoted *Krishnattreya* by name like *Charaka* and *Susruta* and it is proved beyond doubt that the work of *Krishnattreya* was distinct from that of *Charaka*. Had they been identical, there would not have been distinct quotations from each of them. *Dridhabala* has mentioned "*Nagaradya churna*" in the treatment of *Grahani*.

According to the *Charaka Samhita*, *Chakrapani* and *Brinda* have mentioned this "*Nagaradhya churna*" in their respective works. We have proved *Krishnattreya* to be the author of the *Salakya tantra* on the authorities of *Srikantha Datta* and *Sivadasa*. In the commentaries of *Srikantha* and *Sivadasa* again on the text relating to the *Nagaradhya churna* "नागराद्यमिदं चूर्णं कृष्णात्रेयेण पूजितम्" it is written "कृष्णात्रेयः पुनर्वसुः" In the two commentaries just noted we find abundant internal evidence to distinguish *Attreya* from *Krishnattreya* but the passage just before quoted is the only solitary piece of evidence to establish the identity of the two. Adverting to the principle of set off we can as well ignore the text "कृष्णात्रेयः पुनर्वसुः" as a slip of the pen of the manuscript writer, for there is no other better way of reconciling the self contradictions of different commentators. *Attreya*, the son of *Attri*, is anterior to *Krishnattreya*.

(iii) *Bhikshu Attreya*. He was a Buddhist by faith, a physician to King *Bimbisara* and Buddhistic *Samghas*, preceptor of *Jiraka* and the author of *Attri Samhita*. We know not in detail about *Punarvasu* and *Krishnattreya*, but from the Buddhistic writers we know much about *Bhikshuattreya*. During the reign of *Tathagata* there was a university at *Takshasila*, the Capital of *Gandhara*. Like all other branches of knowledge Ayurveda was taught there. The professors realised plenty of riches from the students. *Jivaka* a resident of *Rajgriha* learnt Ayurveda from *Bhikshuattreya*, the Professor of Ayurveda in the university at *Takshashila*, and was appointed a physician to *Bimbisara*. He was as well the medical attendant of *Buddha* and at the Buddistic monastaries. He was the author of the treatise on the nursing of the children and the treatment of the infantile diseases; so he was known in the Buddhistic age as कोमारभच्च। We know from *Attri Samhita* that the author of the *Samhita* was famous in *Gandhara*, and it is not unreasonable to infer that this celebrity was due to his connection with the university at *Takshasila*. Mohamohopadhyaya Pandit Satis Chandra Vidyabhusana, M.A., Ph.D., has written in his book

named "*Buddhadeva*" that Attreya, the Physician to Buddha, and professor of *Jivaka*, is identical with *Attreya*, the son of Attri the preceptor of *Agnivesa* and others. *Agnivesa Tantra* written by *Agnivesa*, the diciple of *Attreya*, the son of *Attri*, was edited by *Charaka* some thousands of years later on. This *Agnivesa Tantra* as edited by *Charaka* and which is known as *Charaka Samhita* was, according to the learned, composed not less than a century or two before Buddha; how can *Attreya*, the preceptor of *Agnivesa*, writer of the compendium which was edited by *Charaka*, be the professor of *Jivaka*? So it is conclusively proved that *Attreya*, the son of *Attri*, and *Bhikshu Attreya*, the tutor of Jivaka, are two different persons, and the former is anterior to the latter.

Of the three *Attreyas* we have specified *Attreya* the son of *Attri*, and that he is the oldest of the three. But in the congress of the Rishis mentioned in the *Charaka Samhita* we find the three *Attreyas*; in *Sutrasthan* Chap. 25 we find *Bhiksu Attreya* and *Attreya* the son of *Attri* discussing in the same conference, which proves the three were contemporaries. In fact contemporaneousness of these three does not stand to reason. In the first Chapter of the *Sutrasthan* of the *Charaka Samhita* we have the mention of the congress of the Rishis. Now a question arises who was the author of this Chapter, for we know that the compendium of *Charaka* which is now-a days known as the *Charaka Samhita* was the revised edition of the *Agnivesasamhita*. It cannot be said with certainty how much of the Agnivesa tantra has been reproduced in the *Charaka Samhita*, and how much has been abridged or enlarged, and how much is the original composition of *Charaka*; for now-a-days the *Agnivesa tantra* is very rare. Though it is difficult to ascertain the character of the changes made by *Charaka*, it can be ascertained whether a particular chapter has been revised by *Charaka*. In the chapter I of the *Sutrasthan Charaka Samhita* it is written—

"बुद्धेर्विशेषसत्त्वार्थी पुनर्वसुरुपेयिवान्।
तन्त्रस्य कर्त्ता प्रथमं अग्निवेशो ततोऽभवत्॥

Agnivesa, himself never proclaimed the speciality of his intellect and the superiority of his compendium. Hence it appears that the first chapter of the *Charaka Samhita* was not reproduced from the compendium of *Agnivesa*. *Charak*, *Dridhabala* or some one else might have revised it. Whoever might be the revisor of the first chapter *Sutrasthan* of the *Charaka Samhita*, he must have mentioned the names of the Rishis of the different ages in the same place, with a view to show regard and respect for the previous workers in the field, and to enhance the value of the book, even disregarding the point of time. Hence we find the mention of three *Attreyas* in the same place though belonging to different ages. In some other places we find *Attreya*, the son of *Attri*, and *Bhikshu Attreya* as the speaker and audience, a fact which requires explanation. It is desirable that no one should ascertain the chronology of the Ayurvedic works having regard only to the speaker and audience; for it must be borne in mind that it is a mere narrative portion only, and has no historical basis. Even now-a-days high regard is shown for the sayings of the Rishis; on the other hand, those that have no such authority, are treated with negligence. This sentiment was stronger in the olden days, so every one felt anxious to represent his own opinions as those of the Rishis, and thus attached an additional importance and sanctity to them, for everything old had some charm therein. A notable instance may be cited to support the above view. *Dridhabala* writes—

"कृत्वा बहुभ्यस्तन्त्रेभ्यो विशेषोञ्छशिलोच्चयम्।
सप्तदशौषधाध्यायैः सिद्धिकल्पैरपूरयत्॥"

i e., I have collected materials from various compendia and have supplemented the 17 chapters of the *Chikitsasthan* as well as the *Siddhi* and *Kalpasthan*." He himself in the beginning of the second chapter of the *Siddhisthan* originally composed by him, writes—

"शेषं यस्मात् पञ्चकर्माण्यग्निवेश! प्रचारयेत्।
तेषाञ्च धारयेद् यानि तत् सर्वं सम्प्रवक्ष्यते॥"

here it is evident that *Attreya* is, as if, addressing his pupil Agnivesa, in fact it is composed by *Dridhabala*. This is net however, the only instance but in the beginning of each chapter he writes "अथातो चिकित्सितं व्याख्यास्याम इति ह स्माह भगवान् आत्रेयः and at the end अग्निवेशकृते तन्त्रे चरक-प्रतिसंस्कृते, etc., it is established therefore that the names of *Attreya* and *Agnivesa* have been introduced for the purpose of narrative only. This custom was in vogue till the time of *Bhaba Misra*, for he, after having described the pathology and treatment of the disease called "*Firanga*" (syphilis) comparatively of modern date, goes on to say इत्याहुर्मुनयः पुरा" *i.e.*, so said the Rishis of the old, whereas no mention of the same can be found in the works of early date. Next we shall say something specially about Bhikshu Attreya. In the palmy days of the Buddhism the Buddhistic physicians were not wanting. Again when there arose a conflict between the Hindus and the Buddhist, the Hindu physicians naturally treated the Buddhist physicians with great contempt; and as a result of this, many Buddhist physicians have been represented as putting questions to the son of *Attri*, totally disregarding the time and place; anachronisms of this nature are very common. So except the commentaries of *Aruna*, all other commentaries studiously avoided the mention of the Buddhist physicians and their works.

Attreya, the son of *Attri*, had six disciples *viz.*, (1) *Agaivesa*, (2) *Bhela*, (3) *Jatukarna*, (4) *Parasara*, (5) *Haiita*, and (6) *Kshara-pani*. The works of each of them are called after their respective names.

Agnivesa tantra (the compendium of Agnivesa)—The compendium of *Agniresa* was acknowledged superior to the compendia of all the disciples of Attreya. The preceptor was the same and his teachings were the same, still why the compendium of Agnivesa was valued most? In reply to the query Charaka himself has said—

"बुद्धेर्विशेषस्तत्रासीन्नोपदेशान्तरं मुनेः ।
तन्त्रस्य कर्त्ता प्रथममग्निवेशो यतोऽभवत् ॥"

Agnivesa had stirring intelligence and his compendium became so much popular. The fact that the compendium of *Agnivesa* has now-a-days become extant has given rise to various conjectures in different quarters. Dr. P. C. Rây says—" *Vagbhatta* the epitomiser of the *Charaka* and *Susruta* mentions the works of *Harita* and *Bhela*, which were probably extant in his days."* This inference seems to have based upon insecure basis, for *Vagbhatta* in the beginning of his *Astanga Hridaya* says—

"तेऽग्निवेशादिकांस्ते तु पृथक् तन्त्राणि तेनिरे ।
तेभ्योऽति विप्रकीर्णेभ्यः प्रायः सारतरोच्चयः ।
क्रियतेऽष्टाङ्गहृदयं नातिसंक्षेपविस्तरम् ॥"

i.e., I write this *Astanga hridaya* neither too long nor too short on the substantial materials from the *Agnivesa* and other five compendia. It is obvious therefore that in the days of *Vagbhatta* six compendia were still extant.

In the beginning of the *Uttartantra* of the revised *Susruta Samhita* it is written thus—

"षट्सु कायचिकित्सासु ये चोक्ताः परमर्षिभिः"

The commentator writes on "षट्सु कायचिकित्सासु" that this means and includes "अग्निवेशभेलजातुकर्णपराशरक्षारपाणि"; this proves beyond doubt that the compendium of Agnivesa was extant when the compendium of *Vriddha Susruta* was revised and known as the *Susruta Samhita*. *Srikantha Datta* the disciple of *Bijaya Rakshita* and commentator of the "*Sidhaya yoga*" by *Brinda* quotes in his "*Byakhya Kusumavali*" abunduntly from *Agnivesa*. We here cite one instance only. *Srikantha* while explaining the method of the application of fomentation with hot sand in fever, writes—

"तथा चाग्निवेशः—
प्रवेपमाने ज्वरिते शीते हृष्टतनूरुहे ।
कट्यूरुजङ्घापार्श्वास्थिशूलिने स्वेदनं हितम् ।
शीतेऽसं शूलयकृद्दि प्रवर्तयति मारुतम् ।
संस्थिताः स्निग्धतां स्तुनी दोषान् मार्दवीकुरुते भृशम् ।"

* History of Hindu Chemistry—Second Edition p. 21.

It can not be said that the above text has been quoted from the compendium of *Agnivesa* as edited by *Charaka*, for in the *Charaka Samhita* we do not find it. Hence it follows irresistably that in the days of *Sreekantha Datta* the compendium of *Agnivesa* was still extant. Besides, *Chakrapani* and *Sivadasa* have quoted from the compendium of *Agnivesa* by name. It may be said as well that in their days it was extant.

Harita Samhita—*Harita Samhita* has been printed in Bengal and Hindustan. On a perusal of the printed *Harita Samhita*, I have come to the conclusion that the whole of it was not written by *Harita*, the fellow student of *Agnivesa*. Very probably some moderner has taken the texts, so far as they were available, from the old *Harita Samhita* and compiled the one in question in the form of dialogue between *Attreya* and *Harita*. If any one attentively goes through it, he, I may hope, would concur with me in the conclusion I have arrived at. However, I cite some instances to make the matter clear.

The Introductory portion of the printed *Harita Samhita* is as imaginary as it can possibly be. It does not deal with, like all other compendia, the circumstances attending the descent of the Ayurveda from Heaven, nor does it mention even the fellow students of *Harita*. In the beginning of it we have—

"शुद्ध-स्फटिकवच्छुभ्रभूतिभूषित विग्रहम् ।
जटाजूटाटवीमौलिं भासितं शुभ्रकुन्तलैः ॥
आत्रेयं बहुशिष्यैस्तु राजितं तपसान्वितम् ।
पप्रच्छ शिष्यो हारीतः सर्व्वज्ञानमिदं महत् ॥"

Chakrapani considering the account of the descent of the Ayurveda as given by *Harita* too lengthy, has in his commentary on the *Charaka Samhita* quoted only the beginning and end of it*; we find no resemblance whatsoever in the passage quoted

* यस्मादहमधीतवान् इत्यादिना मतः पुनरसंक्षेपा त्रिसूत्रं त्रिप्रयोजनम् । अस्मालेखादिपर्य्यन्ता विदुः सप्तमहर्षयः । आत्रेयाद्धारीत ऋषि रव्यक्तेन" । चरकतत्त्वदीपिकायां चक्रपाणिः ।

above with that mentioned by *Chakrapani*. Every student of the *Charaka Samhita* knows that *Agnivesa*, *Charaka* and *Dridhabala* have given several different attributes to Attreya out of the deepest regard for him, but it is to be noted that nowhere any of them has represented him *(Attreya)* to the reader as भूतिभूषितवपुः" (*i.e.*, body decorated with ashes) जटाजुटाटवीमौलिः (*i.e.*, head overgrown with huge clotted hair). *Attreya* of the printed *Harita Samhita* says—

चतुर्विंशसहस्रैस्तु मयीक्ता चाद्यसंहिता।
तथा द्वादश-साहस्रा द्वितीया संहिता मता।
तृतीयाऽष्टसहस्रैस्तु चतुर्थी त्रिभिरेवच।
पञ्चमी दिक् पञ्चशतैः प्रोक्ता पञ्चात्र संहिता॥

Indeed, this *Attreya* the writer of the five samhitas was quite different a person from *Punarvasu Attreya* the preceptor of *Agnivesa* and others.

By—Kaviraj Biraja Charan Gupta, Kaviratna.

(To be continued).

REVIEW.

Therapeutic By-Ways.—Being a collection of therapeutic measures not to be found in the text-books collected from all sources. Condensed and arranged by Dr. E. P. Anshutz. 195 pages. Cloth, $1.00 *net*. Philadelphia, Boericke & Tafel, 1916.

This is an excellent hand book on therapeutic measures. It should be in the pocket of every man whether professional or lay. The author has given not only the chosen medicines from the Meteria Medica but also those which may be called household medicines. A few examples will show, such as *Potato* in Beri-Beri, Heatburn and Lumbago; *grape fruit* and *apple cidar* in Bladder complaint; *geranium maculatum* in Bleeding; *sookum chalk* in Sepsis; *Figs, Honey, Agrimony, Pineapple, Echinacea* and *Bellis perennis* in Boils; *Peach leaves* in lock-jaw etc., etc. Dr. Anshutz's name is sufficient guarantee for the excellence of the work. We have already too many books on Meteria Medica but such small books are necessary for the general public.

The publications of Messrs. Boericke & Tafel deserve all commendations and their selection of the authors is always the best.

The Surgical Instruments of the Hindus—(with a comparative study of the Surgical Instruments of the Greek, Roman, Arab and the Modern European Surgeons.) By Girindra Nath Mukhopadhyaya, B.A., M.D., etc.... [Griffith Prize Essay for 1909. In two volumes. *Published by the Calcutta University, 1913.*]

We are glad to see that our young medical men, following the western savants, have begun to study the Medical Literature of Ancient India, in the spirit of research. The savants of the West have shown by their research that medical literature of ancient India is well worth the study. This study has proved without doubt that the medical and the surgical knowledge of

the Hindus were far advanced than what was thought of them a few years before.

Dr. T. A. Wise, M.D. (of the Bengal Medical Service, Calcutta) published a treatise as far back as in 1845, entitled—"*Commentary on the Hindu System of Medicine*" and even this book was not the first foreign production of modern times to mention about the Hindu Medical Science, since Dr. Wise himself remarked in the 'Preliminary Remarks' of his book —"An accomplished scholar had indeed given an interesting account of Hindu opinions regarding certain diseases[1], a persevering traveller had afforded a sketch of certain opinions contained in the Hindu Medical Shastras, as translated into the Tibetan language[2], an antiquarian and a distinguished physician had given some of their peculiar opinions as found in the medical works of the South of India[3] and an able lecturer had combined all his information with important additions of his own[4]. Since the publication of Dr. Wise's book on "Hindu system of medicine," no valuable additions were made to this literature until the year 1896, when from the facile pen of His Highness Sir Vagabat Sinh Jee K.C.I.E., M.D., D.C.L., LL.D., F.R.C.P.E., Thakore Saheb of Gondal, we have that excellent and well-known work entitled "History of Aryan Medical Science." Next comes Jolly's "Medicine." After which we see Hoernle's "Osteology" in reference to "Medicine of Ancient India" (1907). Besides these we have also the English translations of *Cāraka* and *Susruta* which form the base of Hindu Medical literature. And lately we have Dr. Girindranath's "Surgical Instruments of the Hindus." (1913)

Dr. Wise's treatise contains much valuable information, and a clear and abridged statement of the Octopartite Medical Science

1. Prof. H. A. Wilson, Tran. Med. and Phy. Society, Calcutta, Vol. I, Oriental Magaizne for March, 1823.

2. Mr. A. Scoma de Köros, Journal Asiatic Society, Calcutta, No. 37, January, 1835.

3. Dr. Heyne's Tracts on India, and Ainslie's Materia Medica Indica.

4. Royle—On the antiquity of Hindu Medicine, 1838.

of the Hindus in nearly all its aspects. As a pioneer work in this line of research it has the supreme value to an investigator as well as to those interested in the Aryan Medical Science of the Ancient Hindus.

Thakore Saheb of Gondal's book is a short but plain and lucid expression of the history of the Octopartite Medical Science of India. It gives an information on the subject of our Ancient Medical Science, the value of which can never be impaired even if a score of experts write on the subject ever and anon. It is not replete with footnotes and supporting evidences to every statement it contains, and as such, it may not come to be reckoned within the category of first class research work like that of Dr. Hoernle's Osteology, yet it may be regarded as a faithful statement of a few prominent facts concerning the historical survey of Aryan Medicine.

Prof. Jolly's treatise, as we have had the opportunity to see through, is in German, and is a faithful expression of the Octopartite Science, which he deals with one after the other, and from which interesting and valuable information could be ascertained by any researcher in this field of work, especially from the Bibliography, which is perhaps the most complete of its kind on the subject.

Dr. Hoernle's Osteology stands out above all as a true specimen of research work, in point of originality, as well as, of careful expression of well assimilated facts.

Dr. Hoernle's attempt to make out a clear chronology in reference to *Susruta, Atreya, Caraka, Vagabata* etc., though seem to be somewhat satisfactory, still it is open to serious questions on many points, and we hope later writers, with a thorough grasp and command of Sanskrit literature, may help in this direction with their contributions.

After these we have "The Surgical Instrument of the Hindus" by Dr. Girindra Nath Mukhopadhyaya and we entertained a hope to find out something new as to show the high level mark of original research.

In the preface the author dealing with (i) the sources of information and (ii) the causes of the downfall of Indian surgery. Regarding the first we find the author following Dr. Payne* observes "The remarks of Dr. Payne regarding the sources of information of Anglo-Saxon Medicine may apply here with still greater force." This sounds to be very wise no doubt, though a somewhat original treatment of the subject would have lent more value to the contribution. He therefore classifies, after Dr. Payne the sources of information into eight different heads, viz., (1) Evidence of contemporary literature†, (2) Monuments and inscriptions, (3) Representations on works of art, (4) Archaeological finds, (5) Medicinal literature of India, (6) Comparative study of literature of various foreign countries, (7) Accounts of historians and travellers, (8) Traditions followed up to the present date. Such a preamble is well sounding indeed, but reading through the contents of the book, we must freely acknowledge that the expectations which it creates are hardly fulfilled. So the above has proved with the learned doctor a *nudum pactum* or rather *vox et præterea nihil.* Now in coming to our resume we note that in the preface itself, the various sources of informations regarding the surgical attainment of the Ancient Hindus, Dr. Girindranath dealt with in the serial order as pointed above to a certain extent and it behoves us to express the opinion we have formed of it in going through the matter. In regard to the first source of information dealing with evidence from contemporay literature, the author first quotes from *Rigveda*, then from *Mahabharata*, next from *Mahavagga*, again from *Malavikagnimitra* then from *Bhojaprabandha* and lastly from *Manusanhita.* We believe they are not *contemporary* literature. And this curious way of quoting from Sanskrit authors, unmindful of the usual orders is revolting to the spirit of research. Dr. Girindranath writes—*"Thus we find in the Rigveda, the use of artificial limb as a substitute for a limb accidentally lost,"* supported in the

* Payne's English Medicine in the Anglo-Saxon Times.

† We cannot fully realise the meaning of "contemporary literature as used by the author.—[Ed., C.J.M.]

foot note by a full quotation from *Rigveda* text i, 116, 15, together with Sayana's commentary on it. Thus we find the same in Thakore Saheb's book, in Ch. VI, p. 28, we have— "In cases of broken legs, the Surgeon's used to substitute iron legs.—*Ayasin-jangham (vide Rigveda, i, 116, 15),*" Again we have in Thakore Saheb's book Ch. XI, pp. 197-198.— "Pandit Ballala, in his *Bhoja-prabandha* or a collection of literary anecdotes relating to King Bhoja, describes an interesting surgical operation performed on the King, who was suffering from severe pain in the head. He tried all medicinal means but to no purpose, and his condition became most critical, when two brother physicians happened to arrive in Dhar who, after carefully considering the case, came to the conclusion that the patient would obtain no relief until surgically treated. They accordingly administered a drug called *Sammohini* to render him insensible. When the patient was completely under the influence of the drug, they trephined his skull, removed from the brain the real cause of complaint, closed the opening, stitched the wound, and applied a healing balm. They are then related to have administered a restorative medicine called *Sanjivani* to the patient who thereby regained consciousness, and experienced complete relief. This incident clearly shows that brain-surgery which is considered one of the greatest achievements of modern science, was not unknown to the Indians." Evidently deriving his information from the above Dr. Girindranath writes (Preface p. iii) —"*From the Bhoja-prabandha the administration of some kind of anaesthetic by inhalation* before surgical operations can be ascertained.*" Here Dr. Girindranath does not even quote from the original text of "Bhojaprabandha" This fact further and most clearly corroborates our belief of his information being quite second-hand and which becomes more exemplified when we find again in his book P. 231—"*Pandit Vallala describes, in his Bhojoprabandha or Anncedotes* (sic) *of King Bhoja, a Surgical operation performed on the King. He was suffering from a severe*

* Is it correct that the patient was anaesthetised by actual inhalation and not by using the drug internally?

pain in the head. Medicines did him no good, and so to give relief, surgical interference was thought necessary by two brother surgeons who happened to arrive in Dhar at that time. They are said to have administered a drug called Sammohini to render him insensible. They then trepanned the skull and removed the real cause of complaint. They closed the opening, stitched the wound and applied a healing balm. They are then said to have administered to the King another drug called Sanjibani to accelerate the return of consciousness" again in P. 60—"** *Pandit Vallala, in his Bhojo Prabandha alludes to a cranial operation performed on the King Bhoja after he was rendered insensible by some drug called Sammohini (producer of unconsciousness). Another drug is also mentioned, Sanjibani (restorer to life), by which he soon regained consciousness after the operation has been finished.*" The original quotation from *Bhojaprabandha* which he gives here and to which he also refers in P. 231, fails to support his statements in full thus exposing them to critical eyes as anything but original. Again we have in Thakore Saheb's book, Ch. XI, P. 198—"Jivaka the personal physician of Buddha is recorded to have practised cranial surgery with the greatest success," while we have in Dr. Girindranath's Book (Preface p. ii)—"*From the Mohavagga, we learn that Jivaka the personal physician of Buddha practised cranial surgery with success*" This same fact Dr. Girindranath also uses in the various parts of his book. Thus in P. 231 he observers "*** *though Jivaka* (500 B.C.) *is said to have practised cranial surgery with success.*" Again we have in Thakore Saheb's book, Ch. XI P. 189 "Arrian, the Greek Historian, in describing the conditions in India at the time of the invasion of Alexander the Great, refers to a curious fact, which reflects no small credit on the Hindoo Physicians of the day"—and the same is found in Dr. Girindranath's book (Preface p. vii)—"*Arrian informs us in his Indisthu that the study of medicine among the Brahmans was in great favour.*" Further again we have in Thakore Saheb's treatise, Ch. XI p. 198 "No art or science can flourish without the moral and material support of the Government of the day," Dr. Girindranath observes (Preface p. xiv)—"*No science can flourish without the*

support of the Government of the day." Here as elsewhere we find a most accurate though strange coincidence of Thakore Saheb's language with that in Dr. Girindranath's book. Besides these we have another remarkable instance of creeping into Dr. Girindranath's book some expressions from Thakore Saheb's book in which His Highness seems to have fallen in error. Dr. Girindranath thinks much of this and poses to be original by an apparently wise and skilful argument. Thakore Saheb observes in Ch. XII, P. 204 of his book—"* * * and when Manu in his Ordinances directs his followers to 'avoid the food of the doctor' (that is to avoid eating with or, any food touched by a doctor) he evidently refers to the surgeons and not to the other classes of physicians. The degenerate state to which Indian Surgery is now reduced is chiefly due to this popular prejudice." Dr. Girindranath deriving inspiration as it were, from this fact writes (Preface p. iii)—"*In the Manusamhita we have unmistakable testimony of the decline of Hindu surgery as the author prohibits the eating of cooked rice from the hands of a surgeon,*" and Dr. Girindranath quotes from the original text of Manu to support this without, entering into the proper spirit of these *sutras*. The most curious point with Dr. Girindranath about this lies in his further statement on the subject (Preface p. viii) —"*The Hindus from a very early period have given up the dissection of human bodies—the only trustworthy method of acquiring anatomical knowledge—merely because it may occasion ceremonial uncleanliness. The Ancient Hindus were however, free from such prejudices. Manu lays down that mere bathing will purify a Brahman who has touched a corpse (Manu Ch. v. 85), while stroking a cow or looking at the sun, having only sprinkled his mouth with water will remove the defilement due to touching a dead bone. (Manu Ch. v. 87). But even in the Manusamhita we can trace the decline of Hindu surgery and his law forbidding any one from eating food from the hands of a doctor evidently refers to a surgeon.*" (Manu III-152, IV-212, 220).

The remarkable part of the statements of Dr. Girindranath quoted above may be interpreted to mean that Manu's Ordinan-

ces V-85, V-87 refer to the *ancient Hindus,* while those of III-152, IV-212 and 220 refer to the *later Hindus* with whom the fall of surgery could be traced. We cannot reconcile the chronology here, nor can we understand clearly how can Manu allow easy purification when a bone or a corpse is touched and again prohibit the use of food touched by *doctors,* unless these have some deeper meaning in them.

And that Manu by prohibiting to use the food touched by *physicians or doctors* evidently meant *surgeons* only is a statement which ought to be supported by proper evidence before it can be accepted at all.

For the sake of easy reference we quote below the translation of the above Manu text by Sir William Jones:—

MANU III—152—"Physicians, image worshippers for gain, sellers of meat and such as live by low traffic must be shunned from oblations."

MANU IV—212—"Nor the food of a physician, nor of a hunter, nor of a dishonest man, nor of an eater of orts, nor that of any cruel person, nor of a woman in child-bed, nor of him who rises pematurely from table to make ablution, nor of her, whose ten days of purification have not elapsed."

MANU IV—220—"The food of a physician is purulent, that of a libidinous woman seminure; that of an userer feculent, that of a weapon-seller feculent."

MANU V—85—"He who has touched a '*Chandala,*' a woman in her courses, an outcast for deadly sin, a new-born child, a corpse or one who has touched a corpse, is made pure by bathing."

MANU V—87—"Should a Brahman touch a human bone moist with oil, he is purified by bathing, if it be not oily by stroking a cow, or by looking at the sun, having sprinkled his mouth with water.

Now in explaining Manu III-152, to the context we find that Manu enjoins upon *Brahmanas* to avoid inviting to oblations

certain classes of *Brahmanas* who have degraded themselves by wrong or low living. Among those he mentions, are *Brahmanas* who have taken upon themselves the profession of physicians, (*i.e.*, those *Brahmanas* who live upon the art of healing mankind, in other words who sell benevolent acts for the benefit of their own-selves), next *Brahmanas* who live upon the profession of worshipping temple-gods (*i.e.*, who sell *devotion* for personal gain), as also *Brahmanas* who live upon the traffic of meat-selling and such other *Brahmanas* who live upon commercial business and have similar low means of gaining livelihood.

Similarly Manu IV-212 and 220 refer plainly to persons who have lowered themselves in the estimation of the public by following low or vile profession or mode of living, such as that of a *physician*, of one who lives upon selling meat of beasts he has killed, of one who is very crooked-minded or cruel-hearted, of one who eats the food-remains of another, as also of those who live upon the performance of cruel acts. But a careful study of Manu defining the lowness of the birth, rank, caste as well as the traffic of a professional physician will show clearly that Manu by "*physician*" never meant a "*surgeon*," but one who has taken upon himself the profession of the "healing art," not for charitable purpose but for self-gain or for making it a means of his own livelihood. The extent of abhorrence of the *commerciality* of the profession of a physician was so great, that Manu in his ordinance IV-220, distinctly laid down that the food of a 'physician' (*i.e.*, one who lives by *selling benevolence*) was purulent, and put it in the same level with that of a lewd professional woman or harlot (*i.e.*, one who lives by *selling love*) which he declared to be seminure, and that of an userer *i.e.*, one who lives upon the interest of money to be *feculent*. The force of definition which Manu brings upon these particular words sharply and distinctly points to the *commerciality* of the professions, which demeans their followers to such a degree that they become shorn of the noble virtues of mankind and thus they are considered as fallen according to the sacred scripture. This may be fully supported by the following ordinance of Manu

III-156 where he lays down—"One who teaches the *Veda* by receiving money in return, as well as the person who receives such tuition must also be shunned from oblations. In X. 87-88 Manu forbids the *Brahmins* to sell fruits, roots, medicinal herbs and poisons &c. In other ordinances Manu dictates the particular professions which certain fallen classes of men should adopt, as in III-46, "*Sutas* must live by managing horses and driving cars; *Ambasthas* by curing disorders, *Vaidehas* by waiting on women, *Magadhas* by travelling with merchandise."

Manu, in his ordinances, which form the subject matter of our discussion, refers to the *vulgarity of the profession* of a physician, but he does not mean by this *vulgarity* the *profession of a surgeon* simply because he is to touch the corpses which according to Manu is easily purificable (V-85, 87). The whole argument of Manu is, therefore clearly on the point of partaking of pure food by *Dwija* or twice-born class which according to his wisdom would be rendered profane by the touch of persons who have rendered themselves impure by adopting improper, low, vile, immoral or cruel methods of living. Here the low living of the physician has been indicated as being due to the commerciality of his profession. At least this is the meaning, which one finds out for the term "physician" from the well-known commentaries of Manu. Though Manu enjoins not to take food touched by physicians, he never preaches hatred towards them, may be proved from his ordinances IV. 179-80, where he enjoins the twice-born not to incur any ill-feeling of the "physicians," &c., for he says emphatically that one is freed from all his sins by invoking their friendship and good-will.

Caraka condemns also very severely the commerciality of the Art of healing and he expresses himself thus—"There is no man on earth equal in virtue to him who saves from the jaws of death those dying through ailments. There is no better gift than the gift of one's life. Those who do the work of a physician solely with the aim of doing good to humanity they alone enjoy eternal bliss and comfort. That *Vaidya* who for the benefit of

others does the noble work of a physician according to the "*Ayurveda-shastra*" prolongs his life and adds to his virtues. Actuated through greed of wealth the physicians shall never sell the virtue of healing mankind by receiving money in turn. Should they be in want of money for maintaining their livelihood they shall appeal for such funds to the land-holders."

Thus we see that His Highness the Thakore Saheb of Gondal seemed to have drawn a hasty conclusion when he observed—"When Manu in his ordinances directs his followers 'to avoid the food of the doctor' (that is, to avoid eating with, or any food touched by a doctor,) he evidently refers to the surgeons, and not to the other classes of physicians. The degenerate state to which Indian surgery is now reduced is chiefly due to this popular prejudice." And we find Dr. Girindranath followed suit with the Thakore Saheb of Gondal.

Dr. Girindranath's observed in his preface, p. ii "we find the use of charms—a signet ring as a healing talisman for the cure of a snake bite *etc.*" Dr. Girindranath has committed a thing which cannot be supported in any way by original text where we find that a serpent stone was needed for the cure of snake bite and as the ring of the chief queen contained the stone she gave the ring to save the man. So it was not the ring but the serpent stone of the ring that acted as a charm.

(To be continued).

EDITOR'S NOTES.

An Ideal Mechanical hand.

We learn from the Société Nationale de Chirurgie de Paris that an anonymous donor has offered to the society a prize of 50,000 francs, to be handed over to the maker of the mechanical apparatus which best supplies the place of the hand. The conditions laid down are as follows: "All competitors must belong to allied or neutral nations. They are to present to the society mutilated men who have been using their apparatus for at least six months. The Société de Chirurgie will experiment with each apparatus on mutilated men for the length of time it thinks fit. The apparatus rewarded is to remain the property of its inventor. The competition will be closed two years after the end of the war." MM. Faure, Kirmisson, Quenu, Rieffel, and Rochard form the committee selected by the society to deal with the competition, and those wishing to compete should send the apparatus and description to the Secretary-General of the Société National de Chirurgie, 12, Rue de Seine, Paris.—The *Lancet*, July 29, 1916.

The Cocaine Habit.

Until the war there does not appear to have been any substantial increase in the addiction to cocaine in this country, and the recent introduction of the habit among our troops is probably correctly attributed to the Canadians, whose example has been followed at first out of mere curiosity. In the ranks cocaine is usually taken in the form of snuff, known as "snow," and the hypodermic method is not often used. The victims of the habit allege that cocaine is taken to replace alcohol when that is unobtainable in sufficient quantities or, if taken in the desired amount, would lead to punishment. It is well known that drug habitues ring the changes for various causes between alcohol, morphia, opium, and cocaine, sometimes doubtless in the hope of breaking a habit, at other times because the particular poison desired is unobtainable. The cocaine habit is largely prevalent in various parts of America, and has more recently invaded India. Now that the practice has been introduced among our young men there is a grave risk that the habit will

spread especially if the sale of liquor continues to be restricted, unless there are stringent precautions taken to stop the sale of the drug.—The *Lancet*, July 29, 1916.

The Early Diagnosis of Pulmonary Tubercle.

The difficulties attending the early diagnosis of pulmonary tubercle in certain cases are well recognised, but since the welfare of the patient depends on a prompt recognition of his condition, the difficulties have much exercised the mind of the profession, as various important clinical and laboratory methods bear witness. A new method has been worked out by Professor Calo Martelli, of the University of Naples, and is described in the issue of *Il Policlinico* of July 9th (Practical Section). Briefly, the technique consists of the following steps: (1) To promote bronchial secretion and expectoration by means of iodides, one-half to one gramme daily, given with decoction of senega and syrup of ipecacuanha for two or three days; (2) to collect the sputum, 100-200 or more c.c., and homogenise it with an equal quantity of antiformin for two to four hours in a thermostat; (3) thoroughly to centrifugalise the material in conjunction with repeated washings with physiological salt solution; (4) to make smears of all the residue, staining the preparation with Ziehl's carbol-fuchsin in the ordinary way and another after Much's method for granules. Professor Martelli claims that this technique will reveal the presence of scanty bacilli and collections of Much granules in cases where neither clinical nor ordinary bacteriological methods are sufficient to form a diagnosis. We question whether it is ever necessary to resort to the induction of an iodide bronchial catarrh which may indeed in certain cases reveal bacilli, but only at the expense of turning a "closed" case into an "open" one. If there is closed cooperation between the clinician and the laboratory expert, ensuring the obtaining of the most suitable specimens of sputum for examination, we believe that the tubercle bacilli, when present, will rarely fail to be found by ordinary means. Experience shows that bacilli are rarely revealed by the antiformin method when not discovered in direct films.—The *Lancet*, August 5, 1916.

A Dilemma.

Our excitable and optimistic contemporary, *The Journal of the A. M. A.*, says that "no condition can be properly treated" without, in short, taking the blood pressure. Therefore, it follows that no condition has ever been properly treated until quite recently, and even now, perhaps, the great majority of physicians know but little about it. A severe reflection on the medical men! What the learned pundits of the A. M. A. do after they have taken the pressure is by no means clear, but the operation throws an additional halo of learning about them. But pretty soon, Oh aspiring practitioner, one who takes the blood pressure only will be as much out of the learned swim as he who pays no attention to it beyond feeling the pulse, for *The Journal* goes on say, "It is now generally agreed by all scientific clinicians that it is as essential—almost more essential—to determine the diastolic pressure as the systolic pressure." If this enormous pressure of learning keeps increasing something will burst.—The *Homœopathic Recorder*, August 15, 1916.

Methyl Alcohol.

It is a bit curious that some of our homœopathic eye-men have not looked into wood alcohol, in potency, as a possible remedy for failing, or loss of, sight. Heroic proving, though not under expert guidance, demonstrate beyond doubt that the action of this drug is to cause blindness, or to greatly affect the eyesight. Did not Hahnemann largely depend on this sort of evidence in building up the materia medica that, in spite of the occasional wobbling of its professed followers, has carried Homœopathy for over a century? Did he not tell them that his work was but a beginning? Here is possibly a great remedy for a condition for which we have no remedy. Many unconscious provings have been made of it, and they all center in the eyes—failing sight terminating in blindness. We do not know whether the drug has ever been prepared in potencies, but that is a thing easily done by any skillful pharmacist, and as the potencies can harm no one, and as the results may be good, it is worth trying.—The *Homœopathic Recorder*, August 15, 1916.

Hello, Doctor.

In dead of night when all is still
And snugly in his bed does lie,
What breaks his rest and makes sleep nil
And bids him out in storm to hie?
The telephone.

"O docter, dear, come to us quick
Do not delay your coming.
Our baby boy is very sick,
A big pain in his tummy."

The faithful doctor leaves his bed,
His rest is gone, his head is dizzy,
Kicks on his clothes, goes to the shed,
Gets Dobbin out or benzine Lizzie.

With much expense of gasoline,
Or Dobbin rudely lathered,
He comes upon the lamp-lit scene,
The family round him gathered.

Oh, doctor, see our blessed dear,
He's sleeping now, the darling;
A wicked safety pin we fear
His playfulness was marring.

"Of course you will not charge for this,
No medicine you're leaving."
"Oh, no, I thought it perfect bliss
To take this evening airing."

On homeward road, o'er vale and hill,
His fancy builds on ideal home,
Where patients only call when ill
And, praise the gods, no telephone!

ALFALFA.

Preservatives in Foods.

Preserved food of many different varieties are practically indispensable in modern civilized life. Yet many of the chemical substances used as preservatives are poisonous in large quantities, and at best only relatively harmless when taken in even small amounts. Benzoic acid and sodium benzoate are looked upon by some as the most promising of the many chemical antiseptics used nowadays for the preservation of food; yet we are not justified in saying that even they are strictly harmless, and the Board of Agriculture has recently issued a warning against the use of sodium benzoate in jam. Away, then, with preserved foods! Quite impossible; it is obvious that a diet composed of fresh articles of food alone, uncontaminated by such antiseptic substances as sugar, salt, smoke, or vinegar, would be unendurably tedious to most of us. It may be our own fault; but who could contemplate with equanimity a festive board—or rather a bare table—stripped of all jams, marmalade, salt fish and flesh, kippers, pickles, and most of the hundred and one *hors-d'œuvres* and side dishes, preserves and stimulating sauces, that do so much in this world to help indifferent meals upon the way they must go? It remains, then, to submit all chemicals used in preserving foods to a strict scrutiny, and to prevent their abuse. The whole subject has recently been discussed in a fairly practical and temperate manner by Professor Folin, of Harvard University. His book, *Preservatives and other Chemicals in Foods*, is one that may be read with advantage by medical men and laymen alike. As he points out, vast sums of money can be made out of preserved foods; and the manufacturer's interest in the products of his factories is apt to be pecuniary rather than of the scientific or hygienic kind. Naturally the business man uses the preservatives that is simplest or cheapest for his particular purpose, perhaps without any excess of anxiety as to the effect of the preservative on the consumer's tissues and alimentary tract. Professor Folin would put an end to this by forbidding the use of any antiseptic in foods until its harmlessness had been proved; at the present time the law

indicates the reverse process, no preservative being prohibited until it has been shown to be injurious. Professor Folin would thus leave the food preserver two chemical antiseptics to be used *ad libitum*—namely, sugar and salt. As for the other common preservatives, he would prohibit entirely the use of formaldehyde, salycilic acid, boric acid, borax, sulphites, sulphurous acid, and smoking. There is, he says, no sound reason why the above-mentioned antiseptics should be permitted in any article that is used as a food; all are suspicious characters. Flour that has been bleached, or "artificially aged" as its producers call it, by exposure to the fumes of nitrogen peroxide should not be allowed on the market; the use of preserved foods highly coloured by chemicals or dyes should be discouraged. The only other preservatives Professor Folin contemplates retaining are benzoic acid, sodium benzoate; they are, indeed, poisonous substances, but he believes that the tissues of the human body command an efficient metabolic process for converting them, by combination with glycocoll, into the harmless hippuric acid, in which form they are excreted. There is room, as he points out, for much pioneer work in the discovery of new chemical substances that will preserve foods from decay yet be harmless to human beings. The law at present endeavours to protect the public by a series of prohibitions as regards the use of chemicals in food products; Professor Folin sees no hope in this method, for the expert "food chemist" may always be trusted to go one better than the law and to circumvent it. Such legislation should rather take the form of a series of permissions granted as exceptions to the general rule that no chemicals or drugs of any kind may be added to any article of food.—The *British Medical Journal*, September 23rd, 1916.

Pituitary Extract in Diabetes Insipidus.

Our ignorance of the functions of the pituitary body was unlimited until it was first studied by Schäfer and Oliver in 1895. In 1901 Magnus and Schäfer found that extract of the infundibular or posterior lobe of the gland acted as a diuretic, and in 1905 Herring and Schäfer proved that this extract dilated

the renal arteries while constricting the other arteries of the greater circulation. At the present time many pituitary preparations are on the market—proprietary drugs made for the most part from the posterior part of the gland—and the literature dealing with them is very extensive; their names are many, including hypophysin, infundibulin and pituglandol. These extracts have been employed in the treatment of anuria or diminution of the renal secretion of urine, apparently with success. The polyuria which follows operative manipulation or disturbance of the posterior lobe of the pituitary body has been particularly remarked by Cushing, who is inclined to attribute many cases of either transient or lasting polyuria to increased secretory activity of the hypophysis. There can be no dobut, therefore, that polyuria is one of the effects of exhibiting pituitary extracts in both health and certain diseases. Oddly enough, its effect in diabetes insipidus is precisely the opposite, as was pointed out by Francesco of Venice in 1913. This author quoted two patients passing six or eight litres of urine a day, in whom pituitary extract reduced the urinary output to the more moderate figure of one or two litres a day. Rosenfeld has recently put on record two cases of diabetes insipidus in which subcutaneous injections of 0·5 gram of pituglandol much reduced the output of urine. The particular interest of his communication lies in this, that in one instance the concentration of the urinary sodium chloride was much increased when the polyuria disappeared under the influence of the drug, while in the other case it was unaltered. The first patient, a well nourished woman of 38, passed some five litres of urine daily while on a diet containing little sodium chloride. The pituglandol injections reduced the urinary output to from one to two litres a day, while the percentage of sodium chloride in the urine rose from under 0.1 per cent. to 0.2 or 0.3 per cent., the latter figure being reached when more of the salt was added to the diet. The second patient, a man with cystitis, hypertrophy of the prostate, and renal disease, who was passing from five to seven litres of urine daily, passed a smaller amount of water while treated with pituglandol, without exhibiting any increase in the sodium

chloride concentration, but rather the reverse. In the first patient administration of the drug by the rectum did not lessen the polyuria; she was a case of primary polydipsia, no doubt, or, as Rosenfeld puts it, of symptomatic polyuria, for the addition of common salt to her diet did not increase the secretion of urine. The second patient, however, exhibited primary polyuria, or true diabetes insipidus. Rosenfeld had evidence to show that his kidneys were incapable of secreting a more concentrated urine. Rosenfeld also quotes a third patient, a soldier, passing five or six litres of urine a day, on whose polyuria hypophysin and pituglandol were almost without influence. The conclusion reached is that these extracts influence polyuria by acting on some urinary (or polyuric) centre in the floor of the fourth ventricle; the centre diminishes the polyuria by increasing the capacity of the kidneys to secrete a concentrated urine. This action of pituitary extracts is but transient, lasting in favourable cases for only a few days.—The *British Medical Journal*, August 26, 1916.

Voltaire and Venereal Disease.

Voltaire naturally found in venereal disease a subject for the satiric touch which he applied to everything, divine and human. But beneath the lightness of his manner there was always a real sympathy with suffering. The references to syphilis in his works are almost innumerable, but the *loci classici* are in *Candide* and *L'Homme aux quarante écus*. In the former he almost revels in his account of the consequences of the poisoned joys which Pangloss found in the arms of Paquette. Candide meets his old master, professor of "metaphysico-theologo-cosmologo-nigology" (the "nigo" in this ultra-Teutonic monster of word formation we take to be a playful disguise of *nigand*), "all covered with pustules, his eyes lifeless, the end of his nose eaten away, his teeth black, speaking with a throaty voice, tormented by a racking cough, and spitting out a tooth at every effort." The unlucky philosopher, although confessing that the pleasures of paradise had been followed by the tortures

of hell, still clung to his doctrine that all was for the best in the best of all possible worlds. Syphilis, he argued, was a necessary and indispensable ingredient in its composition, for "if Columbus had not caught on an American island that disease which poisons the source of generation, which often hinders generation, and which is evidently opposed to the great end of Nature, we should not have chocolate or cochineal." Pangloss goes on to describe how the disease had spread throughout Europe, especially in those great armies composed of honest mercenaries who decide the destinies of states; it might be assumed that when thirty thousand soldiers fought in pitched battle against an equal number of men there were about twenty thousand on each side afflicted with the pox. In *L'Homme aux quarante écus* Voltaire again dwells on the part in the spread of the disease played by armies. He relates the piteous story of two girls living in a village where nothing was known about syphilis and where "people made love with the security of innocence" till troops were quartered there, when at once sin brought suffering into the little paradise. Severe as the disease was in the eighteenth century, the treatment, according to Voltaire, was almost as destructive. The abuse of mercury cost Pangloss an eye and an ear. The heads of the girls were swollen like balloons for six weeks, they lost half their teeth, their tongues stuck out "half a foot," and they died of chest disease within six months. The surgeon-major of the regiment said that the parliament of Paris was the first to make an ordinance for the suppression of syphilis; this was in 1497, when all persons suffering from the disease were forbidden to stay in Paris under pain of the rope. But as it was not easy to get legal proof of the guilt, the ordinance had no effect. He added that the scourge instead of abating was spreading everywhere. Nor was it becoming less dangerous. Asked whether there was any means of suppressing the contagion, the surgeon-major said the only way would be that all the princes of Europe should form an international league as in Godfrey de Bouillon's day. A crusade against syphilis would be much more reasonable than

those against Saladin and the Albigenses. It would be much better to combine in a war against the common enemy than to be continually watching for an opportunity of laying waste each other's countries and covering the fields with corpses. Dr. Dubois-Havenith, who called attention to this passage of Voltaire in a communication made some years ago to the Medico-Chirurgical Society of Brabant, said that the organizers of the two international congresses held at Brussels with the participation of all governments of the world to study the prophylaxis of venereal disease believed that the first idea of such international action had come from Professor Wolff of Strassburg. But Wolff had been forestalled by Voltaire, whose suggestion, which had remained a dead letter for more than a century, was revived at these conferences. Voltaire's view that armies are potent factors in the diffusion of syphilis is said to have found confirmation in the present war. At a recent meeting of the Academie de Medecine, Gaucher stated that his observations had convinced him that in France and the other belligerent countries, syphilis was twice as prevalent as before the outbreak of hostilities. Brocq had already uttered a note of warning on the same subject. Among the many projects for the betterment of the world after the war not the least useful would be to extend the international crusade against the insidious disease which is sapping the health of the men and women who are to repeople a devastated world.—The *British Medical Journal,* August 26, 1916.

The Sale of Habit-Forming Drugs.

The recent Order of the Army Council dealing with the supply of cocaine and about a dozen other drugs to members of His Majesty's Forces imposes severe—though not too severe—restrictions on a trade which contains the possibilities of serious evil. Of the drugs dealt with by the Order, coca, cocaine, codeine, diamorphine, opium, and morphine were already in Part I of the Poisons Schedule, and could only be supplied retail by qualified pharmacists to purchasers known to them personally and after compliance with the statutory requirements as to registration of sale and labelling of the article; barbitone (veronal), sulphonal, and chloral hydrate were in Part II of the schedule, and the only restrictions were in regard to labelling and the qualification of the seller; benzamine (eucaine) salts, however, being synthetic compounds, and therefore not included in the clause "all poisonous vegetable alkaloids," and Indian hemp, were freely saleable by any one. The restrictions of the Pharmacy Act, however, refer to retail sales; the only clause dealing with scheduled poisons when dispensed to a prescription merely requires that the prescription shall be entered in a book kept for the purpose and that the name and address of the pharmacist dispensing it shall appear on the label; no evidence even is required that the prescription is that of a medical practitioner. In contrast to all this, the Army Council Order lays down that none of the drugs named, or any of their "preparations, derivatives, or admixtures" shall be supplied under any conditions to a member of the forces "unless ordered for him by a registered medical practitioner on a written prescription, dated and signed by the practitioner with his full name and qualifications, and marked with the words 'not to be repeated,' and unless the person so selling or supplying shall mark the prescription with his name and address and the date on which it is dispensed." The need for restricting the repetition of prescriptions for habitforming drugs has long been felt, and the practice of putting on the prescription. "Not to be repeated" or similar words is by no means unknown, while the requirement that a practitioner's signature, and not merely

initials, must be attached when poisonous ingredients are ordered in a medicine, is obviously reasonable. Probably these additional precautions, being now necessary in some cases, will become general. No exception need be taken to the list of drugs selected for restriction; the inclusion of all preparations and admixtures is rather sweeping. The suggestion made in a recent question in the House of Commons that "coca liquidum" (by which presumably liquid extract of coca was meant) is not included was, of course, quite erroneous.—The *British Medical Journal*, July 1, 1916.

Tetanus due to the use of Catgut.

One of our correspondents in Scotland described in THE LANCET of July 1st (p. 33) the establishment of a factory in Edinburgh for the manufacture of surgical catgut, a product for which we depended on Germany before the war. He stated that the manufacturer had found it impossible to produce from catgut, obtained under septic conditions, a sterile ligature by means of a subsequent medication after the strings had been twisted and dried without impairing the tensile strength. The difficulty of sterilisation is illustrated by an unfortunate case reported to the Académie de Médecine of Paris on June 20th by M. Charles Nicolle and M. Henri Bouquet. A woman, aged 47 years, was admitted to the French Civil Hospital, Tunis, with a large umbilical hernia, partly reducible. Morestin's operation for radical cure was performed, a transverse incision being made above and below the umbilicus, when a large flap of skin and fat was removed. When the sac was opened the omentum was found adherent and was resected after ligature with catgut. The intestine was not seen. The sac was resected and closed. The aponeuroses were united by three catgut sutures. The wound in the skin was closed by metallic sutures and Michel's clasps. A small drain was inserted at each end. The drains were removed on the third day and the patient did well until the sixth day, when, although the wound looked well,

the temperature rose to 101·1° F. On the seventh day she refused food because of "pain in the throat, and wry-neck." On the eighth day there were trismus and attacks of opisthotonos. The wound still looked well, but there was a slight purulent discharge from the point of drainage on the left side. Death took place on the ninth day in spite of serum treatment instituted two and a half days after the appearance of symptoms of tetanus. After death the wound was opened. In the position of the aponeurotic suture the tissues were greyish and there was a little pus. Two catgut sutures were removed, and after wiping with gauze were sent in sterile tubes to the Pasteur Institute. There the catgut was washed in normal saline solution and desiccated at a temperature of 98·6° F. for eight hours. It was then broken up in a little bouillon and inoculated with some drops of the latter in the muscles of the thigh of two guinea-pigs and two mice. After an incubation period of 48 to 72 hours tetanus appeared in all the animals. It rapidly became generalised in the mice, who succumbed on the fifth day, but it remained local in the guinea-pigs. There was therefore no doubt that the patient's death was due to the presence of tetanus spores in the catgut. This had been obtained from an important French house in sealed tubes, and the anhydrous vapours of acetone had been used to sterilise it. It is noteworthy that at a recent meeting of the Académie de Médecine a well-known surgeon, M. Quénu, declared that he had never experienced any serious accidents due to the use of catgut.—The *Lancet*, August 5, 1916.

Gleanings from Contemporary Literature.

VERTIGO AND SEA-SICKNESS.

Their Relation to the Ear.

By Lewis Fisher, M.D.,
Philadelphia;
And Isaac H. Jones, M.D.,
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Perhaps in the whole domain of medicine there is no subject which seems so vague and chaotic as that of vertigo. Doctors repeatedly speak in a general and indefinite way of "intestinal" or "stomach" vertigo, of vertigo from Bright's disease, dizzy spells from refractive errors, from indigestion, or neurasthenia, etc., without thinking even for a moment of the real mechanism of its production.

The most recent work on the ear makes it clear that vertigo is not some general manifestation accompanying disorders in this, that, or other organ, but that it is a peculiar and definite disturbance perceived within the brain itself just as sight and hearing are perceived in the brain, and that the vertigo impulses are transmitted thereto through the vestibular portion of the ear and its associated paths. Since the ear and its nerve paths are responsible for the production of vertigo, it might be profitable to refer briefly to a few absolutely essential facts relative to the physiology and anatomy of the internal ear or labyrinth.

The inner ear consists of two distinct organs, both housed in the same cavity: 1, A cochlear portion, which attends to the function of hearing; 2, a vestibular or static portion with *equilibration* for its function. The static labyrinth consists of a saccule, utricle, and three semicircular canals. The saccule presides over linear movements in a lateral direction, the utricle recognizes linear movement in an anteroposterior direction, and the semicircular canals control rotary or turning movements in all conceivable planes. It is particularly important that the relation of the three semicircular canals to these planes be borne in mind in a discussion of vertigo. The semicircular canals have each a bulbous swelling on one end in which is placed a group of sensitive hair cells, capable of excitation. The eighth cranial nerve or "auditory" nerve, so called, conveys impulses from the whole labyrinth, and consists of two distinct parts—the cochlear which carries fibres of audition, and another distinct vestibular portion which carries fibres of equilibration. When this com-

bined bundle, or eighth nerve, reaches the brain stem, it breaks up into its two component parts, the cochlear portion going one way and the vestibular going another.

The normal human organism depends in a great measure upon certain special senses, such as sight, taste, hearing, olfaction, etc. Among those is one, not generally known as a distinct special sense, but yet existing and of the utmost importance, namely, the static sense, *i.e.*, a special sense whereby we are enabled to maintain our proper position in space. To those unfamiliar with this fact, we might point out the following:

Every "special sense" consists of three distinct elemental portions: 1, An "end organ" for perceiving external stimuli; 2, a brain centre for interpreting those stimuli, and, 3, nerve paths connecting the two. Now this static sense is constructed on the same plan. It has an "end organ," the static labyrinth, in which are situated the hair cells capable of excitation. It also has a brain centre, postulated by Mills to be situated in the posterior portion of the temporal lobes. It likewise has nerve paths connecting the labyrinth with these centres. These paths are many in number and are most intimately associated with the cerebellum, the other special sense centres, and in fact with the whole central nervous system.

Perfect equilibration is accomplished through a harmonious cooperation of several special senses, chiefly the static sense, sight, and muscle sense. Disturbance of any one of them will result in partial or complete loss of equilibrium; but the point to remember is, that the static labyrinth, unlike the others, has equilibration for its *sole* function, and is the most important organ for the maintenance of balance and of orientation. *Any disturbance of the mechanism of equilibration induces vertigo.*

By vertigo we mean a subjective sensation of a disturbed relationship of one's own body to surrounding objects in space. That the labyrinth was a factor in maintaining the equilibrium of the body was suspected by numerous observers for many years. But it was not until 1860 that this relationship was established as a clinical entity. In that year Menière, of Paris, published his epoch making paper, in which he described that train of symptoms always referred to thereafter as Menière's disease. Many others followed him and made contributions to the subject, but no work has equalled the recent brilliant efforts of Dr. Robert Barany of Vienna. That his work upon the physiology of the labyrinth was of more than passing interest was attested to by his receiving recently the Nobel Prize,

awarded annually for research work in medicine. He has established, beyond doubt, that the static labyrinth constitutes the chief organ of equilibration. It accomplishes this by being most intimately connected through the central nervous system with nearly every portion of the human organism. The nerves connecting this vestibular portion of the labyrinth with the rest of the body may be spoken of as the vestibular paths or tracts. Stimulation, or irritation, or of any portion of the vestibular tracts, induces vertigo or dizziness with associated loss of equilibration. We must not be misunderstood as meaning that irritation of the ear itself is the sole and only way of producing vertigo. We all know that various visual disturbances, cardiovascular affections, gastric or alimentary disorders, etc., may exhibit vertigo as a symptom. What we do wish to impress, is that in the latter instances it is their direct action on the *vestibular apparatus* that is responsible for the induction of the vertigo. The stomach of itself, or the kidneys, or the heart, etc., can no more produce vertigo, than they can produce sensations of flashes of light, hallucinations of sound, or obsessions of smell. It is generally known and admitted, as a matter of course, that the light, sound and smell sensations in these instances are produced by irritation or stimulation of the visual, auditory or olfactory apparatus as the case may be. Just in the same way, when disease in any of the organs just mentioned is accompanied by vertigo, it is due to a direct effect on the static organ or its distribution. Should the same pathological states for one reason or another fail to irritate the vestibular tracts, *there will be no vertigo.*

Vertigo produced by inflammatory or other conditions of the ear itself can be differentiated from other kinds of vertigo by an examination of the ear. By this we have come to mean, not only the study of the hearing function, but a careful investigation of the static portion of the labyrinth as well. When attempting to determine the origin and nature of vertiginous attacks, so that an intelligent prognosis can be given and proper treatment instituted, it is absolutely essential to determine the functional activity of *every* portion of the inner ear. The acoustic labyrinth is therefore carefully tested by means of tuning forks, while the static labyrinth is examined most scrupulously by the new labyrinthine tests. These tests enable us to determine the functional value of the various portions of the inner ear, and also to demonstrate any affection or interference with the vestibular paths connecting the labyrinths with the central nervous system. Many of these vestibular paths are well known and defi-

nitely located. Clinically this knowledge is of the greatest interest and importance as we are enabled by means of these tests to locate with a good deal of accuracy lesions within the cranium, particularly so if they happen to involve those paths themselves. The importance of it has been recognized to the extent that a number of our local leading teaching institutions, beginning with the University of Pennsylvania and followed by the Medico-Chirurgical College, special subdivisions of their respective ear departments ware created where all patients complaining of vertigo or suspected of an intracranial lesion are carefully tested out in this way with a view of determining the integrity of the labyrinths and the associated paths. These vertiginous cases are sent to the ear dispensaries from *all* the departments, chiefly the medical and nervous, to which many of the patients first apply for relief.

As these labyrinthine tests are new we might say a few words about them. The principle underlying them all is this: Movement of the endolymph in the semicircular canals in a given direction, stimulates the sensitive hair cells in these canals, and produces definite phenomena. These phenomena are: I, A twitching of the eyes or nystagmus of a certain type; 2, vertigo; 3, so called "past pointing"; 4, falling reactions. In a person to be examined this endolymph is artificially set in motion, either by turning the subject in a smoothly revolving chair, or by douching the ear with cold or hot water. The reactions following are carefully observed. With a knowledge of what these reactions should be *in the normal*, and knowing furthermore that in a normal individual they are remarkably uniform and constantly present, we are able to recognize that any deviation from the normal, or a complete absence of some or all of the reactions, is significant of a disturbance either in the labyrinth or somewhere along the vestibular tracts. In this paper we will speak only of that reaction which is immediately under discussion, namely, vertigo.

If a person is turned toward the right, with the head in the upright position, with the eyes closed, his first sensation is that of turning toward the right. This is due to the lagging behind of the endolymph in the horizontal semicircular canals. As the turning is continued the endolymph catches up to the movement of the body, and the subject no longer feels that he is turning, although actually he *is* turning. On stopping the chair the endolymph continues to move and the person has the sensation of turning in the opposite direction, namely, to the left, although as matter of

fact he is sitting absolutely quiet in the chair. This induced vertigo, or what we may call experimental vertigo, is obviously produced by setting in motion the endolymph in the labyrinth.

Experimental or vestibular vertigo manifests itself in certain definite planes.

1. Sensation of turning in a horizontal plane, either from the right to left or from the left to the right.

2. Sensation of turning in the frontal plane or rather the sensation of *falling* to the right or falling to the left.

3. Sensation of turning in the sagittal plane, or rather the sensation of pitching forward or backward.

Sensation of movement in the horizontal plane is produced by horizontal canal or canals only. This is experienced by the subject when he is turned with the head in an upright position.

The sensation of turning in the frontal plane is produced only when the vertical canals are influenced in the plane. This can be produced in a subject by turning him with the head placed forward or backward, in which position the plane of the head is frontal. If after such turning, the head is permitted to remain in the forward or backward position, the sensation that the subject experiences is one of turning in the frontal plane, which in this position of the head is paralled to the floor. The sensation is therefore the same he experienced after being turned with the head upright, namely, a movement about his own axis, either to the right or to the left. As it is a sensation of turning in a plane parallel to the floor, or the horizontal, it is not unpleasant. If, however, the head is then raised to the upright position, the frontal plane now assumes a position at right angles to the floor, and the subject has a sensation of falling either to the right or to the left, which is therefore unpleasant.

The sensation of turning in the sagittal plane is produced only when the vertical canals are influenced in that plane. If a subject is placed in a chair with the head inclined well over foward the shoulder, his head is then in the sagittal plane. If he is turned now with the head in that position, the resulting subjective sensation is one of turning in that same sagittal plane, which, however (in this position of the head), is parallel to the floor. The sensation is therefore the same as that experienced after being turned with the head upright, namely, a movement about one's own axis

either to the right or to the left. As it is a sensation of turning in a plane parallel to the floor, it is not unpleasant. If, however, after such turning, the head is raised to the upright position, the sagittal plane assumes a position at right angles to the floor, and the sensation is that of falling in the sagittal plane, namely, pitching forward or backward. This is unpleasant.

In connection with unpleasantness from these turning sensations, we may consider seasickness. *Mal de mer* is unquestionably an *ear* phenomenon. As Barany* has stated, the reason that this is not generally recognized is that the phenomena of the labyrinth and the vestibular apparatus are not generally understood. In 1881, Champeaux first showed the close similarity between Menière's disease and seasickness. In both conditions there is an aura consisting of a sensation of flashes of color before the eyes, and a breaking out of sweat; there is vomiting of a projectile type, which occurs very easily and produces only temporary relief. In both instances the sufferer feels worse on attempting to stand or move about and shows distinct ataxia; lying down and closing the eyes usually results in some relief. Headaches is present in both instances and occasionally there is a nervous diarrhea after the vomiting.

Deaf and dumb people do not become seasick. This was first brought out by W. James. Similar proof of the relation of the ear to seasickness was proved experimentally by Kreidl. He constructed a floor on which he rocked animals, indicating the movement of a ship at sea. He was able to make the animals sick in this way. He then operated on the animals and severed both *eighth nerves.* When they recovered he conducted the same experiment and found that they could not be made seasick again.

Trotsenberg makes the observation that in very small children seasickness is uncommon, bringing out the fact at the same time that douching the ear with cold water in children similarly fails to produce nausea. This could be explained by the fact that the vestibular apparatus of small children, not yet being highly developed, shows but little response either to the movement of the ship or to experimental stimulation of the ear by douching.

Ruttin had the same idea as to the causation of *mal de mer*, and to prove it he performed the following experiment on himself. He went out to sea purposely to make himself seasick, and when in

*Seekrankkeit, *Handbuch der Neurologie*, 1912. This paragraph is largely based on this article.

that condition he had a colleague of his, Doctor Beck, douche cold water in both of his ears simultaneously with an apparatus which he had devised. This produced a decided lessening of his seasickness. Unfortunately for therapeutic purposes the relief lasted only so long as the douching was kept up.

Barany has shown that persons who show no response to stimulation of their ears experimentally cannot be made seasick. This is substantiated by our own experience with patients who have "dead" or nonreacting labyrinths. Barany also brings out the following interesting facts: Persons who by stimulation of the ears become easily nauseated also become seasick easily. Neurasthenic are sensitive to being turned in a chair or having their ears douched, and they also become seasick easily. Persons who become seasick from certain movements of the boat, also become seasick by the very same kind of vestibular stimulation. The manner of onset and the persistency of the nausea are the same in seasickness as in experimental vestibular stimulation. Furthermore, the sensations after seasickness are the same that we have after being nauseated by violent vestibulation. Any means which would help against seasickness, such as altering the position of the head, helps as much against the unpleasant sensations experienced when one is being turned in a chair. After getting back to land the seasick person quickly becomes perfectly normal again; in the same way nausea produced by violent vestibular tests quickly disappears.

Seasickness is therefore an ear phenomenon, by which we mean that the end organ of equilibrium, namely, the static labyrinth, is disturbed by the unaccustomed movement of the boat or ship. The tossing of a ship may be analyzed as movements in the following planes:

1. *The horizotal plane* from right to left and from left to right. This movement, however, is usually very slight, and unfortunately, as we have already shown, it is the only plane of the movement that is not pleasant.

2. *The frontal plane*, namely the rolling of the ship from side to side. If the subject is standing facing the bow of the ship, such a movement will influence the vertical semicircular canals in the frontal plane. Such stimulation is unpleasant. If, therefore, the subject *lies down* with his head toward the bow or stern, the rolling movement would then affect the *horizontal* canals and the unpleasantness would disappear.

3. *The sagittal plane*, namely, a pitching of the ship fore and aft. If the subject is standing facing the bow of the ship, such a movement affects the vertical semicircular canals in the sagittal plane. The resulting sensation is extremely unpleasant. If, however, the subject lies down with the line of the body extending across the ship from starboard to port, then the pitching movement affects the horizontal canals instead of the vertical and the unpleasantness disappears.

The up and down movement of the ship, that is, the rising and the sinking, in a similar way affects the vertical semicircular canals when the subject is in an upright position. The resulting unpleasantness is again relieved by the subject lying down, since then the up and down movements affect the horizontal canals instead of the vertical, the stimulation of which is so much less unpleasant. Unfortunately the movement of the ship seldom takes place *in one plane only*. It is the *combination* of the various planes which plays havoc with the semicircular canals.

In consideration of these facts, to speak of the role that the ear and the ultimate tracts play in the production of vertigo, is like speaking of the role the heart plays in the production of cardiac murmurs. A normal static labyrinth and vestibular mechanism see to it that we have no vertigo. They accomplish this by keeping the central nervous system continuously informed of our position in space with relation to objects around us. In the presence, however, of pathological condition in the labyrinth or along any of its paths, the perfect performance of this function is no longer possible. Objects around us do not appear as they should. They either move or dance before us. Our own bodies feel no longer stable and secure upon the ground—in other words, we are *dizzy* or are experiencing sensations of vertigo which, if serious enough, result in our inability to move about or stand upright.

Summing up, then, all vertigo of whatever cause, be it from stomach, kidneys, eyes, or what not, is directly due to a disturbance along some part of the vestibular paths. The pathological conditions that may affect the labyrinth itself are of course legion and cannot be discussed in a paper of this character. For our purposes it is best to limit ourselves to certain general principles. Among the things to bear in mind in this, namely, that the static labyrinths always act in unison. They continuously keep sending out an equal flow of tonic impulses to the whole body, the right labyrinth as much

as the left, and the left labyrinth as much as the right. When, however, a pathological process impairs or exaggerates the action of one of the labyrinths, there results a definite disturbance of this nicely adjusted mechanism with vertigo as a symptom. Impairment or stimulation of both sides to exactly the same extent produces no vertigo whatever. Diseased conditions within the ear itself may produce vertigo in the following ways: 1. By an actual impairment or destruction of the static end organ in the labyrinth itself; 2, by affecting the circulation and pressure in and about the labyrinth, resulting in an abnormal stimulation of the labyrinth hair cells.

Inflammatory conditions of the middle ear, for instance acute otitis media, or mild inflammations of the inner ear itself, produce only irritative effects, if any, so that the patients suffer from more or less vertigo as long as the acute stage of the congestion lasts, the vertigo vanishing with the disappearance of the inflammation. On the other hand, slow dengerative changes of the labyrinth, or sudden destruction of the whole or part of one labyrinth, are accompanied by *marked vertigo*, nausea and vomiting, and loss of equilibration. Such slow denegerative changes are seen in syphilis, diabetes, gout, lead poisoning, and other systemic affections.

Sudden destruction of the whole or part of the labyrinth may be produced rarely by trauma, but usually by hemorrhage or serous effusion into it, and may occur in diabetes, Bright's disease, or in any condition where the vascular system becomes affected. It is this class of cases that exhibit the so called Menière's symptom complex. The hearing in these patients is usually markedly affected if not altogether gone, and the condition is characterized by repeated attacks, with a suddenness of onset, the violence of the symptoms quickly reaching a climax and then gradually subsiding, and all of it disappearing when the brain centres have learned to compensate.

In conclusion we should like to emphasize the following:

1. Vertigo from whatever cause is a disturbance of the vestibular apparatus.

2. Disturbance of the vestibular apparatus can be definitely analyzed by means of the new tests.

3. Cases of vertigo, therefore, need no longer be regarded as vague or mysterious, but should be cleared up by means of the ear tests. The *New York Medical Journal, July 15, 1916.*

THE

CALCUTTA JOURNAL

OF

MEDICINE.

Vol. xxxv.] November, 1916. [No. 11,

AN ACCOUNT OF THE PRINCIPAL WORKS OF ATTREYA SCHOOL WITH THEIR CHRONOLOGY.

By Kaviraj Biraja Charan Gupta, Kavibhusan.

(Continued from page 407).

Attreya, the preceptor of *Agnivesa* and others, was a member of the party to the congress of the *Rishis* mentioned above in which *Varadwaja*, the disciple of Indra, gave an exposition of the *Ayurveda* having three principle branches. *Charaka* has called him (*Attreya*), a disciple of *Bharadwaja*. Nowhere has this *Attreya* acknowledged himself to be the author of the five *Samhitas*. In the printed *Harita Samhita* an altogether strange method has been adopted as to the selection and the arrangement of the subject matter.

Attreya imparted the knowlege of the *Ayurveda* to six large-hearted *Rishis*. The science and art of healing was not then a means of livelihood. It was not cultivated with any mercinary motive; it was simply pious motive that led one to the culture of this branch of knowledge. We are told that except the

compendium of *Agnivesa* none of the other five has ever been edited and revised*. So none of the physicians of later days did apply hands on the *Harita* and other *Samhitas*; hence—

आयुर्व्वेदस्वयं सम्यङ् न देयो यस्य कस्यचित् ।
नाभक्ताय स्वशान्ताय न मूर्खाय नराधमे ॥

the instructions for keeping back the knowledge from others—a spirit befitting the spirit of the *Tantric* age could not possibly have been said by *Attreya* the preceptor of *Agnivesa* and others.

"भट्टो वा गणिका गुण्यो (?) चिकित्स्यास्तु विशेषतः ।
रोगमुक्ता हृषे स्युस्ते चिकित्साकीर्त्तिकारिणी ॥
व्याधयोरस्तथा म्लेच्छो वह्निदो मत्स्यबन्धकः
* * * *
एतान् व्याधिविनिर्मुक्तान् नैव कुर्य्यात् प्रतिक्रियाम् ।
एतेभ्यः स्वार्थसिद्धिर्न नोपकारोऽस्य मङ्गलम् ॥

The geneolist and the public women should be treated with particular care. If they be cured they would trumpet forth your name. Don't treat the hunters, thieves and the strangers for you can have no interest in their cure. It cannot be believed at all that the above instructions measured as they were by the standard of self interest and of the calculating bend of mind could have been uttered in the congress of the *Rishis* at the foot of the sacred *Himalayas*, and sanctified by the first descent of the *Ayurveda*.

The texts, quoted by different commentators to have been composed by *Harita*, cannot be found in the printed *Harita Samhita*. We quote below some of the instances from the respective commentaries, of *Chakrapani*, *Bijaya Rakshita* and *Sivadasa*. *Chakrapani* in his commentaries on the 27th Chapter of *Sutrasthan* of the *Charaka Samhita* writes—क्वेलुटे हारीतवचनं—क्वेलुटं स्वादु विटपं तत्कन्दः स्वादुशीतलः etc. but such text we do not

* "जातूकर्णादौ प्रतिसंस्कर्त्तृस्मृतिगम्योऽपि नास्ति"—चरकतत्त्वदीपिकायां चक्रपाणिः ।

find out in the printed *Harita Samhita.* A little upwards he writes उक्तञ्च हारीते "आनूपदेशे यद्वारि गुरु तत् श्लेष्मवर्द्धनम्। विपरीत मतो मुख्यं जाङ्गलं लघु चोच्यते।" But this cannot be found out in the *Harita Samhita. Chakrapani*, while explaining प्रायः सर्व्वं तिक्तं in the same 27th Chapter, says प्रायः सर्व्वं तिक्तं तिक्तादिस्तु पथ्यो हारीतीयः, एष केनापि प्रमादाल्लिखितः। But this text does not appear at all in the prose portion of the printed *Harita Samhita. Bijaya Rakshit* the commentator of *Madhava Nidanam* in explaining the symptoms of वातश्लेष्मज्वर writes "यदाह हारीत—शिरोग्रहः स्वेदभवश्च कासो। ज्वरस्य लिङ्गं कफवातजस्य" etc. but the symptoms of that fever are given in the printed *Harita Samhita* thus— "शीतं वेपथुपर्व्वभङ्गश्चमथु गात्रे जड़त्वं रुजा etc. in the commentary of the text bearing on the thirst thus हारीतेनापि सपित्तेन श्लेष्मणा तृष्णा नतु केवलेन। यदाह स्वाद्वम्ललवणाजीर्णैः क्रुद्धश्लेष्मा सहोष्मणा etc. in the printed *Harita Samhita* this text cannot be found. In the commentary of *Charaka Samhita, Sivadasa* writes यत्तु हारीते "त्रिदोषमलनुद्वृंहधातुसामान्याच्छागनं लघु दत्तरक्तम्" But the printed *Harita Samhita* does not give the properties of the flesh of the goat. Further quotations, we think, are unnecessary.

Those who acknowledge the author of the printed *Harita Samhita* to be *Rishi Harita,* the fellow student of *Agnivesa,* would be surprised to find the mention of *Charaka* and others in the following couplet in the appendix portion—

"चरकः सुश्रुतश्चैव वाग्भटश्च तथापरः।
मुख्याश्च संहिता वाच्या स्तिस्र एव युगे युगे॥

The above remarks of the *Harita Samhita* are based on the Bengal edition of the *Harita Samhita* published by Kalish Ch. Sen.

Charaka Samhita—It has been said above that of the compendia of the six disciples of *Attreya* that of *Agnivesa* stood unique. In course of time, however, it was revised by *Charaka* and it came to be known as the *Charaka Samhita.* The compendium of *Agnivesa* is not available now-a-days so it is very

difficult to ascertain the nature and characteristics of the rivisions made by *Charaka*. But we can have a glimpse into the matter from what *Dridhabala* says

"विस्तारयति लेशोक्तं संक्षिपत्यति विस्तरम् ।
संस्कर्त्ता कुरुते तन्त्रं पुराणञ्च पुनर्नवम् ॥"

Dridhabala had *Charaka* the revisor in his mind when he says "the revisor (editor) expands what is put in nutsell and abridges what is written large, in short, builds an altogether new structure out of the old materials." Hence the *Charaka Samhita* is a revised edition of the compendium of *Agnivesa* in name only, in fact it is quite a new work. The novelty has its charm, the people forgot in course of time the name of the original author and gave prominence to the revisor *Charaka*. The entire compendium of *Agnivesa* was revised by *Charaka* but *Dridhabala* says:

"अस्मिन् सप्तदशाध्यायाः कल्पसिद्ध्य एवच ।
नासाद्यन्तेऽग्निवेशस्य तन्त्रे चरकसंस्कृते ॥"

That is, in the revised edition of *Charaka* the last Seventeen Chapters of the *Chikitsitasthan*, the twelve chapters of the *Kalpasthan* and the *Siddhisthan* of the work of *Agnivesa* cannot be found or in brief the last forty-one Chapters of the *Agnivesa's* work as revised by *Charaka* are not written by *Charaka* himself. The difficulty that next meets us is who is the writer of these 41 chapters? The existing *Charaka Samhita* solves out the difficulty. It is written there—

"अस्यार्थस्य दृढबलो जातः पञ्चनदे पुरे ।
लब्ध्वा बहुभ्यस्तन्त्रेभ्यो विशेषाच्च बलोऽयम् ।
सप्तदशौषधाध्यायसिद्धिकल्पैरपूरयत् ॥"

That is to make up for the incompleteness of the *Agnivesas's* work as revised by *Charaka*, *Dridhabala*, a resident of the Punjab, supplemented the 17 chapters of the *Chikitsitasthan* and the *Kalpa* and *Siddhisthans* to it and in doing so he drew his materials from various treatises on medicine. Hence it

irresistably follows that the treatise that generally goes by the name of *Charaka Samhita* was originally the compendium of *Agnivesa* revised by *Charaka* and lastly supplimented by *Dridhabala.*

Again another difficulty meets us a strange theory. I call it strange because no doubts have there hitherto been about the chronological situation of *Dridhabala*, the supplementor of *Charaka Samhita*, the author of *Ashtanga Samgraha* (*Vagbhata* I) and *Madhava*—the well-known compilor of the *Nidanam* or pathology; it has of late been advanced with much considerable force by no less an authority than Mr. Rudolf Hoernle, an oriental scholar of admitted name and fame. In the introduction to his work on "Studies in the Medicine of ancient India" Mr. Hoernle has said—"In the preparation of this portion (referring obviously to the 17 chapters of the *Chikitsitasthan* and *Kalpa* and *Siddhisthans*) as he himself informs us utilised a large number of existing treatises. Among these may have been *Agnivesa's* original work; but his main sources, as a comparison of their respective works shows, appear to have been the *Ashtanga Samgraha* or summary of medicine of *Vagbhata* I and the *Nidana* or pathology of *Madhava*" (Page 2). Further down he has said in clear language that "*Madhava* is anterior to *Dridhabala*" (Page 13). The reputation of the author as an oriental scholar is likely to add much weight and attach great importance to the theory, and may lead the readers to change their views and the notion that prevails among the teachers and the students of *Ayurveda.* I must admit at the outset before I examine the theory advanced by Mr. Hoernle that I cherish no sentiments—the idle sentiments for the general prevailing notion. I shall base my arguments solely upon the text writers and the approved commentators thereof. Now the principal point at issue is whether *Madhava* is anterior or posterior to *Dridhabala.* I shall hereafter deal with whether *Vagbhata* I, the compilor of the *Ashtanga Samgraha* or summary of medicine is anterior to *Dridhabala.* In deciding the point at

issue one way or the other, the following facts are to be taken into consideration. *Dridhabala* himself informs us, as we have said above, that he has supplimented the 17 chapters of the *Chikitsitasthan* and the *Kalpa* and *Siddhisthans* and in doing so he has drawn materials from numerous works on Medicine (बहुभ्यस्तन्त्रेभ्यः). In the text quoted before "बहुभ्यस्तन्त्रेभ्यः" very probably refers to the compendia of *Agniresa* and his fellow students belonging to the *Attreya* school and not to the *Ashtanga Samgraha* or the *Nidanam* of *Madhava* as Mr. Hoernle supposes. Almost all the texts of the *Nidanam* occurs either in *Charaka Samhita*, the *Susruta Samhita*, the *Ashtanga Samgrah* or the *Ashtanga Hridayam*. A question may naturally arise here whether these texts have been quoted in the *Nidanam* from those works or the latter have quoted them from the *Nidanam*. *Bijaya Rakshita*, the commentator of the *Nidanam*, knew quite well that *Madhava* had quoted texts from the *Ashtanga Hridaya* and not the latter from the *Madhava's Nidanam*, and so while explaining the text of the *Madhava's Nidanam* on the defination of "*Purbarupa*" (पूर्व्वरूप) he wrote "येतद्दोषपरिजिहीर्षया परमकृशत्वेन वाग्भटेन अदृष्टदोषजसम्यपूर्व्वरूपोपसंग्राहकं येनेति पदं निवर्त्तमिति मत्वा तदीयपूर्व्वरूपलक्षणमेव माधवकरो लिखितवानिति *i.e.* the defination of *Purbarup* (पूर्व्वरूप) as given in the *Ashtanga Hridaya* and *Ashtanga Samgraha*, was quoted by *Madhava*. Mr. Hoernle too has himself admitted that the compiler of the *Ashtanga Hridaya*—*Vagbhata* II is posterior to *Dridhabala* and the compilor of *Ashtanga Samgraha*—*Vagbhata* I *. We have shown above that *Madhava* has quoted texts from the *Ashtanga Hridaya*, hence it inevitably follows that *Madhava* is not anterior to *Dridhabala* but his age is long after that of *Dridhabala*. Again there are passages that occur in the *Charaka Samhita* and the *Susruta Samhita* as well as in the *Nidanam* of *Madhava*. *Chakrapani*, *Srikantha*, *Sivadasa* and other reputed commentators while commenting upon those passages have quoted them from the *Charaka Samhita* and *Susruta Samhita* by name and nowhere they have

* "*Dridhabala* is anterior to *Vagbhata* II," (Introduction page 14).

admitted them to have been composed by *Madhava*. If they had known these texts to have originally written by *Madhava* but quoted in the *Charaka Samhita* and the *Susruta Samhita* they would have admitted that and quoted from *Madhava* by name. From what has been said above it follows that Mr. Hoernle's assertion that *Dridhabala* derived his materials from the *Nidanam* of *Madhava* receives no support from the authoritative commentators. They knew that *Madhava* was a compiler from *Charaka*, *Dridhabala* and *Susruta* and other text writers of later date as *Vagbhata*—the compiler of *Ashtanga Samgraha* and *Ashtanga Hridaya*, and others.

Next let us come to another theory of Mr. Hoernle, that the compiler of the *Ashtanga Samgraha* is anterior to *Dridhabala*. In the Chapter III of the *Siddhasthan* of the *Charaka Samhita* (which is admittedly supplemented by *Dridhabala*) *Dridhabala* writes in connection with the times of the *Vasti* (the injection through the rectum) त्रिप्रधोष्ण एकः पवने etc. *i.e.*, if the *Basti* applied once the *Vayu* (वायुः), if twice the *Pittam* (पित्तम्), if thrice *Kapha* (कफः) is drawn from their respective receptacles (आशयाः). Thus according to *Dridhabala* the *Vasti* (वस्तिः) is not to be applied more than three times, on the other hand *Susruta* says वस्तिर्धार्यते च &c (*Chikitsitasthan*, Chap. XXXIV) that is, he extends the application to four times for the purpose of removing the impurities of the blood. *Dridhabala* in the text quoted above by the expression "निरूहा न परं विधेया" prohibits the forth application of the *Vasti*. The *Ashtanga Samgraha* however in the face of this conflict of opinion, has respectfully followed *Dridhabala* and in doing so he in a manner has echoed forth and supported the view of *Dridhabala* though couched in a different language in the following text वस्तिरेकोऽनिले &c (*Ashtanga Samgraha*, *Sutrasthan*, Chap. XXVIII P. 151). It is to be observed here that the compiler in the above text makes mention of "आचार्यचरकस्य" he obviously means thereby *Dridhabala* because the method of the application of the *Vasti* occurs in that portion of the *Charaka Samhita* which has

admittedly been supplimented by *Dridhabala*. The commentators also knew that the text "स्निग्धोष्ण एका: पवने" &c to have been composed by *Dridhabala*. So Srikantha Datta, the well-known commentator of "*Siddhayoga*" by *Vrinda* and *Sivadasa* the commentator of "*Chakra Samgraha*" by *Chakrapani Datta* while commenting upon the texts of the *Niruhadhikara* say "ननु तृतीयाधिकपुटदानं निषिद्धं दृढबलेन तद्यथा—स्निग्धोष्ण ऐक: पवने समांसो &c (*Siddhayoga*—Anandasrama Edition, page 588; *Chakra Samgraha*—Bengal Ed. p. 675.) thus it has been proved beyond doubt by what the compiler of the *Ashtanga Samgraha* says that he is posterior to *Dridhabala*. Hence Mr. Hoernle's assertion that *Dridhabala* has derived his materials from the *Ashtanga Samgraha* (*Vagbhata* I) does not stand to reason. There is further internal evidence to show that *Dridhabala* is anterior to the compiler of the *Ashtanga Samgraha*. We think what has been said above is quite enough for the purpose and too strong to need any further support; still with a view to make the matter more explicit we quote a few more of them.

Both *Dridhabala* and the compiler of the *Ashtanga Samgraha* have laid down the remedies for the repletion of the substance injected through the rectum and it is to be observed that the texts of both of them are similar in many places. The texts of *Chakra Datta* on the same subject are very brief. *Sivadasa* while commenting upon the above texts of *Chakra Datta*, says without making mention even of the compiler of the *Ashtanga Samgraha*—एतच्च वस्तिव्यापच्चिकित्सितं लेशत एवोक्तम् &c. Had *Dridhabala* compiled from the *Ashtanga Samgraha*, *Sivadasa* would not have mentioned the name of *Dridhabala* (चरकादावनुलक्ष्येयः) for it is a uniform practice with the commentators to refer to the original works. Several commentators have quoted in abundance, texts from the portion of the *Charaka Samhita*, which has been supplimented by *Dridhabala*, and in doing so they in all cases, have referred to the *Charaka Samhita* or *Dridhabala*. If they had the best knowledge that the *Ashtanga Samgraha* was the source of the portion supplemented

by *Dridhabala* they would not have disregarded the original author and his work and refered to the mere compiler.

The *Kalpa* and the *Siddhisthans of Dridhabala* are complete in 24 Chapters, 12 in each and those of the *Ashtanga Samgraha* two are mixed up and complete in eight Chapters only.. What *Dridhabala* has said in 12 Chapters has been said by the compiler of the *Ashtanga Samgraha* exactly in the same order, that is from the *Madana Kalpa* to the *Danti Kalpa*—the difference lies in brevity only. Again *Dridhabala* has said of 60 prescriptions in ten Chapters whereas the *Ashtanga Samgraha* abruptly ends thus क्षतवेधनमत्यर्थं : &c. The same characteristic brevity in the *Sankhini* and *Saptala Kalpas*. Now it is for the reader to decide for himself which of these two can fitly claim the first place in the chronological order.

Before I begin to probe the soundness of the arguments on which Mr. Hoernle bases his theory that *Madhava* is anterior to *Dridhabala*, I must note in the first place that Mr. Hoernle has sadly erred in his finding that *Madhava* the compiler of the *Nidana* or Pathology and *Vrinda* the author of the *Siddhayoga* are but one and the same person, and very likely the error has occured in this way. The *Siddhayoga* of *Vrinda Madhava* is named by some *Vrinda Madhava* and Mr. Hoernle has established an identity of the book with its author (Vide p. 12, foot note 1). In fact *Vrinda* is posterior to *Madhava* for in the very begining of his work, the *Siddhayoga*, he has expressly admitted that he has dealt with the diseases exactly in the same order as *Madhava* has done in his *Nidana*.*

Mr. Hoernle goes on to say " *Dridhabala* though he does not name *Vagbhata I* as his authority quotes from him very frequently " (Introduction P. 12); but we have shown before that the compiler of the *Ashtanga Samgraha* whom Mr. Hoernle choses to call *Vagbhat I* cites *Dridhabala* by name, so the reason assigned in support of his contention does not hold good.

* *Uttartantra*, Chapter III, last *Sloka*.

He next proceeds to establish that *Madhavá* is anterior to *Dridhabala* on the basis of two facts which he lays much stress upon and argues with considerable force. Let us see what these two facts are about and how much do they help him in supporting the theory. The one relates to the method of enumerating the diseases of the eye adopted by *Susruta*, *Dridhabala*, the compiler of *Ashtanga Samgraha* (*Vagbhata I?*) and *Madhaba*, and the other is the Kashmere Recension (काश्मीरपाठः) of *Charaka's* compendium. On a comparison of the texts of the diseases of the eye given by *Susruta*, *Dridhabala*, the compiler of *Astanga Samgraha* and *Madhava* respectively Mr. Hoernle observes that in the *Susruta Samhita* there is a mention of the 76 varieties that of 94 varieties in the *Ashtanga Samgraha*, 96 in *Dridhabala* and that *Madhava* obtained 78 by adding two to list of *Susruta*. He concludes, however, in these circumstances that *Dridhabala* obtained his total of 96 by accepting the total given by the *Ashtanga Samgraha* and adding to it the two new diseases of the eye set up by *Madhava*. It is to be observed however that the two diseases—पक्ष्मकोप and पक्ष्मपात said to have been added by *Madhava* which Mr. Hoernle calls altogether new, are to be found in the texts given by *Susruta** and *Ashtanga Samgraha*†. A reference to the two texts would at once go to show that the diseases are not newly added by *Madhava*. It may be inferred as well that *Madhava* is of later date. So Mr. Hoernle's statement and the reasons thereof do not seem to be correct and the grand palace of the Chronology he has so labouriously built up on the basis of these reasons at once come down like a house of cards.

* *Ashtanga Samgraha*, *Uttartantra*, Chapter XI, verse 8.

† वृन्देन पक्ष्मभतिनात्मद्दिताधिनायम् । संलिख्यते गदविनिश्चयजक्रमेण

(To be continued).

CONSTIPATION.

By M. Louise Chadwick, M.D.

The passing of the late Dr. Metchinicoff of the Pasteur Institute, Paris, has recalled to the world how much humanity is indebted to him for his patient investigations and discoveries in regard to the function of the colon, and the influence of its neglect upon the health and well being of mind and body.

Because the colon has been looked upon as a "mere waste receptacle," we have forgotten that even a waste receptacle demands care and attention and if neglected, may make itself most obnoxious.

The function of the colon is to cast out residue after food digestion is completed. If proper food is eaten and in proper quantities *and combinations* if the entire digestive tract functions promptly and efficiently, and if the colon is active, all is well; but under present conditions of civilization and artificial living such perfection is rare.

X-ray investigation has proved that under ordinarily normal conditions of today food taken into the stomach passes through the small intestine, the residue reaching the ascending colon (a) in five to six hours; it reaches the lowest point of the descending colon (b) in ten hours; there it lies for six hours; and in the rectum for two hours more, being discharged in eighteen hours from the time it enters the colon.

Under ordinarily normal conditions, then, waste matter lies in the colon, somewhere along the route, for eighteen hours. This waste matter is not, however, wholly food residue; but has gathered to itself during the progress of the food from the stomach, bile, remains of pancreatic juice, mucus, excretory substances thrown off by the intestinal lining, together with various microbes and poisons produced by microbes (indol, skatol, pyrol, et al). Strassburger has demonstrated that 50 per cent. of fecal matter is made up of bacteria, and Roger has demonstrated that of the 160 species of bacteria formed in normal feces, one-third of them possess disease-producing properties. In the

feces of those who take a high proteid diet (meat and eggs) are found fully twenty putrefactive bacteria which form highly toxic products—one, the bacillus of Welch, which produces large quantities of offensive gas and highly active poisons. This bacillus is found in an active growing condition in all raw meats and in salted and dried fish. Not a large per cent. of these bacteria are found active in the feces; but all have in their time produced their poison while breaking up the proteid on which they feed; indeed, the bacterial laboratory analyses of fecal matter, which is already a part of the regular regime in some institutions, throws light upon many a blind and puzzling chronic case.

Constipation is a slowing up of intestinal activity and consequent ineffective casting out of this fecal matter.

Causes of Conspipation.

This slowing up of intestinal activity is brought about by:

(*a*) a diet so liquid and so lacking in solids that a lack of bulk results;

(*b*) a diet so concentrated that a similar condition is brought about;

(*c*) pasty cereals, new bread, hot biscuits, and all doughy food;

(*d*) a highly proteid diet (meat and eggs)—and for two reasons; first, that there is little residue in a proteid diet, and secondly, that excess of proteid produces putrefactive processes in the intestine which in turn produce an alkaline condition of feces paralyzing to the activity of the intestinal muscles;

(*e*) hasty eating, which throws into the stomach, and later into the intestine, food which, because so slowly digested, putrifies, thus disturbing the whole digestive tract;

(*f*) milk, because the human alimentary canal cannot well digest the casein of milk;

(*g*) monotonous diet or food, which is not "relished";

(*h*) exclusive use of cooked foods;

(*i*) hot foods and hot drinks;

(*j*) condiments of all kinds, since these are wholly undigested and so pass on into the colon where they set up mucous irritation;

(*k*) irregular feeding, because it prevents the intestines from acquiring a habitual rhythmic peristalsis.

In a normal alimentary canal, the peristaltic movement is set up at once by the introduction of food into the stomach, and a "bowel movement" would consequently (and in savages does) follow each feeding. That there are few normal alimentary canals, except among savages, need hardly be stated.

(*l*) tea and coffee are constipating because astringent;

(*m*) insufficient drinking of water, which produces dry feces;

(*n*) resisting the "call of nature" until the call is "lost" is one of the most prolific and most regrettable causes of constipation;—the reason is obvious;

(*o*) tobacco, laboratory experiments have proved, deadens the activity of the sympathetic nerves, and without the activity of the sympathetic nerves rhythmic intestinal activity is impossible;

(*p*) all narcotics, bromides, sleeping powders, etc., deaden the activity of the entire alimentary tract.

(*q*) laxative drugs are most pernicious; they produce a most obstinate constipation—a constipation difficult to cure; these laxative drugs over-stimulate, irritate and later destroy capacity for stimulation or irritation of the nerves of the intestinal walls. And when this condition is brought about, the intestine becomes a passive instrument for the intake of residue, but with little capacity to force it forward.

That alimentary toxemia must result from the retention of these poisons in the colon is self-evident. And since the colon is more or less supplied with glands of absorption (fortunately least in the locality of the descending colon and sigmoid flexure) these poisons are absorbed into the blood; and what disease exists in which a present toxemia would not play a modyfying part and prove more or less of an aggravating factor?

That a person may be constipated for years and not consciously suffer from it is true; for Nature struggles hard against our ignorance and our wilfulnesses. She has provided many and strong defences. For example, the mucous membrane of the alimentary tract itself is Nature's filter; the liver and the kidneys are powerful destroyers of poisons, and we know now that the thyroid, the suprarenal capsules and the spleen, even the pituitary body assist also in the destruction of poisons. Nature's defences give way in time, however, as the almost general never-sick but never-well condition of the middle-aged human testifies.

In 1914 the Royal Society of Medicine of Great Britain devoted a generous period to the matter of alimentary toxemia. From the minutes of this convention we learn that the speakers enumerated more than thirty poisons to be found in a torpid intestine, and among the pathological conditions attributed to intestinal poisoning these physicians enumerated: distension, dilatation and prolapse of the stomach; congestion and consequent torpidity of the liver—(from which follows a marked lessening of bile, that secretion so essential to the well-being of the intestinal mass); weakening and atrophy of the intestinal walls; foul gases and foul smelling stools; chronic appendicitis; enlargement of the pancreas and spleen; diarrheas; while in the realm of "nerves" were enumerated headaches; indigestion; sleeplessness; sleep that does not rest; twitching of eye muscles; indecision, forgetfulness; mental depression and fears; confusion; irritability; indifference; eyestrain; backache; heavy, grippy sensation; also lumbago; skin eruption (acne, hives, etc.), and that general lack of strength and endurance commonly known as nervous debility and which the patient herself often describes as "always tired," or "never-sick but never-well"

In this meeting, Dr. W. Bezely said, "There are few phases of cardiac or vascular disease with which some part of the alimentary tract is not causatively associated."

As to the eyes, Dr. W. Long said, "As an opthalmic surgeon I look forward to a future when many serious eye troubles will cease to occur because the physician shall teach mothers how to

feed their children and the dentist shall impress upon the public the importance of proper mastication and hygiene of the mouth."

Dr. Abuthnot Lane is quoted as saying, "I do not believe that tubercle and rheumatic arthritis could obtain a foothold except in the presence of intestinal stasis." Dr. Lane also says, "Auto-intoxication plays so large a part in the development of gynecological conditions that the conditions may be well regarded by the gynecologist as a product of intestinal stagnation. And Herter shows that certain putrifactive colon organisms are always present in the stools of patients suffering from rheumatic gout.

Dr. J. H. Kellogg of Battle Creek, whose research in the domain of the alimentary canal must be acknowledged by all schools of medicine, finds, based upon his years of experience, that many maladies are so *aggravated* by inactivity of the intestines, that it becomes a prominent factor in the treatment of the diseases, viz: "All catarrhs, all rectal troubles; enlargement of liver and spleen; all stomach disorders." A pseudo angina pectoris Dr. Kellogg finds to be frequently associated with chronic constipation. Arteriosclerosis (he quotes from Bouchard and other authorities) is one of the common results of chronic constipation. "Long continued poisoning from chronic constipation is frequently indicated by the presence of pus, albumen and casts in the urine; bacterial examination of the urine often reveals the presence of colon germs. Floating right kidney, he believes to be often due to stasis in the ascending colon from the anatomical fact that the right kidney is so closely connected with hepatic flexure."

One seldom finds a person suffering from insomnia who is not constipated; and this because of the irritation of the brain from poisons which have been absorbed from the colon into the blood.

Dr. Kellogg quotes Ross as saying: "Cancer is due to abnormal cell growth; cholin and cadaverin, two powerful augmenters of cell growth, are found in ths products of putrefaction of flesh and protein. Guinea-pigs, experimented upon with cholin and cadaverin, present all the characteristics of cancer."

Exopthalmic goitre and myxedema, Dr. Kellogg does not hesitate to say, are due to long overwork of the thyroid gland in striving to destroy colon poisons.

A high proteid diet produces in the intestine, brenzcatchin, —a poisonous brown coloring substance which manifests itself in "liver spots"; dingy complexion; brown circles around the eyes, etc. Since it is the function of the suprarenal capsules to destroy this poison, the presence of the spots indicates that the suprarenal capsules have become defective or are otherwise overworked. Dr. Abuthnot Lane, who first demonstrated the removal of the colon, says that the fading of these spots is evident in a few days after the operation and that they completely disappear in a few weeks. The connection, then, between intestinal poison, the pigmentation, and the suprarenals is obvious.

Eczema, it has long been known by skin specialists, is due to intestinal disturbances. Dr. Bulkley, our eminent New York skin specialist, claims "that most cases, even chronic, are curable by a dietary that excludes proteid bacteria from the intestines and accelerates activity of the colon. Psoriasis, that obstinate form of skin disease, is seldom curable without restoration of the normal activity of the colon."

Accumulation of fecal matter in the intestines, with its consequent poisoning, often gives rise to a fever so resembling malaria that it is often treated with drugs as such. These cases occur in people who have an inflammation of the colon—and often when their cases are treated hydropathically, an accumulation of mucus comes away with the enema; after which the fever subsides at once.

The presence of a certain quantity of gas in the intestine is normal; it aids peristalsis. Excessive gas, however, is due to the action of bacteria on food stuffs; and foul smelling gas indicates the presence of putrefaction in the intestine together with the pernicious bacteria that accompany putrefaction. Gas formation is due, not as once supposed, to starchy foods, but to the stagnation at some point in the alimentary tract—in the stomach or in the intestine. Flatulence in the colon always

indicates the presence of decayed feces; and if not relievable by enema, indicates incompetency of the ileocæcal valve (*c*)—a condition that one cannot afford to further neglect.

KINDS OF CONSTIPATION.

Simple Constipation—which every one has as the result of wrong eating and wrong habits. The bowels move daily, perhaps, but the colon is far from being completely evacuated. There is as yet no disturbance of the mechanism of the colon; poisons are, however, retained and nervous and other symptoms develop sooner or later. Even simple constipation should not be neglected when we consider that a normal peristalsis should pass along the entire intestinal tract every time the stomach end is stimulated to action by the intake of food.

Accumulative Constipation—as its name implies—occurs when masses of feces accumulate. This accumulation occurs at the lower sagging part of the colon (*d*) and shows that the mechanism of the rectum is beginning to be disturbed—or that sensibility is lessening. If neglected, complete loss of reflex—"call"—follows.

Latent Constipation—the bowels still move daily—or regularly—the "call" or reflex is still active; fecal matter is not accumulated in the rectum; nevertheless somewhere along the tract there is delay and the feces are dark and ill-smelling. An incompetent ileocæcal valve (*c*) is most frequently the cause; and the presence of intestinal gas *from which relief is not attainable by enema* is a keynote in diagnosis, since in these cases, the gas escapes backward, as it were, into the small intestine—a condition which obviously should never occur and which never could occur were the guard—the ileocæcal valve—alert.

Of the chronic cases that present themselves at the doctor's office, there are two classes—First: those that do not "believe in auto-intoxication," or at least do not recognize it in themselves. These it is the doctor's privilege to convince—if he can. Patients will say that they are never constipated; will report a daily movement; but on closer questioning, their movement

will prove to be far from sufficient to clear the colon, especially in consideration of Dr. Kellogg's statement that with every intake of food at the stomach end of the alimentary tract, peristalsis is set up the whole length of the tract and that in a normal savage, this peristalsis would end in evacuation. These patients are the despair of the earnest physician; and by the superficial physician are labelled hysterical or neuræsthenic;—or that overworked scapegoat, the climacteric, is held responsible,—all terms of scorn as used by the physician who has neither time nor scientific zeal to search for causes. The suffering of these patients except when auto-intoxication has made deep in-roads upon health, are not sufficiently acute to put the superficial physician on his mettle; but to the patient they spell defeat and misery. These are the "chronics" who come to the doctor patiently, on and on, seldom if ever suffering intensely, not in danger of immediate dissolution, but never knowing the joy of living because of the various depressions, physical and mental, which accompany a condition of autointoxication.

The other class admit that they are constipated: they recognize it and are worried about it; they have tried every known cathartic, and cathartics are failing them. The cathartic habituè is most difficult to cure; but barring out organic complications or old age, the specialists along this line tell us that very few cases are incurable.

It may take time and it will require something more than pills on the part of the doctor as well as persistence and patience on the part of the patient. But with special diet, special massage, hydrotherapy, vibration, the sinusoidal current and thermopenetration, much can be done for these cases. Much is being done for them in hydropathic institutions, and the methods of these institutions are open to any physician who wishes to investigate.

Wisely or unwisely, there is today a reaction in the minds of the laity against drugs; and it is the discouraged chronic who is turning to "drugless healing" of all kinds for help; but it is the superficial doctor who considers his duty towards his

patient finished when he passes out the bottle of pellets who is largely responsible for the disaffection of the laity. Pellets have their function, and nothing can fill their true, legitimate field, but the field has its boundaries, and it is the modern doctor's privilege to recognize those boundaries and look over into the abutting provinces. We submit the following suggestion for

The Supplemental Treatment of Constipation

First, the patient must be made to appreciate the *chemistry of digestion* in order that he may do his part; he must live hygienically, avoid tobacco, alcohol, rich food, high proteid diet, irregular or hasty eating, etc.

Diet is most important of all measures; not only must it afford moisture and bulk to the feces, but foods, must be *rightly combined.* All gases in a chemical laboratory may be excellent so long as rightly combined, but they become most destructive when wrongly combined. Many a patient will outline to her physician a perfectly normal, wholesome, dietary regime; but on investigation one finds that she makes most atrocious combinations; sugar—*and* milk with her cereal; fruits with vegetables, etc., etc.

Treatment for Cumulative Constipation.

The chief cause of this having been neglect of call until the reflex is more or less lost, this reflex must be restored by establishing regular habits. First of all, the rectum and sigmoid must be thoroughly evacuated by enema. This is repeated day after day until no hardened fecal matter comes away. The bowel must then be kept clean by systematic use of enema until it regains its normal size and activity. Temporary dilation with water does not weaken the intestinal wall; permanent distension with feces does.

The use of the sinusoidal current aids greatly in this restoration. In obstinate cases it may be necessary to use the proctoscope in order to introduce the electrode into or beyond the sigmoid. Often the proctoscope reveals tiny abrasions which, naturally, favor quick absorption of poisonous feces.

Paraffin treatment, (oil *per se*) when once the intestine has been cleared, is excellent if not kept up too long. The laity are in danger of using the paraffin preparations now so widely advertised too freely, until the lining of the intestine becomes so "oiled" that the lighter fluids, the natural secretions of the glands of both intestines, large and small, are unable to penetrate the oil and perform their normal functions.

Often hemorrhoids or sphincter spasms exist in cases of accumulative constipation. Hot fomentations or sitting over boiling hot water will often relieve the spasm as well as the pain.

A special paraffin which melts at not less than 102 degrees F. introduced into the rectum with a piston syringe is excellent—the patient then taking a knee chest position for three or four moments, breathing deeply. This special paraffin cools at the body temperature and forms a soothing lubricating ointment. This treatment is useful, since in these accumulative cases the mucus membrane of the rectum and sigmoid is dry and often sore.

Treatment for Ileocæcal Constipation.

In this form there may be diarrhœa as well as constipation, and mucus is often found in the stools.

It is best in these cases to give a bismuth test meal and examine with X-ray in order to locate the exact point of stasis, since ileocæcal insufficiency may not, in advanced cases, be the only trouble.

Hot fomentations to the spine and abdomen are useful; they allay pain at once. The wet girdle (cold) worn at night is most effective.

High enemas are at first necessary to wash out the accumulated toxins, but the point of disturbance in ileocæcal constipation is beyond the reach of water. (If one doubts that the intestinal wall has capacity for absorption, let him note the copious discharge of urine, which usually follows a high enema.)

The sinusoidal current is, of course, indicated here as well as in other constipations. Diathermy too is particularly useful in this, as in all disturbances of the colon, in that its heat reaches the deep tissues—an advantage over all other heat application. There is also a special massage movement for this disturbance. This is usually corrected by a few high flushings followed by laxative diet.

Simple Constipation

Food is nature's laxative. The laxative qualities are due to the flavor and taste, to bulk, to moisture and to chemical properties. Proteids are toxic; therefore proteid should be kept at a minimum; uncooked foods are antitoxic, therefore should be encouraged; fruits are the most antitoxic of all foods, therefore should be used abundantly.

In order to obtain bulk, food containing cellulose should be eaten; the concentrated foods of civilized life furnish far too little bulk; and without bulk, the intestinal muscles have little to exercise upon. Sterilized wheat bran, mingled with morning cereal, forms the two ounces of cellulose which should be eaten daily.

Agar-agar, especially that manufactured under the name of Regulin, is a most effective stimulant to the intestine, and it provides bulk as well. Also its affinity for water is great; therefore sufficient moisture to the intestine is assured by it. These agar-agar preparations provide bulk where the cellulose of green vegetables fails, for the reason that agar-agar is not digested by any of the digestive fluids. Two ounces a day will under any ordinary condition, produce two large, long, consistent stools a day; a larger amount may be taken, however, as it requires no work of the digestive apparatus other than the intestinal exertion to move it along, which is an advantage rather than disadvantage in all cases of intestinal torpidity.—*The New England Medical Gazette,* September, 1916.

EDITOR'S NOTES.

Purification of Water by Bleaching Powder.

Mr. Cree Brown, Professor of Engineering in the College of Science, Poona, has described in the *Indian Journal of Medical Research* an apparatus for the purification of water for troops by hypochlorite of lime. Such an apparatus, he points out, must be sufficiently simple for use by unskilled men, and the result must be thoroughly reliable. His apparatus consists of two tanks, one above the other. Into the upper and smaller tank water is pumped from the source of supply. The hypochlorite solution is mixed with it as it leaves this tank to run into the larger tank, in which the process is completed in the course of a few minutes. The water entering the lower tank smells strongly of chlorine, but that drawn off from the bottom of it is tasteless, odourless, and free from dangerous bacteria. The apparatus by which the mixing is carried out consists of a glass gauge, protected by a brass tube and connected with both the upper tank and the gauge by a three way cock, which is an essential part of the design. The hypochlorite is admitted through the glass gauge. The hypochlorite solution is mixed in a bottle by agitating bleaching powder and water in the correct proportions. Free lime is allowed to settle; the upper receiving tank is then filled with untreated water and the hypochlorite solution poured into the gauge to the same level as that of the water in the tank. The three-way cock is then opened so that the untreated water and hypochlorite solution flow through it into the tank below, mixing *en route*. As the water-levels in the tank and in the glass gauge fall at the same rate, the resulting mixture is in the correct proportions throughout. In a note appended to the paper Captain J. Morison, I.M.S., describes a modification of Professor Sims Woodhead's method of dosing the bleaching powder which he has had in use since July, 1915, as a daily routine at Poona. Into each of seven flasks 500 c.cm. of the water to be treated is introduced. To each is added a measured quantity of a freshly prepared 1 in 1,000 solution of hypochlorite of lime, and the samples are stirred with a glass rod, or rotated

to ensure mixture. The convenient quantities are: 0.5 c.cm., 0.6 c.cm., 0.7 c.cm., 0·8 c.cm., 0.9 c.cm., 1 c.cm., and 1.1 c.cm. After a quarter of an hour each sample is tested with a crystal or a few drops of a solution of potassium iodide and a few drops of fresh starch solution. The sample with the smallest quantity of hypochlorite solution, which shows a distinct blue colour, has received sufficient bleaching powder solution to make it bacteriologically safe. As these samples were each of 500 c.cm., and the strength of the solution of bleaching powder 1 in 1,000 the weight of bleaching powder in pounds required to treat 1,000,000 gallons of water is obtained by multiplying the number of cubic centimetres of the test solution used by 20. As samples of bleaching powder, especially in the tropics, vary in the percentage of available chlorine they contain, it is necessary to repeat the estimation of the dose from time to time. Where the water is derived from a river, the estimation should be made daily. The apparatus was tried at the camp of the Poona Volunteers at Chinchwad with satisfactory results. The water was from a surface well in the midst of agricultural land. After treatment with 15 lb. per 1,000,000 gallons in the way described, the water used from the second tank contained no lactose fermenters in 100 c.cm., and was absolutely free from smell or taste. The daily average number in camp during the week of the trial was 200, and there was no case of diarrhœa or dysentery. In another paper in the same issue Captain Morison gives directions as to the dose of alum for the clarification of water by precipitation. For soft water the best dose is half the equivalent weight of alum necessary to react completely with the alkalinity calculated as calcium carbonate. For a hard water the same rule holds good; but an equally good clarification can be obtained by the use of a smaller dose and a mechanical filter. A watery solution of hæmatoxylin (logwood) gives a reddish colour when the correct dose has been used. With doses in excess or in defect of this a decoloration or a gradation of shades of purple or lavender is obtained; this reaction can be used for a colorimetric estimation of, and hence a check on, the dose of alum actually used. The

clarification obtained by adding the optimum dose of alum was not affected by the turbidity of the water within the wide limits of turbidity found in the Poona water.—*The British Medical Journal,* September 2, 1916.

Lettsom and the Medical Society of London.

At the conclusion of the annual general meeting of the Medical Society of London, on Monday last, the retiring president, Dr. William Pasteur, made reference to the plaque which has been removed from the society's old house in Bolt Court to the Library in Chandos Street. The sale of the Bolt Court property, he said, marked the close of a period in the history of the society. It was founded by Dr. John Coakley Lettsom in 1773; down to 1776 its meetings were held at Dr. Lettsom's house in the city, and for the next two years at a house in Crane Court, Fleet Street. In 1778 Dr. Lettsom purchased and presented to the society the freehold house, 3, Bolt Court, Fleet Street, where it continued to meet until 1852. When the property was sold recently the Charity Commissioners granted permission to remove the plaque which stood over the entrance door. The plaque, which is of terra cotta, is in a state of excellent preservation, thanks to the many coats of paint it has received. It has been cleaned and restored. The back ground is occupied by the great pyramid of Egypt, flanked by palm leaves. The principal figure is the Isis of Sais, the revealer of the mysteries of nature and universal benefactress, who presided at the birth of children and rocked the cradle of the Nile. She is also reputed to have created the science of medicine and to have discovered the healing properties of plants. On either side crouches a sphinx, the emblem of mystery, whilst at her feet, encircled by the snake, the emblem of eternity, is a Greek inscription, which may be translated: "I am that which is, has been, and shall be: my veil no one has lifted."—*The British Medical Journal,* October 14, 1916.

Post-natal Care of the Illegitimate Infant.

Some weeks ago attention was drawn to the large scheme for maternity service and child welfare which had been prepared by Dr. Maxwell Williamson, M.O.H., and submitted to the Public Health Committee of the Town Council of Edinburgh. One of its outstanding features was the manner in which existing institutions had been worked into it, so as to provide for the welfare of the infant up to his fifth year (school age), and certainly Edinburgh is well supplied with hospitals, dispensaries, homes, clinics, kindergartens, play-centres, etc. The Infants' Edinburgh Home was not referred to by name, and yet it is calculated to do good work, although on a small scale and in a limited range. It is maintained for the benefit of the infants of unmarried mothers who have been confined in the Royal Maternity Hospital, lying-in homes, or elsewhere. The home is open only to unmarried mothers with their first babies, and is intended especially for those girls who may be leaving the hospital at the end of ten days, and who may either have no home to go to or one at which they can no longer expect a welcome. In the past they have usually had to board out their young babies with the first person who offered, and return themselves to work without completing their convalescence properly. It is to relieve this unfortunate situation that the home—its name, by the way, is hardly happily chosen—is being carried on. Applicants must produce a medical certificate, and must sign an agreement to remain at least two months in the home; no mother may stay longer than nine months. Further, inmates must take part in the household work and comply pleasantly with the routine of the home. Five shillings is charged for each of the first two weeks, and 3s. 6d for each succeeding week. Mothers who remain three months in the home may leave their babies there until they are a year old on payment of 5s. weekly. The objects of the home are stated to be fivefold: (1) To have the babies cared for and, whenever possible, nursed by their own mothers; (2) to help the mothers—usually quite young girls—to find good homes where the babies may eventually be boarded out or

adopted; (3) to assist the girls to find suitable employment when they leave the home; (4) to strengthen and develop the mother's character, and (5) to trace the fathers and, if possible, compel them to contribute to the support of the children. The general Committee, which includes three medical men, is able to report that during last year 24 women of ages ranging from 16 to 37 passed through the home; 17 of them were domestic servants, 4 were factory girls, 1 was a laundary worker, and 1 a clerk. Of the 18 babies who left the home, 4 went to relations, 8 were boarded out, 3 were adopted, and 3 were delicate and died in hospital. The average number of mothers resident in the home was 5. The mortality amongst the infants of unmarried mothers who have to go back to work to earn a living, or who take to a life of shame, is very high. The home helps to complete the system, which, beginning with the prematernity home for unmarried primiparous patients, goes on through the antenatal clinic, the prematernity ward, and the maternity hospital, and finishes in this post-natal home. The committee is hampered in its efforts towards extension by the smallness of its resources, but it is certain that so valuable a piece of infant life conservation must not be allowed to fail for lack of funds. From the time the home was opened the medical responsibility for the inmates was borne by Dr. Dingwall Fordyce, and since his absence on war service his duties have been taken up by Dr. A. S. Cumming.—The *British Medical Journal*, August, 26, 1916.

Ionization of Cicatrices.

A strong plea for the treatment of contracted or adherent cicatrices of the limbs by ionization with potassium iodide is made by Chiray and Bourguignon,* neurologists to one of the French military regions. They used the town supply reduced, and zinc or tin electrodes covered preferably with asbestos. The solution contained 1 per cent. of potassium iodide in distilled water. The current was localized as far as possible to the

* *La Presse Medicale*, August 3rd, 1915.

cicatrix. A negative electrode, with its covering soaked in the iodide solution, was applied over the cicatrix, and a positive wetted with water only was placed on the other side of the limb. The intensity of the current used with an electrode 60 cm. square was generally 10 milliamperes, and each sitting lasted half an hour. The first effect noticed was a change in colour; the cicatrix became paler by degrees. At the second stage of treatment the cicatrix became thinner and less indurated and the epidermis more supple. At the third stage the cicatrix was loosened from the deeper parts and moved easily over them. At this stage it might be necessary to use other means to relax or break down adhesions about joints, but by the ionization treatment alone the muscles and nerves involved in the cicatrix might be freed and contractures might then disappear. A sitting was given at first every day, and from an early stage the surgeon began to mobilize the skin and if possible, the joint. In some cases an extraordinary improvement was observed in eight or ten days, but in the majority not until after five or six weeks; in some, treatment had to be extended over three or four months before improvement was marked, and it is said that as a rule treatment should not be discontinued until some such period has elapsed.—The *British Medical Journal*, September 16, 1916.

Gleanings from Contemporary Literature.

HOMŒOPATHY'S DECLARATION OF INDEPENDENCE*

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The evolution of the individual from savagery to civilization is an interesting process. One need not go back to primitive days to gain an accurate picture of the changes that take place. A visit to Ellis Island, any day, will show the immigrant, crude, unlettered, and all but poverty-stricken. He proceeds to the prairie or forest, and begins his task of home-building. As his family grows and the instinct for social life develops, we find the second generation acquiring an education and a taste for luxuries. The original settler and his immediate family are watchful, aggressive, suspicious of possible enemies, tenacious, of their possessions, and ready to fight and die for those things nearest and dearest to them. Gradually, as the evolution goes on, the individual is less insistent upon the original principles; he becomes more elastic and yielding in his dealings with men. To change the figure somewhat, these individual bits of cosmic pitch are so softened by the sunlight of civilization that they coalesce, and individuality is lost in the common mass of society. Distinctions are wiped out, original codes of ethics are obliterated, and, ultimately, all men think the same thoughts and hold to the same ideas.

The history of institutions is not unlike this. An individual promulgates a theory, or formulates a principle. To follow this new doctrine one must depart from the accepted standard and assume for himself a separate and distinct position. In spite of this and its attendant ostracism, the formula attracts attention; men accept it and become disciples of the pioneer. Banding themslves together a new party or system is brought into existence. Discussion of the new doctrine frequently becomes acrimonious. As the result of the debate, the line of demarcation between the new teaching and the old is sharply drawn. The followers of the new school of thought, because of the criticisms passed upon it by the older school, find themselves closely knit together for mutual protection and for the common good. They know the reasons for their party's existence, the principles for which they stand and for which they are willing,

*Bureau of Homœopathy, A. I. H., Baltimore, Md., 1916.

if need be, to be crucified. They are aggressive and militant in spirit, tenacious of their views and the rightfulness and justice of their claims. They are missionaries in that they make every effort to attract others to their distinctive views. They are unterrified by opposition and ready to meet all comers in argument and disputation.

As time goes on and the pioneers die off, the second generation is more tolerant. It does not enjoy its exclusion from society. Perhaps it resents this to the extent of advising the third generation of the sacrifices and hardships of sectarian ostracism. Gradually, and usually unconsciously, the line of cleavage disappears. To use the figure employed before, the sunlight of liberality gradually fuses this separate body into the common mass. Distinctions become so ill-defined that it is difficult, indeed, to differentiate between a natural follower of the new thought and the heir of the old.

Has not the progress of the new ideas in medicine been along these same evolutionary lines? Some man has promulgated a new thought. He has met with ostracism, but has attracted, first, a few, and, later, a multitude of followers. These disciples, with all the ardor of pioneers, have gone out into the wilderness, cleared it of opposition, and made for the new thought a place in the sun. The new school has prospered so long as the pioneers remained to keep the faith alive. With the passage of time, however, the old spirit has flagged, and, with the loss of aggressiveness and militancy, there has been gradual coalescence with the dominant school and a corresponding loss of vigor and virility on the part of the new school

The study of the dissenting schools of practice is not unlike the study of astronomy. There are planets that have long since passed through the periods of genesis, population, death, and utter barrenness. There are other planets, like the earth, that may be said to be in the full vigor of life and activity. There are yet other planets in the very beginning of things, with almost their entire history unwritten. Endless, indeed has been the procession of medical "systams," clamoring for public endorsement. Our enemies have classified us with Osteopathy, Christian Science, and other pseudo-scientific organizations. In the past, most of the so-called sects have disappeared and well it is that they have. Like the burned-out planets they have served their day and generation. or at least have ceased to be fruitful. Osteopathy and Christian Science will meet the same fate, but we resent the favorite old school trick of including us in the same list of "irregulars," bound, they say, to suffer speedy

extinction." Our contribution to modern medicine is too important and too permanent to deserve such scant consideration. However, it is lamentably true that for the past fifteen years Homœopathy and and Eclecticism have been softening at the edges, have begun to ooze, and an occasional rivulet has found its way to the sea of dominant practice that hungrily awaits the privilege of engulfing the dissolving mass.

Whether or not the present state of things is a calamity depends upon the point of view. If dominant medicine has appropriated to itself all that is good in the sects, and is prepared to teach these doctrines, together with everything else in medicine that should be known by the practitioner, then, certainly, no voice should be raised against the present trend. On the other hand, if these new schools have something in the way of therapeutic procedure that is capable of lessening human pain, shortening disease, and prolonging the span of life then they should continue their separate existence until they have proven to the scientific world that they are the custodians of priceless therapeutic treasures. If any Homœopath or Eclectic has reached that point in individual evolution where he no longer holds to these ideas, but honestly believes that dominant medicine embraces in its practice everything necessary to the happiness of human beings, he should unhesitatingly surrender and join the ranks of the dominant school. If there be any considerable number who believe that the new schools still possess important differences in practice and possibilities of continued therapeutic usefulness, there can be no doubt it is the duty of these schools to resume their old-time spirit of conviction, aggressiveness, and militancy. Once more should they clamor for a hearing and insist upon their public recognition.

When a sectarian organization no longer meets with opposition, when there is no occasion for its adherents to study the articles of faith and to renew their allegiance to the covenant, it becomes anæmic, weak, and wabbly, stumbling along in a spineless way, showing but a remnant of its old-time vigor and usefulness. It is flattered beyond words when Mayo declares his conviction that Hahnemann was a hundred years ahead of his time, that serum and vaccine treatment is homœopathic, in its application and effect, and that the most modern methods of treatment are in accord with the ideas of Hahnemann and Homœopathy. Thus allured, Homœopathy and Eclecticism have submitted to the domination of the highly organized American Medical Association, permitted their

colleges to be visited, inspected, investigated, standardized, and classified by the Council on Medical Education of the American Medical Association, and it was at this time that Homœopathy and Eclecticism became servile, humble, yielding, supine, and hopelessly helpless. We seemed to forget that we had our own national organizations, our own machinery, intelligence sufficient to administer our possessions, and wealth enough to pay the bills. What is the American Medical Association that it should have authority over the Homœopathic and Eclectic colleges of this country? Why should a system of government in which we have to say whatever, directed by officers for whom we cannot vote, backed by influences that we can in no way control, unsympathetic to our institutions, out of harmony with our ideas, scornful of our theories, hateful of our successes, jealous of our wealth,—why should we submit to this sort of domination and control? For fifteen years we seem to have forgotten that we are men, citizens of the same republic, with equal privileges, social and political. Is it not time for us to awaken from this Rip Van Winkle sleep, and to resume our proper place in the direction of our own institutions?

We have read that Moses came down from Mt. Sinai, carrying in his hands the tablets of stone, upon which God had written the laws to govern the human family. Most of these commandments begin with the words, "Thou shalt not": "Thou shalt not kill," "Thou shalt not commit adultery," "Thou shalt not steal," "Thou shalt not bear false witness," "Thou shalt not covet." One of these commandments differs from all the rest because it is a commandment with a promise. It says, "Honor thy father and thy mother: that thy days may be long upon the land which the Lord Thy God giveth thee." I am wondering if we have not forgotten some of these commandments, especially the one I have just quoted. Where are we to find the parent of the Homœopathic colleges, of the Homœopathic hospitals, of the Homœopathic institutions, of the Homœopathic activities? The parent of all these is the American Institute of Homœopathy. When we renew the covenant and once more resolve to keep the commandments, then it is that we will honor the parent of all these institutions. When we have done this we shall have a right to believe that our days will be long in the land which the Lord our God hath given us. By proper organization of the American Institute of Homœopathy, by its support, by its activities, by the work of its councils and committees, by its vigilance and resourcefulness, by its guiding care, the

Homœopathic institutions will continue upon their interrupted course of prosperity and once more become the influential and strong bodies that they once were. If we would remain long in this land, as a force to be reckoned with, we must observe this commandment and honor this parent.

Homœopathy has never been anything more than a respectable minority; it represents a respectable minority today. When its followers rally to the support of the American Institute of Homœopathy and its children, the state, county, and local medical societies, then once more can we hold up our heads and demand for the Homœopathic institutions that support and equal station which they have had since their organization and which they are entitled to receive until there are very proper reasons for their discontinuance.

It is not too late to go back a dozen years, take up the broken threads, and resume the course that we followed in olden times. The first this for us to do is to declare our independence of the American Medical Association as regards its attempt to control our teaching institution. We endorse and commend that organization as a scientific body; we welcome advances it may make in the study and cure of disease. Whatever it undertakes in the way of the public in sanitation or prophylactic medicine, we heartily endorse. Our resentment is limited wholly to is assumption of proprietary rights in everything relating to medical education and medical licensure. Homœopathy should no longer delegate the care of its medical colleges to the American Medical Association, neither should it let that body dictate what shall be the form of the medical practice act to be enacted by the various states or by the federal government. We should declare our independence of that body and hereafter make our own inspection and standardization of medical colleges and be heard in every council looking to the formation of medical laws.

We realize we are not alone in our opposition to the attempted domination of Dearborn Street,* Chicago. There are many old school colleges and thousands of old school graduates just as resentful of this officious interference as are the Eclectic and the Homœopathic practitioners. We should attempt no alliance with these, however, but should band ourselves together in the College Alliance, determined that from this day forward we will brook no interference with our educational or legislative rights. We take no backtrack

* Headquarters of American Medical Association.

as regards the lowering of standards, we are in step with modern progress as regards medical education, we expect and shall demand that our colleges conform to the ideals of modern scientific education. But, as to whether or not they are so conforming, we should determine for ourselves. No Roman Catholic institution would permit the Methodist church to dictate its policies, neither would the Methodist church tolerate any assumptiou of authority on the part of the Presbyterians. In the same spirit the Homœopathic and Eclectic professions should resent the officiousness of Dearborn Street and from this time on tolerate it no more!

In 1895, addressing Congress on the Venezuela matter, President Grover Clever Cleveland recommended the appointment of a commission to make thorough investigation of the matter in dispute. "When such report is made and accepted," said Mr. Cleveland, it will, in my opinon, be the duty of the United States to resist by every means in its power, as a wilful aggression upon its rights and interests, the appropriation by Great Britain of any lands or the exercise of governmental jurisdiction over any territory not belonging to it." Mr. Cleveland continues: "In making these recommendations I am fully active to the responsibilities incurred and keenly realize all the consequences that may follow. I am, nevertheless, firm in my conviction that while it is a grievous thing to contemplate the two great English-speaking peoples of the world as being otherwise than friendly competitors in the onward march of civilization, and strenuous and worthy rivals in all the arts of peace, there is no calamity which a great nation can invite which equals that which follows a supine submission to wrong and injustice and the consequent loss of national self-respect and honor, beneath which are shielded a people's safety and greatness."

For consideration this day, the College Alliance has before it a problem quite as much related to the safety and greatness of Homœopathy as was the proper settlement of the Venezuela question vital to the honor and highest interests of our government. Shall we submit to the activities of the American Medical Association, or shall we resist by every means in our power its wilful aggression upon our sacred rights and interests? For my part there is but one answer: Homœopathy is sufficient unto itself, and to the last drop of blood should resist every act and plan having to do with the supervision of our colleges. That is our work and we should prefer to do it ourselves.—The *Journal of the American Institute of Homœopathy*, Ausust 1916.

THE DIAGNOSIS AND TREATMENT OF ACUTE ANTERIOR POLIOMYELITIS IN THE PRE-PARALYTIC AND POSTPARALYTIC STAGES.*

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While nothing new has been discovered about the epidemiology, etiology, diagnosis, and treatment of poliomyelitis since 1912, it might be apropos at the present time to reiterate some of the salient features with a view of suggesting some points in its diagnosis and treatment.

ETIOLOGY.

That the disease is infectious and contagious, no one will gainsay. We know that the virus belongs to the variety that can be filtered through a porcelain and asbestos filter and that it is highly resistant to many destructive measures; thus it withstands glycerinization for long periods, drying over caustic potash, freezing, and is not injured in a 0·5 per cent. phenol solution for three days. Gastric and intestinal juices seem not to affect it. On the other hand, it is readily destroyed when heated to a temperature of 50° C. for half an hour, or in weak solutions of hydrogen peroxide, formaldehyde solution, menthol, potassium permanganate, or corrosive sublimate. Several investigators have reported pure cultures of a coccus producing the disease, but this is as yet unconfirmed.

The mode of its infection can be accepted as fairly well established. Infections may be propagated either by the circulatory or lymphatic system. No evidence has as yet been adduced that the circulatory system is the primary route for the virus of poliomyelitis, while the evidence in favor of the lymphatic system seems to be conclusive. It was my privilege to be the first to prove that the nasopharynx was the point of entry, and later investigators produced the disease experimentally from the nasal discharges of patients as well as from healthy carriers.

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*This original communication was written by special request of the New York Medical Journal.

It is then conceivable that its mode of dissemination may be through direct contact or indirectly through persons, living animals, or dead objects. House pets may carry the virus from place to place; toys, books, linen will likewise carry infection, and, most of all, dust is the greatest disseminator of the disease. This last agency was proved by me when I produced the disease experimentally in monkeys from dust of the sick room; this was fully confirmed by Swedish investigators. It may be that the fly carries the germ and thus spreads the disease, but it was not proved that insects act as hosts for the virus. Articles of food may be contaminated and may infect by coming in contact with the pharynx. Milk and also water may be carriers, since the virus has been shown to remain viable in them and retain its virulence for over thirty days. The nasal discharges are probably swallowed, and, as it was shown, the virus survives in the intestinal tract; it may, under certain circumstances, contaminate the sick room through feces.

The period of incubation is estimated to be from two to thirty-three days. I have one case on record in which I could establish a period of incubation of one day. It was in a physician's child and the father brought the infection after staying in the house of a relative with a poliomyelitic patient for thirty-six hours. Twenty-four hours after he had arrived home, his child was stricken with fever, which lasted two days. On the third day, the child's lower extremities became paralyzed.

As to age, the statistics vary. In Europe five per cent. of all patients are over sixteen years of age; in this country not more than one per cent. of all patients are over sixteen years old. Both sexes seem to be equally attacked. Poliomyelitis, furthermore, shows definite seasonal variations in its incidence. The records of epidemics in many countries shows that it occurs during the summer and early autumn. Sporadic cases occur everywhere throughout the entire year. Our present epidemic started rather early in the season, owing probably to the high virulence of the virus.

It is significant that, while the disease is highly contagious and infectious, we find, comparatively speaking, not many cases of infection during an epidemic in proportion to the population of an affected community. It is rarely that more than one member of a

family is attacked at a time; few nurses were infected while attending cases in hospitals, and the epidemic recurs only every three to five years in the same locality. It may be due, as some authors argue, to an acquired active immunity. I believe that it may also be due to an inherited immunity and that individuals are affected who exhibit a point of minor resistance in the cerebro-spinal axis. Within the last few years I have collected fifty cases from my clinic and private practice with a fairly trustworthy family history. These show 5·4 per cent. to have neuropathic or psychopathic taint. This high percentage, even in so small a number of cases, is more than a mere coincidence. While I do not regard it as conclusive, I believe it significant, and further inquiry along these lines seems to me advisable.

Before entering upon a discussion of the clinical picture I deem it necessary to review the pathology of the disease as we understand it to-day. This, like the symptomatology, we must divide into two stages—the preparalytic and postparalytic. It is well to remember, as I have pointed out recently, that poliomyelitis is a pathological entity, but not a clinical one. That is to say, it cannot be regarded as affecting the anterior horns of the spinal cord exclusively, but rather the entire cerebrospinal axis, the gray and white matter and the meninges as well. Nor are the other viscera to be disregarded, for in no small number of cases these are also affected; so that by recognizing that acute poliomyelitis is a general infection and that, in accordance with particular sites attacked, corresponding symptom complexes will appear, its course may be more easily explained and its bearing on treatment. Its pathology, however is uniform and shows the same characteristics, no matter what part is affected. This is true of experimental and clinical cases alike.

PATHOLOGY.

In the prodromal stage we find macroscopically a hyperemia of the cord and meninges; the vessels of the brain cortex, basal ganglia, ventricles, pons, bulb, cerebellum, and cord at all levels, especially marked in the cervical and lumbar regions, are congested. The entire cerebrospinal axis presents an edematous condition. Yet there is little, if any increase of the cerebrospinal fluid. This is clear as a rule in this stage, and contains a large amount of polynuclears the first few days and then mononuclear cells—lymphocytes exclusively.

The cell count may range anywhere from thirty to ninety cells per c. mm.; its globulin content is increased, and its reducing property for Fehling's solution, due to the presence of dextrose, is intense. The brain and cord, on section, have a moist, translucent, edematous appearance, and the gray matter of the cord is often swollen so that it projects above the level of the white matter. Frequently punctate hemorrhages may be discerned by the naked eye. Bearing in mind that the nasopharynx is accepted as the point of entry, we ought to find some evidence of this focus. Every clinician describing the clinical picture of acute poliomyelitis calls attention to the fact that there is no redness of the throat in the ordinary acceptance of the term; so all report the throat as negative. To my mind the throat is by no means negative. The paleness of the nasopharyngeal mucosa and its edema, accompanied in the early stage by a serous and frothy transudate, is constant in the affection and *pathognomonic* of the earliest prodromal stage. This is analogous to the edema of the brain and cord. I know of no affection in which such a condition of the pharynx obtains. Since the infant swallows the nasal discharges and some may enter the bronchi, we can explain at times the presence of foci of congestion in the lungs and alimentary tract. The virus, as I have stated, is propagated by the lymphatic system, and we may, therefore, have foci of congestion and edema in the various glands.

Histologically, the disease is characterized by a perivascular, and interstitial infiltration of round mononuclear, polymorphonuclear, plasma, and endothelial cells. This is also true of the lymph spaces around the ganglion cells of the anterior horns of the cord, the cells of the nuclei of the cranial nerves, the cortical brain cells, basal ganglia cells and those of the cerebellum. Early in the disease there is also a marked infiltration of cells into the lymph spaces in the intervertebral ganglia. These and the vessels of the pia in the anterior longitudinal fissure of the cord are the very first to be involved. This has been experimentally demonstrated as early as the third day after infection. This infiltration follows along the sheaths of the central vessels of the cord into the anterior horns. Not infrequently we find an involvement of the vessels of the white matter of the cord as well, giving us a picture of transverse myelitis. In such cases the infiltration may be local or diffuse throughout.

The capillaries of the gray matter of the cord are engorged. The degenerative changes in the ganglion cells in this stage are not great, but there is marked gliosis, especially of the wandering neurone-phagocytes. Alterations of the peripheral nerves have not been described. There have been cases described in which the cell degeneration was marked in this stage, while the perivascular infiltration was scanty. These are exceptions. The first changes, then, are those of an acute interstitial meningitis, which is not associated with fibrin formation or with an exudate on the surface of the meninges. To summarize, the whole process is one of an inflammation. The blood early presents a leucocytosis with a predominance of polymorphonuclears, and, according to some investigators, mononuclears.

If the process goes on to the subacute or chronic stage, we find the following changes in addition to those enumerated. The perivascular exudate forms a sheath apparently completely surrounding the vessels for long stretches, pressing on the lumen of the vessel, and thus exerting a mechanical obstruction to circulation and thereby to cell nutrition. To this mechanical obstruction I ascribe the edema and one phase of cell degeneration. Devoid of nutrition, the cell swells up, the Nissl bodies coalesce, the nucleus becomes eccentric, and the cell finally breaks down, becoming autolyzed in its own ferment, there being no antiferment present to counterbalance it. There is also another phase of cell destruction. We find frequently a marked infiltration of the pericellular lymph spaces, with leucocytes predominating over the perivascular infiltration. These polynuclear cells and some mononuclears, probably polyblasts, enter into the ganglion cells with the probable purpose of destroying the virus therein. They are seen on section in a degenerated state, caryorrhexia. These are the cells which absorb the products of degeneration of the ganglion cells and other leucocytes through phagocytosis. This is a characteristic form of degeneration of ganglion cells which we find in poliomyelitis. In place of the ganglion cells we find an accumulation of round cells. This process of cell destruction is termed neuronophagocytosis. Once the cell is destroyed, it is conceivable that later we should find a degeneration of its axone. As this process is becoming complete the whole anterior horn structure is converted into connective tissue; it shrinks and presents what older writers described as scars.

The ganglion cells of the anterior horns of the cord possess, beside motor, somatic functions also, and once destroyed must of necessity produce trophic disturbances in muscles and bones supplied by them; and the first to atrophy is the affected muscle. In later stages we find also involvement of bones.

A word about the question of immunity and the nature of the toxin of the virus. Various observers have found that the serum of a patient or animal recovered from the disease will neutralize the virus *in vitro* after being incubated for an hour in a temperature of 37° C. Such mixture, when injected into a monkey, will not produce the disease; nor will an animal again be successfully infected, in the majority of instances, after it has once recovered from the affection. Animals have been also rendered actively immune by successive vaccinations with the attenuated virus after the method of Pasteur. On the other hand, it was established that the serum of a recovered case had no protective or curative power whatever. As to the character of the toxin, we have so far established that, whatever exotoxin there may be, it is a negligible quantity and of no great toxicity. Nor does the endotoxin seem to be very toxic. This conclusion I have reached from my experiments and clinical data at hand. I have succeeded in separating the endotoxin and found that the product of a suspension of a virulent virus, of which 0.1. c.c. did bring down a monkey in six days, would kill a rabbit of 900 grams only when injected with fifteen c.c. Guinea-pigs immunized with such endotoxin have yielded a serum which rendered the virus *in vitro* inactive after an incubation period of three quarters of an hour in a temperature of 37° C. Whether such serum possesses any protective or curative properties remains to be seen at the conclusion of my work.

Symptomatology.

Our difficulty lies mainly in the possibility of early diagnosis of the disease before the onset of paralysis. The importance of this cannot be over-estimated, since it may afford us a means of attempting to intercede in time to prevent paralysis and, possibly, death. In searching, then, for a set of symptoms during the preparalytic stage that would prove a criterion, we must have recourse to its pathology in that stage. Bearing then in mind the picture described above, we may expect very early *fever* as the first sign, accompanied sometimes

by vomiting, with or without diarrhœa. Alongside of this there are, without exception, nasopharyngeal symptoms. Frequently we hear that the patient began to sneeze, or made attempts at sneezing, and at times this was accompanied by copious nasal discharges. Upon inspection we find a somewhat anemic, glistening edematous condition of the nasopharyngeal mucosa, with a serous, frothy transudate, analogous to the edematous swelling of the cord that we see upon autopsy. This condition persists for a few weeks after the paralysis had set in and then changes to an anemic atrophic condition of the mucosa. I desire to lay stress upon this sign as being, in my opinion, pathognomic of the disease at its onset, and taking it in conjunction with other signs that I am about to enumerate, will enable the general practitioner, who is the first to be consulted, to diagnosticate the case early. With this sign present, it becomes imperative to make a lumbar puncture, and the cytological findings in the cerebrospinal fluid as enumerated will at once clear up any doubt.

Headache and pain ought to be, and as a rule are, constant accompaniments. The little infant cannot tell us of its headache, but he is giddy and drowsy, yet rarely comatose; the mentality is always clear, and the child is easily roused. This is in accord with my statement, that the exotoxin is of a negligible quantity and the endotoxin is not very toxic, or else there ought to be high fever and delirium, even coma. The older children, when affected, always complain of this characteristic headache and giddiness. These symptoms are due rather to the hyperemia of the brain vessels and the edema without appreciable augmentation of the cerebrospinal fluid.

It has been shown in experimental as well as clinical cases that the exudate in the intervertebral ganglia is marked early in the disease, and associated with this infiltration there is an inflammation of the dura of the cord. For these reasons there is, quite early, pain in the extremities and along the spinal column, a hyperesthesia along the affected area, and rigidity of the muscles of the neck. It should be remembered, however, that there is no pain on pressure along the course of the peripheral nerves of the extremities, unless it is a neuritic case, but rather on extending the affected limb. The children are found with their extremities in a flexed position, and an attempt to extend them, or even slight passive motion, produces excruciating pain—so much so that the patient cries from apprehen-

sion when only approached by the physician or nurse. The inflammatory condition, when extending to the brain meninges, may give rise to simple twitchings or even convulsions in direct proportion to the extent and intensity of the affection. The patients, as a rule, favor some extremity in particular, for there is the weak spot, and this favored extremity will become paralyzed. Reflexes may be weak or already absent. In some instances they are exaggerated at the beginning.

To recapitulate, then, we meet in the prodromal stage the following constant symptoms: Sudden onset with fever, headache, drowsiness, at times twitchings or convulsions, pain in extremities on passive motion and along the spinal column on pressure, sometimes gastro-intestinal disturbances, the nose and throat symptoms, as mentioned, and the cytological findings in the cerebrospinal fluid. Some investigators call attention to an early and profuse perspiration, but I cannot verify this.

In attempting to classify the symptom complexes of the subacute and chronic stages, we must bear in mind that in reality we are dealing not with an anterior polyomyelitis, but with a polioencephalomeningomyelitis. In these stages we get the end results of the infection; the symptoms indicate the site or sites of involvement anywhere along the cerebro-spinal axis. In these stages some of the prodromal symptoms disappear, notably fever, headache, and the gastrointestinal symptoms, if such were present, and often pain also. All the symptoms may clear up and the patient fully recover. These are abortive cases and during every epidemic, the present one included, many such cases are reported. Most of the others that survive present several groups of paralyses, such as, 1, cerebral spastic; 2, bulbar cranial nerve involvement; 3, spinal flaccid paralyses; 4, pontine and cerebellar cranial nerve involvement, tremors, and ataxias; and, 5, mixed types. Of the cranial nerves the facial and acoustic are most frequently involved, the former resulting in Bell's palsy, the latter in deafness. The cerebral type is rare, and it is perfectly clear that if the sensorio-motor region is involved we shall have a spastic hemiplegia with or without epileptiform convulsions, or, if only the centre of one extremity is involved, a spastic monoplegia will result. In the spinal type we have, of course, the flaccid paralysis of one or more extremities, according to what segments are affected. Here the

motor neuron emanating from the anterior horn becomes destroyed, causing a break in the spinal reflex arc, giving us a flaccid paralysis, loss of reflexes, wasting of the muscles, loss of response to the Faradic current, and a positive reaction of degeneration. In the course of time this condition results in contractures, shortening of the affected limb, spinal curvatures and other orthopedic defects, abdominal and diaphragmatic hernias. The mixed types are those of bulbospinal or cerebrospinal symptom complexes. It seems to me that such classification reconciles the chief clinical symptoms with the predominant anatomical lesions.

Treatment.

Since the disease is directly contagious and is disseminated by healthy as well as sick carriers, prophylactic measures are essential. A strict quarantine for a number of weeks is, of course, the first requisite for the efficient protection of the public. Since I have shown that dust contains the virus in a viable condition, I advise a thorough scrubbing of the floors and frequent flushing of the streets and sidewalks. We must remember that people spit on sidewalks and children play there. On general principles I advocate the extermination of insects as possible carriers. Milk and other articles of food, where practicable, should be boiled. Domesticated animals and household pets should receive frequent washings. Bathing in stagnant water in an infected neighborhood, the playing of children around sand heaps in parks and their congregation in playgrounds or places of amusement during an epidemic should be prohibited. Since it was shown that the virus is readily destroyed by menthol and hydrogen peroxide, I strongly advise that the nasopharynx of the sick be frequently sprayed with a one per cent. solution of peroxide of hydrogen, and that of the healthy children be sprayed with a solution of 0.5 per cent. menthol in liquid petrolatum. As a measure of individual prophylaxis, this has given me good results in my practice. All these measures I advocated in the international Congress of Hygiene in Washington, D. C., in 1912. Since then it has been shown that flees contain the virus, and it would be necessary to disinfect these discharges, as well as bedpans and urinals. Bed clothes and other linen used by the patient should be thoroughly boiled.

During the febrile stage, complete mental and physical rest is imperative and should be continued so long as there is pain, for every

movement causes discomfort. The patient, therefore, should be handled with extreme gentleness; we should avoid flexing the neck or hips, or extending the limbs, or even bending the spine. I would even forego sponging in high fever, in order not to cause pain by such manipulation. Bromides and chloral are, as a rule, efficient in alleviating pain in infants, but in older children the opiates or coaltar preparations will have to be resorted to in extreme cases. An exclusively fluid diet and mild catharsis, when necessary, should be carefully maintained. A cold compress to the head in temperatures higher than 102° F. proves soothing.

When the acute stage passes and paralysis sets in a more active treatment must be instituted in order to prevent possible deformities and restore such muscular function as conditions may warrant. My guide as to when such active treatment should be begun is when pain subsides completely, and *not earlier*. So long as pain lasts, even with the fever gone, I immobilize the affected limb by putting it in a well padded splint, and patients are invariably grateful. I have seen many partial recoveries from loss of muscular function from such procedure. During the stage of active exudate manipulation of the extremity will cause fatigue in the nerve cells, and is apt to enhance the process of degeneration, while complete rest may, and frequently does hasten absorption of the exudate, and restitution *ad integrum* of nerve and muscle is made possible. All our spontaneous recoveries are due, in a great measure, to such precautions. Warm baths during the afebrile stage are of great benefit, and the patient should be left in the bath as long as he can remain with comfort—the longer the better. With the pain gone, about a fortnight after the onset of the paralysis, we may begin with massage, passive movements, and galvanism. No more than five minutes shou'd be allotted to these measures daily, for the structures need very little encouragement and too much stimulation will easily exhaust them and produce the reverse of the desired effect. In using galvanism I prefer the interrupted to the continuous current, and then only of a weak amperage, just enough to produce contractions.

Active exercise of the muscles by the patient should be encouraged, and this is best accomplished with infants while bathing daily by putting into the tub some floating toys and encouraging the patient to attempt to handle the objects with the affected limb. Older chil-

dren can be persuaded to counter-act antagonistic passive movements by the masseur. It may well be remembered that at times groups of cells in a given involved segment of the cord or cranial nerve nucleus may escape destruction and their function be restored, if thus encouraged. In this taeatment we should persist for years. Several youngsters in my private and clinical practice who were hopelessly paralyzed for months, after persistent treatment for several years, have regained a fair amount of function in certain muscles groups. To avoid contractures, counteracting splints may be applied with advantage, but left on only part of the time at the beginning, for example, only over day-time, and removed at night. If no improvement is noticeable in any muscle group after persistent treatment for a few years, it is advisable to resort to operative measures, such as tendon transplantations or other surgical measures, as the case may demand. That the patient should at all times have a bland, well nourishing diet and plenty of fresh air applies here as well as in all febrile and wasting diseases. In common with all clinicians I recommend that we should *do all we can*, and at the right time, but in our zeal take care *not to overdo*.—The *New York Medical Journal*, July 22, 1916.

THE

CALCUTTA JOURNAL

OF

MEDICINE.

Vol. xxxv. | December, 1916. | No. 12.

THE PHYSICIAN IN POLITICS.*

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The word politics has been defined as "the branch of civics that treats of the principles of civil government and the conduct of state affairs; the administration of public affairs in the interest of the peace, prosperity, and safety of state; statecraft; political science; in a wide sense embracing of science of government and civil policy."

Politics have been defined in another sense as "political affairs in a party sense; the administration of public affairs or the conduct of political matters so as to carry elections and secure public officers; party intrigues; political wire pulling; trickery."

Politics have also been defined in another sense "as a man's political sentiments, party preference or connection"; as the saying is usually used, "there is no doubt about his politics."

* Read before the American Medico-Pharmaceutical League at the Hotel Astor, May 22, 1916.

One may see by these definitions that physicians have a place in politics, in fact, we may say that history tells us that physicians have entered all phases particularly the first phase of the subject as herein defined.

In looking over the great names in medicine we have any number of scientists and discoverers in medicine who have been in intimate relation to the politics of their respective countries. Morgagni, the father of pathology may be mentioned, likewise Virchow, the father of cellular pathology, Auenbrugger, an Austrian, born in Tyrol, was a personal friend of the great-empress, Maria Theresa. Galvani refused to take the oath of allegience to the new government when the French Government revolution disturbed political conditions in Northern Italy. His delicacy of conscience caused him to be respected and admired by all his friends. He said he was bound to the old government and was for this reason considered a Quixote. Galvani first demonstrated animal electricity.

Laennec, born in Brittany, figured in many political incidents during the French Revolution.

Sir Dominic Corrigan was for a time a member of Parliament. Louis of France, who discovered the difference between typhoid and typhus fever was his contemporary. Both entered politics in their respective countries.

In German medicine we have the following great men in medicine who entered into German politics: Johan Muller, Helmholtz, Theodore Schwann, Reifhert, Claparde, Brucke, Remak, and Lieberkuhn.

Going back to the revolution in America we are impressed with the names of physicians in politics. Five physicians signed the Declaration of Independence. These five were: Benjamin Rush, M.D., LL.D., born near Philadelphia, 1746; Matthew Thornton, M.D., born in Ireland, 1714; Josiah Bartlett, M.D., born in New Hampshire, 1729; Lyman Hall, M.D., born in Connecticut, 1725, and Oliver Walcott, M.D., born in East Windsor, Conn., 1726.

Dr. David Ramsey was born in Lancaster County, Pa., 1749. Entered Princeton at the age of thirteen. He began his practice at Charlestown, S C., and on July 4, 1778, delivered the first 4th of July oration in the United States. While a member of the Continental Congress, owing to the indisposition of John Hancock, he was made President pro tem.

Dr. Hugh Williamson was born in West Nottingham, Pa, 1735, and, receiving his medical degree in Edinburgh, settled in North Carolina.

He was not only a surgeon in the army but became a member of Congress and signer of the Federal Constitution, and a member of the committee to revise the Constitution of the United States. Besides this he was well known as a scientist and astronomer. He died in New York City in 1819.

Going back in history to the time when King George ruled the thirteen American Colonies, we may mention the name of Dr. Jos. Warren, who was killed in the battle of Bunker Hill. He it was who sent Paul Revere upon that world famous ride through Arlington, Concord, and Lexington; he who arranged the lantern signals in the old North Church Tower.

Up in the little town of Amherst, Nova Scotia, Dr. Charles Tupper practiced medicine for many years. The good people of Cumberland County sent Dr. Tupper to the local assembly thinking it would not interfere with his practice. Once in politics, Dr. Tupper went up and up until he reached the post of Premier.

Up in the Granie State young Jake Gallinger studied medicine and became a country practitioner before the Civil War. After the Civil War he was sent to the Legislature. Politics interested him so much that he took in his shingle, preferring to make medicine laws rather than pills. He became Surgeon General of the State, Chairman of the State Committee, Representative to Congress, and United States Senator.

No account of the physician in politics would be complete without the names of Colonel William C. Gorgas and Major Leonard Wood.

Of all the physicians who have given up their profession for some other, that of letters has been the favorite exchange, and politics has ranked second. Doubtless it is the training of physicians and his close contact with all phases of life, and all shades of human nature through the gamut of emotions, that enables him to succeed so well as an author. Almost every doctor-author has the ability of writing description that is unusually effective and convincing.

The physician in politics at the present time does not cut a conspicuous figure. In small towns and villages we often hear of the physician in the town being elected mayor or justice of the peace. But this condition of affairs does not obtain in our large cities. It is difficult to understand how a physician could continue to practice medicine after he is once launched into politics. It seems as if he must sacrifice his practice from the start. Yet it is absolutely necessary for physicians to keep in touch with politics. Federal medical laws are being enacted upon which no physician has a voice in the matter. All these laws affect the community as a whole and the physician in particular. Legislators at Albany say that medical bills come before them for consideration constantly, and they are at a loss to know what to do with them, for without a physician's voice in the matter they do not understand their intent. Many of these laws are aimed directly at the physician, as for example, a lay board or commission being given the power to revoke the license of any practitioner on the mere pretext that he may use intoxicating liqour, or in the judgment of the commission his moral character may not be up to the average. Although I have mentioned many physicians in history who have gone into politics I believe we may safely say that physicians do not go into politics as frequently as they should. The trouble has been, and the same condition holds today, that the best men in our profession do not enter politics. Not only this but our best men in medicine pay very little attention to politics. This is not as it should be, by any manner of means. But what does politics hold out for the physician? A great deal when we look at politics from the standpoint of our first definition.

A physician of good standing can hardly afford to go into politics without high ideals. If he enter politics in a party sense; the administration of public affairs or the conduct of political matters so as to carry elections and secure office or take part in party intrigues or political wire pulling or trickery; his reputation suffers and he drops a peg in the estimation of all, even his best friends, many of whom he may count as his patients. If a man does not grow after entering politics it would have been better if he had never entered public life. President Wilson has very recently said that a man either grows or swells after he enters public life. The physicians who go into public life lacking the high ideals referred to, will surely swell but there will be no growth and all hands suffer in consequence.

In another sense as referred to, all physicians should have political sentiments, party preferences or connections and as the saying goes "there is no doubt about his politics." He should lend his support to principles and not men, and like Emerson should "hitch his wagon to a star."

All physicians should become students of proposed health insurance bills, as the future of the medical profession depends upon the enactment of these bills.

A physician's experience in politics will not make him a better physician. One can hardly conceive of the mental attitude of a successful physician with high ideals seeking office by intrigue and trickery. The office should seek the physician and he should give the subject very careful attention and consideration with deliberation, before accepting a nomination, for as a rule once a man is launched into politics it is difficult for him to break away. I do not believe a physician should aspire to be a district captain or ward leader, an alderman, an assemblyman, a state senator, a congressman or even a coroner or health commissioner, linked as the two are with medicine, for the reason that he will be forced to divorce himself from the practice of his profession while holding these temporary offices.

It is very probable that physicians will never become statesmen in the sense that the members of the legal profession demonstrate,

not because physicians lack integrity, or in certain instances ability, but because the life of a physician and the life of a statesman are so diametrically opposite.

A lawyer would in all probability become a better lawyer by his experience as a statesman but this would not necessarily obtain in the instance of a physician who in all probability would become a poorer physician after becoming a statesman. In other words medicine and politics do not mix, except in the strict ethical sense where a physician is interested and plays his part in all civic movements in the interest of peace, prosperity and safety of state. He should be interested in the health and welfare of the people at large and the community as a whole.

To our young medical men one may venture these few words of advice: Keep out of politics unless the office seeks you. To the older, more experienced practitioners of medicine, no advice in these matters seems necessary.—*Long Island Medical Journal*, September, 1916.

HOMEOPATHY OF THE FUTURE.*

By Claude A. Burrett, M.D., F.A.C.S, Columbus, O.

Ohio State University, College of Homeopathic Medicine.

Some time ago we read a paper on the subject of "Homeopathy, Past and Present" and in it attempted to trace, not only some of the important historical phases of the subject, but also called attention to the contributions that Homeopathy has made to medical science. Owing largely to this influence, the therapeutics of all medical teaching has been modified. The enormous dose of nauseating compound medicine of the Allopathic school of a generation ago has been replaced by the sugar coated pill or tablet. For the five grain dose of calomel has been substituted one-tenth of a grain. The four per cent solution of cocain has been reduced to one per cent or less. The single remedy is taking

* Read before the Bureau of Homeopathy, A. I. H. Baltimore, June, 1916.

the place of the polypharmacy prescription of six or eight different drugs in one dose of medicine. All of these changes, to say nothing of vaccine therapy, have taken place during the past two decades in the ranks of the dominant school. Thus every real therapeutic reform has tended toward the principles promulgated by Samuel Hahnemann and his followers.

With all of this advancement, the fundamental principle underlying Homeopathy has not been taken into consideration or appreciated by the Allopathic school. The nauseating drug has been modified because the public demanded it; the dose has been decreased because of the recognized drug disease it produced; and the polypharmacy compound is being discarded because it will not stand the test of the modern scientific investigation. Here and there a man has been big enough to stand before the medical world and proclaim the truth of *similia similibus curentur*, while all these changes have been going on and while an occasional treatment is given according to the law of similars; it is a pure accident and is no contribution toward a more scientific method of treating the sick.

There has been a strong tendency in the homeopathic profession of the recent past to say less about Homeopathy and to be content with the statement that he or she is a physician in all that the name implies, that a homeopathic physician is as truly a physician in its broadest sense as can be found. The dominant school of medicine, on the other hand, has popularized and indeed commercialized the modern phrase of "scientific medicine," which is to imply that all other is unscientific. These two tendencies, whether brought about by design or accident, in our judgment, have been strong factors in taking homeopathy out of the public mind. There is not less homeopathy proportionately or homeopathic sentiment among the people Within a month a new resident of our city came to us, having been referred by a doctor in a distant city. She said she had repeatedly inquired of her neighbors for a homeopathic doctor, but no one knew of one in the city. That condition is not peculiar to Columbus; the same experience was related of Louisville, where there have

been homeopathic colleges for the past half century. As a profession, we have tended to say less about homeopathy, although we might practice it faithfully, and our friends, the enemy, have been quick to encourage the process of a gentle, slow method of smothering us under the guise of scientific medicine. As a profession, we have been proud to be linked with the allopathic crowd and with them, today, we are sharing the popular opinion that there are but three or four drugs in the whole materia medica capable of curing disease. The average druggist, if he is honest, will tell you that the mass of people have as much confidence or more in a well tried patent medicine as in the physician. Why? Because Osler has first Oslerized the medical profession and finally the public into a state of drug nihilism. At the same time, scores of drugless healers who produce a mechanical or mental substitute for dope are positive in their claims to cure the sick, and the public is looking for the man or woman who has faith in his own claims. The homeopathic profession, hanging onto the tail of allopathy, has been dragged into this state of affairs.

What, then, is the future of Homeopathy? You are inclined to think and say that it spells ruin. You might be right were it not for the fact that no scientific discovery has disclaimed the truth of the law of similars and, on the other hand, every therapeutic discovery based upon scientific experimentation has tended to prove it. No! Homeopathy is stronger today than ever before in its history. This is true because its institutions have withstood the most severe test that can be imposed upon medical education. It is true because it has been shown during the past few years that the patrons of Homeopathy are now giving large sums of money to our colleges and hospitals. During the past few years hundreds of thousands of dollars, yes, millions of dollars have been given to our institutions. More than thirty-five million dollars are now invested in homeopathic institutions in this country. What is more significant than institutions or money, is the rapidly growing interest in homeopathic research by men and women who are devoting their lives to such work.

Who hitherto has heard of a department of Materia Medica in a Homeopathic College having a laboratory fully equipped with apparatus for homeopathic pharmacological experimentation, with physiological apparatus for both human and animal experimentation; with equipment for examination of drug pathological material and above all else provided with men receiving living salaries and devoting their whole time to teaching and experimentation in this most important branch of our school? From such activity come results that make us strong in the faith for which we stand. I do not refer alone to materia Medica, but to every branch of medicine, for wherever drugs are to be used, the homeopathic law is applicable. Homeopathy is a therapeutic specialty, but whoever practices, homeopathic medicine, whether it be in internal medicine or one of the surgical specialties, must be grounded in the principles and practice of homeopathic therapeutics as applied to his specialty. Why then must we be classed with a school of practice that openly decries the curative value of drugs? We are not drug nihilists, for we believe in the curative value of a hundred and more remedies which have proven their value thousands of times in the past hundred years.

The time has arrived when as individual physicians, as institutions and as an organized body, the homeopathic profession should declare itself and take proper steps that the world at large will understand its relation to the medical world.

This may be accomplished by vigorous action in three directions—publicity, independence of organization in relation to the state and by a continuance in building and enriching our institutions, both colleges and hospitals.

Publicity stands at the head in importance, for an honest understanding by the public of what Homeopathy is, and what its institutions and physicians stand for, will make possible an independence in relation to the dominant school of medicine and will open the pocketbooks of the patrons of Hemeopathy so that our hospitals and colleges need not suffer.

In order to secure publicity, we must have an agency. While the press is open to us in a large measure, we do not use it as we

should. I do not refer to the promotion of the individual, but to our societies and institutions and to the principles for which we stand. We must organize through our local and national societies a publicity bureau through which we may inform the public in a proper manner what Homeopathy is and how it will cure the curable diseases more speedily and comfortably than other forms of treatment. Popular magazines and papers are full of information about health problems. Indeed, we sometimes feel that under the guise of greatness, medical men and their cures are advertised today only to be discarded and forgotten tomorrow. The truth about Homeopathy should be told to the public in properly written articles and published in the papers and lay magazines of the world. Perhaps of equal or greater value as a publicity agency is the organization of the laity and specially the ladies. No greater aid to our cause can be found than a local, state or national organization of the patronesses of Homeopathy. Already the State of Pennsylvania has recognized the value of such an organization and as a result they have a State Federation of homeopathic women. This year, that group of ladies is supporting worthy students in their medical studies. More than that, it is calling the attention of thousands of men as well as women of Pennsylvania to the value of Homeopathy. It gives an opportunity in its local societies for lectures upon medical topics by homeopathic physicians and this is a propagandistic agency, the value of which is beyond estimation. Only last month, in connection with the Ohio State Homeopathic Society, the ladies of that State formed a State Federation of Homeopathic women, not to be composed alone of the wives of physicians, but of every woman of the State who has seen the value of the law of similars in the treatment of the sick.

In our American Institute, we have the Meissen Society, an organization which could well adapt itself as the parent body of the federation of the homeopathic ladies' societies of America. There is no limit to the propagandistic power of such an organization.

That we should maintain our independence from the dominant school of medicine is becoming more apparent daily to our whole profession. What value can be gained by association in any way with an organization which openly and continually declares opposition to the principles for which we stand? How can we expect anything but prejudiced minds in rating our institutions under such conditions? We must examine our own institutions and publish our own findings in such a manner as to be beyond question. Our own Council on Medical Education has just published such a report of our colleges. A report of our hospitals is being distributed at this meeting and is the first of its kind ever published by any medical fraternity. With such reports placed in the hands of every State Medical Board, at least once a year, why should we be subjected to the dictates of any other self-constituted organization? It has been said that publicity is all that is desired. Let us see to it that the public knows the truth about Homeopathy and her institutions.

Finally, our hospitals and colleges must be homeopathic in control and practice. No homeopathic hospital in which allopathic physicians may treat patients can endure as a homeopathic institution. You may feel that a very radical statement. If so, satisfy yourself by collecting the data on many of the hospitals of this country. In making that statement, let it be understood it is no criticism of the individual physician of either school making up the staff of such a hospital. The failure can be explained simply upon the ground of the greater number of allopathic physicians. In repeated cases where a given hospital has been made larger to accommodate more patients, the increase has been out of proportion to the increase in number of homeopathic physicians and the logical outcome has been a mixed staff. A mixed staff is the first step in the elimination process. Size must not be mistaken for quality of service and wherever there are enough homeopathic physicians to maintain a homeopathic hospital, it should be an independent institution.

The future of homeopathy, in the last analysis, focuses about the homeopathic colleges of America. England may have her

hospital lecture courses in Homeopathy, but she must depend upon America to furnish the real homeopathic life blood.

Too little is known about our colleges by the rank and file of our own profession. So many physicians measure our colleges by the standard of their college days or draw the conclusion that since there are fewer colleges and students, that the college is correspondingly decreased in efficiency. It is too little known that all of the work of the first two years in all of our colleges is taught by men and women who are paid living salaries and devote their whole time to teaching and research. It is not known that in all of our colleges, some of the clinical teachers and in many of them all of the clinical teachers devote all their time, except for consultations, to their college duties. It is a well known fact by our allopathic competitors that our colleges in practically every instance have complete control of our clinical teaching hospitals, much to their envy.

There must be a revival in our profession in the publication of books. Members of our profession are as capable of writing books as those of any other school of practice. But the most important reason is that we need the homeopathic therapeutics that should be incorporated into our books of whatever specialty. The large amount of work being done in all of our institutions in this country and abroad is sure to give us new books on the subject of materia medica and therapeutics in the near future—we must also have books on the surgical specialties. No greater monument can be built for a homeopathic physician than a book in his chosen specialty.

The need of a graduate school in Homeopathy has been voiced frequently in recent months. It is one of the most hopeful signs of the times. Such a school should be built upon broad lines, so that it not only would attract physicians of our own and other schools of practice, but it should demonstrate the value of Homeopathy in every branch of medical practice. The endowment of such an enterprise can be found so soon as the profession is fully awake to the real demand. This is an age of giving, but the donor must be shown the real need. What greater gift can

be made than for a more general understanding of Homeopathy? So long as the public recognizes that the treatment of disease is far from perfect, no one school of medicine will be able to dominate public thought or control the pocketbooks of the American people.

The future of Homeopathy, in the last analysis, is in the hands of the homeopathic profession. It is our problem and we can have in proportion to our real desire. The problem of the doctor is the problem of prolonging the life of each individual of the race and making his life comfortable while he lives. That is a problem which no one organization can or will master. Opportunity is ours for the real desire and asking. With the pushing forward of plans for closer organization with the laity and profession, with continued development of our institutions and with a firm declaration of independence from the dominant school, the homeopathic profession will stand before the scientific world as making a notable contribution to medical progress.—*The Journal of the American Institute of Homeopathy*, November, 1916.

EDITOR'S NOTES.

The Prevention and Treatment of Venereal Diseases in the Metropolis.

The London County Council is not going to delay in carrying into effect the recommendations of the Royal Commission on Venereal Diseases, and facilities for treatment are to be provided at the earliest possible moment. The problem of arranging these facilities throughout Greater London is a most difficult and complicated one, but it augurs well for the success of the scheme in hand that the Lord Mayor has convened a special conference of municipal and hospital authorities and representatives of the principal religious, educational, and social organisations to meet at the Mansion House on Oct. 24th. Addresses will be given by Mr. Herbert Samuel, the Home Secretary; Mr. Walter Long, the President of the Local Government Board; Mr. A. F. Buxton, the Chairman of the London County Council; and Lord Sydenham, the President of the National Council for Combating Venereal Diseases. Others who are announced to speak, besides the Lord Mayor, are Lady Barrett, M.D., Sir Thomas Barlow, and Sir Malcolm Morris.—*The Lancet*, October 21, 1916.

A New Form of X-ray Tube.

In a supplement to the *Scientific American* there is a description of a new form of X-ray tube that may prove to be an improvement on that introduced by Mr. Coolidge. The essentially new feature is that the filament producing the necessary electrons, instead of being in the centre of the cathode itself, is mounted in an accessory bulb placed immediately behind the cathode, the latter being provided with a central hole through which the electrons from the filament are made to pass. The hole being a small one, the electrons fall on the anticathode in a correspondingly small dense bundle giving a sharp focal point from which the X-rays emerge, and an almost complete freedom from stray radiations, which are more or less common to all tubes and a constant source of danger to all X-ray workers. If the claims

made for the Lilienfeld tube are borne out in practice there is no doubt that it will be a considerable improvement on anything that has been available up to the present, though the necessity for an auxiliary current to heat the filament still remains as in the Coolidge tube. We gather that the idea is of German origin, and further developments may not occur during the continuance of the war.—*The Lancet*, October 28, 1916.

High Altitudes and Neurasthenia.

Dr. George Moleen, of Denver, Colorado, has made investigations concerning the class of patients who are able to live with more comfort at relatively low altitudes and manifest irritable neurotic disorders on going to higher elevations. He finds that the demand for oxygen-carrying elements of the blood increases directly with the altitude. In normal individuals this requirement is met through an increase in the red blood corpuscles and haemoglobin in from three to five weeks—the normal acclimatization. This power of adaptation is diminished or wanting in certain individuals. Deficient acclimatization results in limited oxygen supply or relative anaemia. The increased excitability or irritability of the nerve structures may be explained as a result of diminished oxygen supply. If by therapeutic or other means the blood-forming mechanism can be stimulated, individuals should find no more difficulty in living tranquil lives in the high altitudes than at the sea level. Moleen insists that neurasthenic cases do not occur more frequently in high altitudes than in low. He admits that rarefied air may cause discomfort where neurasthenia has already developed, but contends that neurasthenia is infrequent in districts where the air is rarefied. The general standard of living, he says, is always better in high altitudes than in congested centres of population in great towns and populous valleys. Work is seldom carried on in small rooms under artificial light. There is a greater average of bright cloudless days and intensity or actinism of the light at high altitudes is favourable to health.—*The British Medical Journal*, September 16, 1916.

A New Treatment for Gunshot Wounds.

Professor Pierre Duval, at present on active service, recently showed before the society of Surgery a series of twelve men severely wounded on the Somme Front. Although the wounds were such usually intractable ones as compound fracture of the knee, they had recovered in two or three weeks without fever, drainage, ankylosis, or plaster bandage, the healing of the wounds even taking place by first intention. These results, which much impressed his audience, were obtained by methods in complete contrast to those usually practised. With the shortest possible delay after the infliction of the wound M. Duval opens up freely the gunshot track, as well as all other tracks, cleans the surface with ether, and deliberately excises the whole wound, cutting for an extent of 1 or 2 cm. into healthy tissue. Renouncing, in short, antisepsis and any attempt to destroy the imported microbes, he treats the whole neighbourhood of the infected injury as he would a malignant tumour by simply removing it. After finding himself in entirely healthy tissue he sutures the synovial membrane, reunites the ligaments, and brings together the edges of the wound without drainage. The results have been surprising; he has been able to dispense with bandages, irrigation, and the drainage of prolonged discharge. At the same time, the rapid return of function is very striking. One of the wounded men, who was already walking with the aid of a stick, had been hit on the knee three weeks before by a fragment of shell which penetrated the knee-joint, a type of wound which up till now has generally resulted in ankylosis when death did not supervene from a rapid infection. The method is one the wider application of which appears likely to modify considerably our treatment of gunshot wounds.—*The Lancet*, October 28, 1916.

Legislation against Quack remedies for Venereal disease.

We understand that, on the advice and with the assistance of its president, Lord Sydenham, the National Council for Combating Venereal Diseases is taking steps to ensure the introduction into the present or the earliest possible session of Parliament of a bill having as its object the prevention of the sale or advertisements of quack remedies for these diseases and for the treatment of them by unqualified persons. It realizes the fact that this is an extremely difficult and thorny subject, and it has asked and obtained the co-operation of the British Medical Association in the matter. A subcommittee, consisting of the Treasurer (Dr. Haslip), Dr. Jenner Verrall, Dr. Bigg-, and Mr. Bishop Harman, was appointed by the Council of the Association at its meeting last week to work conjointly and in harmony with the National Council, and measures are being taken by means of conferences and otherwise to bring every party which might be affected by the provisions of the proposed bill as far as possible into harmony with the object which it is wished to attain.—*The British Medical Journal*, November 4, 1916.

Urea in Plants.

The occurrence of the enzyme urease, which readily converts urea into ammonium carbonate, in plants and more particularly the soy bean, a leguminous plant named Glycine hispida, has naturally led to the suggestion that urea is probably a constituent of the vegetable kingdom. The suggestion is interesting inasmuch as we have for long regarded urea as exclusively an animal product. In an interesting paper read by Dr. Walter G. Smith before the Section of Medicine of the Royal Academy of Medicine in Ireland, and now published in the Transactions of the Academy, urea appears to be a fairly universal constituent of plants. It occurs, at all events, to the extent of as much as 3·5 per cent. in ripe specimens of a fungus Lycoperdon bovista, and it has further been found in wheat, barley, maize, peas,

clover, and beans. It has also been detected in endive, some species of cucumbar, brassica, spinach, carrot and potato, and so, as Dr. Smith points out, we must recognise that plants, without the help of micro-organisms, can directly form urea as a product of nitrogen metabolism of plants and animals. Professor Bayliss states that there does not appear to be any urea in the soy bean itself, for extracts of the seed do not yield any ammonia. He suggests that the germinating seed may contain the enzyme arginase which would produce urea from arginin. The urea on hydrolysis by urease would then serve as a nitrogen food for the plant. The action of urease is quantitative, and is now utilised in the accurate estimation of urea in urine, its conversion into ammonium carbonate admitting of alkalimetric methods. These observations are of great interest, as they not only break down once more an old distinction, but they throw a fresh light on the metabolism of nitrogen substances, and incidentally give us a new and accurate analytical procedure.—*The Lancet*, October 21, 1916.

Weil's Disease in Flanders.

Weil first described the disease which bears his name in 1886. It is characterised by Jaundice, pyrexia, hæmorrhages, and was apparently infectious, occurring either as widespread epidemics or in localised groups of cases. During the Gallipoli operations there was an extensive epidemic of jaundice, and it is possible that these cases may have included an anomalous type of the same disease; a recent paper in our columns on infectious jaundice by Captain N. B. Gwyn, M.D., and Captain J. J. Ower, M.D.,* both of the Canadian Army Medical Corps, sufficiently shows the difficulties of diagnosis that may exist. The cause of Weil's disease was not known until 1914, when Inada and Ito reported the discovery of a spirochæta in the liver of a guinea-pig which had been injected with the blood of a patient suffering from this disease. The following year they concluded that such spirochætæ were the cause of Weil's disease. Later it was found

* The *Lancet*, September 16th, P. 518.

that the blood of patients recovering from this disease contained protective substances against the spirochæta. Still later Japanese workers demonstrated the same spirochætæ in six specimens of patients' blood; in two cases which died on the sixth day of illness the spirochætæ were present in large numbers in the liver. They may also be found in the urine. The source of infection is not definitely known, but it is possible, it seems, that skin abrasions may be a path, as well as alimentary canal. Captain Adrian Stokes and Captain John A Ryle report in the September issue of the *Journal of the Royal Army Medical Corps* details of some 15 cases of Weil's disease in Flanders. In two of the cases it proved possible to infect guinea-pigs with the blood with typical resulting lesions and evidence of the spirochætæ. The general clinical picture is this; The patients complain of weakness and general soreness. Frequently there is pain in the eyes. Vomiting is often marked, sometimes there is epistaxis. On examination neither liver nor spleen was enlarged; the stools were of normal colour. Jaundice is marked. The pulse-rate is slow in proportion to the pyrexia. All cases showed enlarged lymphatic glands, most frequently the pectoral group of the axillary glands. All cases showed an irregular pyrexia. In six cases in which a blood examination was made, in only one were the spirochætæ easily found; in another a single spirochæta was discovered. The spirochætæ are rather straight and with curves resembling those seen in S. refringens. Side-to-side movements were well seen, and they were usually grouped. Cultivation was not attempted. The authors conclude that the experimental facts are sufficient to show that the cause of epidemic jaundice in Japan and in Flanders is identical.—*The Lancet*, October 21, 1916.

The Belgachia Medical College, Calcutta.

This institution, which is described as "the first medical college in Bengal organized by private enterprise, and managed entirely by Bengali medical men," was formally opened by Lord Carmichael, Governor of Bengal, on July 5th, 1916. The history and development of the college were related by the president, Dr. Bannerjee. It has long been realized in India that the Government medical colleges and schools, whose main purpose is to provide officers for the public services, are not adequate to supply medical practitioners to meet the requirements of the native population. Efforts have been made from time to time to start private medical schools under Indian control and support, and staffed by Indian teachers; but for lack of funds, suitable accommodation, and appliances these have not been successful, and have not obtained Government recognition. The present college commenced work in 1887 as the "Calcutta Medical School" under great difficulties. "There was no outdoor dispensary, dissection was not allowed, there was no hospital and no possibility of clinical instruction." Pupils were permitted in 1888 to attend the Mayo Native Hospital and its branches; in the same year an outdoor dispensary was opened; in 1889 permission was obtained for dissection; in 1897 a small hospital, containing fifteen beds, was provided; in 1902 a hospital, containing forty beds, was opened at Belgachia, a suburb of Calcutta, where the Bengal Veterinary Department and Veterinary Hospital and the Macleod Veterinary College are located. The cost of erecting the hospital was met from savings, private contributions, and the surplus of a fund raised "to give a suitable reception to His Highness Prince Albert Victor on the occasion of his visit to Calcutta in 1890." The new hospital was named after this Prince. In 1904 the "Calcutta Medical School" was amalgamated with the "College of Physicians and Surgeons of Bengal." Instruction had hitherto been given in the vernacular up to the standard of the Government vernacular schools. Teaching was now conducted in English, and extended to five years up to the standard of the Government College. Under

the encouragement and liberal support of the Government of Bengal, the Calcutta Municipality, the University of Calcutta and influential and wealthy native gentlemen, the assistance of Surgeons-Generals Sir Pardy Lukis and W. R. Edwards, and the praiseworthy efforts of the teaching staff the hospital has been enlarged, suitable college buildings have been added, a curriculum of study up to the University M B standard arranged, and the institution has been affiliated to the Calcutta University "for the Preliminary Scientific M B Examination." Lord Carmichael's speech was sympathetic and laudatory. As indicating the need of additional means of medical education he mentioned that "last year 725 students applied for admission to the Medical College, but the number of vacancies was only 137; at the Campbell (vernacular) school there were 530 applicants for admission but only 122 vacancies" The organization of the Belgachia Medical College is highly creditable to all concerned, and constitutes an important step in providing practitioners of rational medicine for service among the peoples of Bengal —*The British Medical Journal*, September 2, 1916

Eunuchoidism.

As we further our knowledge concerning the function of the ductless glands we get a clearer understanding of those heretofore obscure diseases whose pathology seemed past finding out

The researches which have been made and which are still being made into the function of the internal secretions from the sexual glands have already cleared up some of the most vexatious problems in the psychological, physiological, and pathological fields. Since the days of antiquity there has lived side by side the normal man, a being which, while it resembled a man in all the outward aspects, yet lacked the psychic element of the virile human. Neither the psychologist nor the alienist seemed able to point out wherein the precise defect lay. Yet its absence was ever apparent. This much at least has now been done by the researchers in this field, they have given this strange being

a name, if not a local habitation,—they have named him "eunuchoid."

Fauldler says eunuchoids are "individuals who, without being castrated, entirely simulate in their clinical manifestations the true eunuch type or at least are extraordinarily similar to it. They are either tall, or if complications are absent, are at least not stunted in growth; they show the typical fat distribution of eunuchs, and eventually pronounced obesity; the epiphyseal junctures persist abnormally long, the skeletal dimensions are characterized by an especial length of the extremities, and furthermore the individuals show a psychical habitus. Finally, there is found a more or less pronounced disturbance of development of the genitalia, with faulty development of the secondary sexual characters. It is probable that in such cases we have to do with a developmental disturbance beginning primarily in the sexual glands, and indeed especially the interstitial glands, as functional disturbances of the generative glands alone do not lead to eunuchoidism."

In general appearance the eunuchoid is slender and tall. Even in those subjects which have taken on fat the skeletal structure is slender, especially the tubular bones. Wilhelm Falta says that while all eunuchoids are not tall, he has not been able to find on record a case which was small. The tallness is almost universally due to extreme length of the extremities, there being a disproportion between the lower and the upper length of the body. Most eunuchoids have genu valgum and a hyperextensibility of the joints, especially the phalanges of the fingers. Owing to the larynx remaining cartilaginous, the voice in the more pronounced case remains high and shrill. There seems to be a peculiar distribution of fat upon the body of the eunuchoid, these being found in pads upon the mons veneris, hypogastric region, breasts, and outer aspects of the thighs. While the hair of the head is abundant, there is little or no hair on the face and body. The skin is delicate, pale, and velvety. The genital organs are quite hypoplastic. The penis, prostate and scrotum are very diminutive, and the testicles scarcely larger than a pea,

or they may have failed to descend. But few cases of female eunuchoidism have been found. Both male and female eunuchoids are sterile. Falta reports a case which seems quite typical:

"Genitalia hypoplastic, as far back as patient can remember. Deposits of fat on the mons veneris and hips, which during the last few years have become more strongly developed. Has rarely had libido erections since the eighteenth year, but when such occur the penis becomes only about 3 cm. long. Has never had sexual intercourse. Recently several pollutions. Patient is 169 cm. tall. Length of lower extremities (from ant. sup. spine of ileum to int. malleolus) 87 cm.; length of upper extremities (from head of humerus to end of third finger) 76 cm. Span width 184 cm., genu valga. Copious deposits of fat on the hips, on the outer sides of the thigh and on mons veneris. Mammæ not very rich in fat. No beard hairs at all. Abundance of hair on head. Hairs in axillæ sparse, pubic hairs present not very luxuriant, bounded above by a horizontal line. No hairs on the linea alba. No hairs on the thighs. Genitalia hypoplastic. Penis small, scarcely 1½ cm. long. Each testicle about size of a bean, soft.

X-ray.—Sella turcica normal, the distal epiphyseal junctures of the radius and ulna, and the proximal of the first metacarpal phalanges are still open.

Leucocytes, 7,600 of which 46 per cent are neutrophilic polymorphonuclear cells. Voice higher. Prominentia laryngea not palpable. Thyroid gland not distinctly palpable. Test for alimentary glycosuria (100 and 150 gm. dextrose) negative. Character: Silent, not communicative, somewhat shy. Intelligence normal."

The cause of eunuchoidism is apparently some perversion or absence of the function of the sex glands. It is quite possible that such may result from early traumatic or infectious disturbances of these glands. In considering eunuchoidism it is quite necessary that one should keep in mind such condition as infantilism, in which the individual simply comes to a standstill in his

development no matter at what stage of it may occur and he therefore retains the psychic, physical, and sexual powers which he possessed at the termination of his developmental career. If this were at the pubic period he would not be an a-sexual being; neither must the condition be confused with hypophyseal dystrophy, which is due to overgrowth of the pituitary, and while it manifests itself in obesity and asexualism, yet there is a distinct inhibition of the body growth.

Late eunuchoidism as described by Falta, Larrey, and Gandy presents a still more interesting study as showing and that in an already matured organism in which all of the sexual glands have attained their full development there may be in early middle life or even sooner an arrest of development or retrogression of the external genitals and a corresponding retrogression of the sexual characters. Accompanying this change there appears the development of the fat cushions such as is noted in the early eunuchoid.

From the psychological standpoint, if from no other, the disease (as it is now termed) of eunuchoidism is interesting, as it offers some explanation for the existence of a peculiar type of mind-sexually, which is so at variance with the commonly accepted type that it has been entirely misunderstood.—*The New England Medical Gazette*, October, 1916.

Clean Wigwams for Civilized Men.

In his presidential address delivered at the annual meeting of the Sanitary Inspector's Association on September 28th, Sir James Crichton-Browne, speaking of social and domestic reform after the War, dwelt on the vital importance of housing reform. We cannot, he said, send the brave men who have fought for us abroad back into hovels and dug-outs and funk holes at home, such as are still in many places, both in town and country, the only available shelter for the poor. We must not any longer leave multitudes of our people huddled together in dwellings that are incubators of disease and debasers of morality. We must recognize the right of every civilized man to a clean wigwam, and of every civilized family to a decent lodging, whether they can afford to pay for it or not. The true causes of slumdom are cheap and nasty buildings, overcrowding, and abject poverty. The two effectual remedies, Sir James Crichton-Browne declared, are a living wage and extensive building operations under the direction and, if need be, with the assistance of the State. Congested areas in towns must be demolished, and 300,000 good habitable cottages are wanted in the country immediately. With this pronouncement may be compared that of Surgeon-General Gorgas in an address to the Conference of Health Officers held at Rochester, New York, which was quoted in our issue of April 29th, 1916 (p. 627). The chief of the medical service of the United States army then said that the extraordinary improvement in the health conditions of Panama was due to the social betterment produced by high wages. He added that if such wages were now paid in New York, "all the poverty, sickness, and degradation caused at present by low wages would be rapidly ameliorated." But high wages alone will not settle what Carlyle called the "condition of the people question." The worker must be taught how to use his larger earnings in a rational way rather than to his own further degradation and to the enrichment of the publican. In too many cases the high wages now paid in arsenals and munition factories have not led to social betterment in the working classes. The medical pro-

fession has preached the gospel of health, in season and out of season, but great as has been the progress in many directions, among the poor the seed of sanitary knowledge still in large measure falls among thorns. This is not because our poorer brethren are in any way more wicked than their better-to-do fellow men, but because the unwholesome and depressing surroundings amid which they have to live drive the father, and too often the mother, to the public house for passing relief from the squalor of their home. Until they are better housed they will continue to drink. It is useless for the moralist to denounce this as sinful, and we are glad to note that some of the more enlightened among the clergy recognize that the responsibility lies with landlords whose greed forces working men to live in filthy and unhealthy hovels. In the crusade against this evil we gladly welcome the help of such ministers of religion as the Rev. H. J. Sharpe, rector of Marston Morteyne, in Bedfordshire. In a pastoral letter to his parishioners, dated August 24th, Mr. Sharpe, after giving figures showing the appalling amount of the national expenditure in drink, invokes the testimony of medical men to the fact that workers in town and in country alike are often housed as no rich man would house his cattle, in small airless insanitary huts where large families are being brought up by struggling mothers. "What wonder," he asks, "If some of the children fall away under the drink crave? What wonder if others fall into darker crimes for which their poor mothers blush?" Doctors can exhort people to better ways of material living, but their efforts would be greatly helped if clergymen of all denominations would, like Mr. Sharpe, use their spiritual influence to promote thrift and sobriety among their flocks. It is altogether right that poor people should have the means of getting clean wigwams, but they must learn to keep them clean and to bring up their families in decent conditions; otherwise a vicious circle of abject poverty and reckless wastefulness will be established that will make real improvement hopeless.—*The British Medical Journal*, October 7, 1916.

Paraffin Treatment of Burns.

With reference to the paraffin treatment of burns, a note on which was published in these columns on July 29th, p. 153, we have received some fresh information from a correspondent who has had opportunities of observing its use at the Hospital St. Nicolas, Issy-les-Moulineux, Paris. His remarks on the subject may be summarized as follows: The hospital mentioned is the only one at which the paraffin treatment has hitherto been applied on a large scale, and it is there known as "ambrine treatment." The hospital itself is an ordinary French auxiliary military hospital of about 500 beds, of which 80 have been set aside for the treatment of burns by ambrine. These beds are under the control of Dr. Barthe de Sandfort, the deviser of "ambrine," but the treatment itself is applied by ordinary military surgeons. The wax employed, a semitransparent substance of violaceous hue, is prepared under Dr. de Sandfort's own supervision, and its exact composition has not yet been disclosed. This, however, is of very small practical importance, since everything points to the conclusion that any paraffin wax of the same melting point and degree of ductility would have precisely the same effect (see p. 329). Strictly speaking, not a treatment, but a form of dressing, which is applied in the following fashion: The wax having been reduced to the consistency of water by heating it to about 80° Centigrade over a spirit lamp, is sprayed on to the burn until its surface is dulled, or, in other words, until its colour is obscured by the interposition of a fine delicate screen of wax. This first layer applied, the second is put on by means of a paint brush, the two layers together being about the thickness of ordinary blotting paper. The formation of the first pellicule is instantaneous, and that of the second is hardly less rapid. The completed pellicle is then covered by a very thin layer of cotton-wool, kept in place either by a bandage or a few dabs of wax. When the time comes to change the dressing one corner is raised and the whole dressing, wax pellicle and cotton-wool included, is gently rolled off. It comes away without any difficulty, since exudation from the wound has already ended the con-

tact between pellicle and wound surface. It is, in fact, mainly the amount of this exudation that regulates the frequency with which the dressing must be renewed. If the output of pus is considerable it begins to trickle out from under the edges of the dressing within twenty-four hours, and the latter, being now quite loose, must be replaced. If the quantity of exudation is small the interval between the dressings may be correspondingly longer. Whatever the interval, the surface of the wound is thoroughly cleansed before the fresh dressing is applied. In performing this cleansing the greatest care is taken to avoid injuring any granulations that may be forming. To this end the cleansing is effected by making a fluid flow over the wound surface. Usually plain boiled water is used for this purpose, but hydrogen peroxide may be added in early cases still presenting fragments of scarred tissue or unseparated sloughs. However exuberant the granulations may appear, nothing is done to repress them, for it is held that any interference with the granulations may lead to the formation of scar tissue. The first sign of the approaching transformation of the granulations into dermal tissue is commonly the appearance of a circular depression, an islet of epithelium becoming visible at its base a day or two later. Such depressions and islets may appear several inches away from the unharmed skin surrounding the burn. The primary and quite incontestable advantages of the treatment are two: it is agreeable to the patient because entirely painless; it is convenient to the surgeon because easily and quickly applied. As for its results, prolonged study would be necessary to determine how they compare with the "open" treatment which was recently use in the navy, but they appear certainly more satisfactory than those of treatments hitherto commonly used. All these cause a good deal of pain, are slow in effecting a cure, and often leave big cicatrices. This difference in result seems due to the fact that in paraffin treatment properly applied there is no injury of granulation tissue or other interference with Nature's own efforts to bring about a cure. It is an essential part of paraffin treatment that the first pellicle should be secured by

spraying on the wax from a heated container, for in this way any touching of unprotected granulations is avoided. It is possible that the treatment by paraffin spray would be found useful in dealing with ordinary ulcers, and in any case it is certain that the study of its application to raw surfaces is worth pursuing. It will be the easier to appreciate the results at the hospital at Issy because the progress of the cases there is habitually recorded by means of coloured photographs—*The British Medical Journal*, September 2, 1916.

Jeremy Bentham's "Auto-Icon."

The wishes expressed by Sir Victor Horsley in regard to the disposal of his remains will recall to many old University College men the will of the utilitarian philosopher, Jeremy Bentham, by which he directed that his body should be used for dissection. He entrusted to Dr. Southwood Smith, in conjunction with two other friends, the execution of this disposition. It was the fulfilment of a long cherished intention, for in 1769 he had made a will leaving his body to his friend Fordyce for the same purpose. In that document he explained the reason for his action as follows: "This my will and special request I make not out of affectation of singularity, but to the intent and with the desire that mankind may reap some small benefit by my decease, having hitherto had small opportunities to contribute thereto while living."* He died in 1832, at the age of 85, and by a memorandum affixed to the document two months before his death he deliberately confirmed the wish expressed when he was 21. In making this disposal of his body Bentham was inspired by the philanthropic wish to lessen the popular prejudice against dissection. At the time of his death the Anatomy Act had not yet been passed, and the crimes of Burke and Hare were fresh in the memory of the public. Dr. Southwood Smith delivered an oration over the body in the Webb Street School of Anatomy on the evening of

* *Dr. Southwood Smith: A Retrospect.* By his granddaughter, Mrs. C. L. Lewes, Edinburgh and London: William Blackwood and Sons. MDCCCXCVIII.

June 9th, 1832. One who was present thus described the occasion: "None who were present can ever forget that impressive scene. The room is small and circular, with no windows but a central skylight, and was filled, with the exception of a class of medical students and some eminent members of that profession, by friends, disciples, and admirers of the deceased philosopher, comprising many men celebrated for literacy talent, scientific research, and political activity. The corpse was on the table in the centre of the room, directly under the light, clothed in a nightdress, with only the head and hands exposed. There was no rigidity in the features, but an expression of placid dignity and benevolence. This was at times rendered almost vital by the reflection of the lightning playing over them; for a storm arose just as the lecturer commenced, and the profound silence in which he was listened to was broken, and only broken by loud peals of thunder which continued to roll at intervals throughout the delivery of his most appropriate and often affecting address." Among Bentham's unpublished works is a fragment, now in the British Museum, entitled *Auto Icon or the uses of the Dead to the Living*; the materials were arranged in December, 1831, but he added passages as late as May, 1832. The object of this curious essay is to show how, if embalmed, every man might be his own statue. Bentham says: "If a country gentleman have rows of trees leading to his dwelling, the auto-icons of his family might alternate with the trees; copal varnish would protect the face from the effects of rain—caoutchouc the habiliments." We do not know whether those who had charge of Bentham's remains found inspiration in this suggestion. At any rate his auto-icon in the form of his skeleton dressed in his habit as he lived is preserved in the Museum of University College.—*The British Medical Journal*, October 21, 1916.

Cancer and Hot Drinks.

That the habit of drinking hot fluids—coffee, tea, and soups—so common throughout the temperate zone is the main predisposing cause of cancer of the oesophagus and stomach is the opinion

of Dr. Lerche of St. Paul, Minnesota,* although he allows that alcohol and other irritating fluids may have the same effect. It seems clear that cancer of the oesophagus is extremely rare in animals and cancer of the stomach distinctly more frequent. These two local forms of malignant disease are alike rare in the natives of tropical and subtropical lands, and alike conspicuously frequent in certain countries temperate in climate and inhabited by so-called civilized man. Dr. Lerche lays stress on the fact that while cancer of the stomach occurs with almost equal frequency in both sexes, cancer of the oesophagus is much more frequent in males. The local effects of corrosive fluid, swallowed accidentally or for suicidal purposes, have long been familiar to pathologists. Cicatricial strictures develop along certain tracts in the oesophagus and stomach. Now Lerche maintains that clinical records agree in demonstrating how it is precisely these same tracts that are the usual seats of oesophageal and gastric cancer. A corrosive fluid passing along the course that all ingesta take in their descent along the alimentary canal burns the surface of the oesophagus and stomach at once, but hot drinks swallowed day after day for years irritate the same parts of the alimentary tract, just as the kangri basket full of burning charcoal irritates the skin of the abdomen of the Kashmir natives. Lerche ends with a less generally acceptable proposition. Cancer of the oesophagus is relatively rare in women because they drink more slowly and take smaller mouthfuls, which pass quickly downwards, sparing the oesophagus, while the less resistant mucosa of the stomach where the fluids come to a stop is more equally exposed in both sexes. Cancer of the stomach, Lerche notes, is almost equally frequent in both sexes.—*The British Medical Journal*, September 2, 1916.

* A contribution to the Etiology of Cancer of the Oesophagus of the stomach, *Surgery, Gynecology, and Obstetrics*, July, 1916, p. 42.

Gleanings from Contemporary Literature.

THE PLACE OF TEACHING IN HOMŒOPATHY.*

By JOHN MCLACHLAN, M.A. Oxon, B.C.L., M.D. Edin., F.R.C.S. Eng.

MR. CHAIRMAN, LADIES AND GENTLEMEN,

Since I received, some months ago, the invitation to give this lecture, I have been led to ponder much upon the principles by which I, in my small way, have, only half-consciously, perhaps, been living and working for many years. It is interesting to one's self to examine and recognise and arrange the ideas which have been slowly taking shape within one during the busy years of work. I shall be very glad if you too are interested as I try to recount them to you, and very thankful if you find in them any help or inspiration.

It is one of the privileges of the aged to be allowed to be reminiscent. I find no fault with the "privileges" but the "aged" I regret. Still, perhaps, you will allow me to give a few pages from my own experience. The late Professor David Masson used to draw a sharp distinction between Autobiographies and Reminiscences. In autobiography a man tells his own story and what he says about others merely defines his relations to them. In reminiscences, on the other hand, a man may to a considerable extent suppress himself. He may attempt merely to relate what he knows of distinguished personalities with whom he has come more or less in contact. But perhaps the distinction can hardly be so sharp as Professor Masson fancied. A man can hardly tell how other people affect him without telling at the same time a good deal about himself. So perhaps my remarks are more autobiographic than reminiscent.

In this country, at least till a few years ago, it has always been a difficult matter to gain a workable knowledge of Homœopathy. There were no schools, no lectures, and so we had just to do the best we could. In recent years, however, much has been done to remedy this grave defect, of which more anon. When first I was licensed to kill (or cure) I did not consider that I had sufficient knowledge to do either in a work-manlike manner, or as one might say, *secundum*

* The Introductory Lecture to the Educational Sessions, 1916-1917.

artem. For this reason I stayed on in Edinburgh studying and teaching for some five or six years longer. When at last I thought I might venture to inflict myself on a long-suffering public, I received my first knock-down blow—in other words I met Homœopathy face to face. Up till that time, I had merely heard the word mentioned now and again by some of our teachers, but always in a sneering or at any rate in a belittling sort of way. I even knew some men who were said to practise it; but I always tried to keep as far away from such as possible, looking upon them as medical degenerates, and as probably, if one could only see beneath the adventitious wrappings, possessing cloven hoofs and a tail, if not horns. I hope those who are still alive and remain will forgive me. In ignorance I did it.

It was as *locum tenens* to one of our men that I first met Homœopathy. Both duty and honour compelled me to do my very best, so far as the practice of Homœopathy was concerned, for the medical man whose *locum tenens* I was. I need not tell you how poor that best was, but the patients were very good, and I remember them to this day with gratitude. It was in Yorkshire, and that perhaps explains it, for the people there are wonderfully kindly. The great difficulty was that I had so little to guide me in the way of books. I still remember the intense pleasure and relief I experienced when I first got a copy of the late Dr. Richard Hughes' "Manual of Therapeutics." It was like a gleam of sunshine on a gloomy day, and I then felt I could do the work I had to do with some measure of success. Some years later Dr. Hughes and I did not quite see eye to eye about certain matters, but no one could regret more sincerely than I did, what seemed to us, his untimely decease. His "Manual" may or may not be the best way of presenting the science of homœopathic therapeutics, but to me, at that crisis, it was a veritable God-sent. I am glad to make this acknowledgment in justice to the memory of my old friend; for that incident of long ago, to me is still like the aroma of some withered favourite flower, that in an instant seems to roll back the years, and make one live over again some happy hour.

When the doctor, whose *locum tenens* I was, returned he was good enough to offer me a partnership on exceedingly favourable terms. It practically meant a moderate income at once, without any outlay on my part. Such a generous offer to one who, like myself,

was without a home and very little in the way of hard cash, was a great temptation. Nevertheless, on looking at the matter from all points of view, I conceived it my duty, much to my regret, to decline the generous offer, both for my friend's sake and my own. At times I have thought that I made a mistake in acting as I did on that occasion. But in one whose life seems to have been but a succession of mistakes it is perhaps scarcely worth while to single out one episode for special reprobation. De not imagine for an instant that I regard my embracing of Homœopathy as one of these mistakes. That is one of the few things in life that I am perfectly sure about. To one whose sole object and ideal in life, however imperfectly that ideal has been realised, was to heal the sick, there could not possibly be any other alternative. Whatever the results might be, I could do no other.

Soon after this, I came to London in order to try to get a workable knowledge of Homœopathy. I stayed at that excellent institution called Hampden House. There with great care I could manage to live for about a pound a week, though this meant that I must do without any regular evening meal. However, a small matter like that was no particular hardship to me. There day by day, in the excellent reading room of the Institution, I read and studied Farrington's "Clinical Meteria Medica" for the most part, also paying an occasional visit to our Hospital, especially on Saturdays, as on that day my old friend, Dr. Thomas Skinner, used to come for out-patients. At that time there were no lectures on Materia Medica or Therapeutics available, so that one had to do the best one could under the circumstances. Scotsmen, from time immemorial, have found difficulties in the persuit of knowledge. In the old days, many a Skye youth, bent on studying the humanities at Aberdeen, would mount his sheltie, traverse thereon the rough roads of his misty island so far as Kyleakin, cross the ferry there, ride on east through the ben-shadowed track of Glen Moriston, and finally bear down on the streets of the Granite City. There the overworked sheltie would be sold to pay the Matriculation fees.

This short outline gives you some idea of the methods one had to adopt in order to gain a more or less workable knowledge of Homœopathy, i.e., an amount of knowledge that ought to prevent one making "howlers" in one's practice, for after all that is all one can hope to attain in the first instance.

But this is all changed, now, and many of the difficulties have been removed. Considerable progress has been made in recent years in the development of facilities for education in homœopathic theory and practice by the Medical Staff of the London Homœopathic Hospital and by the British Homœopathic Association, so that the teaching of Homœopathy is now placed on a firm and substantial basis.

We have (1) *Honyman Gillespie Lectureship in Medicine.*

After a considerable fight (if I remember rightly) but a fight to a successful finish, the Honyman-Gillespie Lectureships were established by the Trustees of the late Mrs. Elizabeth Honyman-Gillespie of Edinburgh, in co-operation with the Board of Management of the London Homœopathic Hospital, in accordance with the terms of a Trust for the purpose of founding, or contributing to found, a new School of Medicine, which shall embrace, as well as ordinary medical studies, the teaching of Homœopathy, and other new and useful medical studies. These lecture-ships include two courses of lectures for the systematic teaching of Homœopathy. The first course is on *Materia Medica*, the second course on *Therapeutics*, these latter being supplemented by Clinical Demonstrations. I believe each course consists of some thirty lectures and demonstrations. The extent and scope of these lectures are fully set forth in the pamphlet which gives an account of the Education Facilities for the *Annus Medicus* now beginning.

We have *(2) The Compton-Burnett Professorship of Homœopathic Practice.*.

This Professorship has been founded in commemoration of the life and work of the late Dr. James Compton Burnett, who was a pioneer in the use of *nosodes* in the treatment of disease. The course consists of, I believe, some ten lectures. These lectures deal with homœopathic prescribing, special attention baing given to the selection of the remedy, the study of the case subsequent to its administration, and the repetition of the medicine. The varied details of homœopathic philosophy will also be dealt with, and, as far as possible, illustrated by clinical cases.

All the lectureships, I am glad to say, are in very capable hands. Dr. Goldsbrough takes Therapeutics, while Dr. Wheeler has the Materia Medica course, and Dr. John Weir holds the Burnett Pro-

fessorship. It will be observed that all the lectures have a very direct bearing on, in fact are entirely concerned with, therapeutics, and the necessary knowledge of Meteria Medica which that implies, for in this point alone do we differ from the other school. I have always regretted that I did not have the pleasure of personally knowing Dr. Compton Burnett. He seemed to me to be a man apart, not easy to become acquainted with, a pioneer, who perhaps at times did not scruple to fling aside stereotyped methods of practice. Such men are apt to be looked upon, by some, with suspicion and distrust, for the simple reason that they are not understood. It has been like this from the beginning of time, and I suppose it will be so to its end. The unvarying sameness of the methods adopted under similar circumstances from age to age towards the unorthodox is one of the marvels of history and only emphasises the fact that human nature is unchanged and unchangeable. Truly, there is no new thing under the sun. "You do not do as we do," say they, "and therefore you are not one of us." "Teacher, we saw a man casting out devils in Thy name and we forbade him, *because he followeth not us.*" The fiery-tempered brother bigots got a marvellously appropriate rebuke from, to adopt Dekker's designation, "the first true gentleman that ever breathed." It is the same to-day. You do not follow us, you do not use our methods and therefore we forbid you to heal the sick. In replying to such let us never forget to be gentlemen. I am afraid that we are all apt at times to let our anger rise (we call it righteous indignation) when we are misunderstood and unjustly misrepresented. But don't let us call down fire from heaven when people will not take us at our own valuation, nor even believe us for our works' sake. Further, let us never forget that the application of the principle, *similia similibus*, is extremely varied and susceptible of almost endless and unlimited variations and development and that too along the lines laid down by Hahnemann.

This great principle is like Truth: *not* the Truth represented by a plane piece of glass with merely *two* sides: not even like a finely facetted sphere reflecting rays of light from each facet: but like a true sphere, smooth and polished which reflects rays from *every point* of its surface; and "point" here means the geometrical point—that which has position, but not length, breadth, or thickness. But no human being can possibly catch the rays from every point of such a

surface at once; therefore, do not let us look askance at one another when, perhaps, what we may regard as some startling innovation is forthcoming. It is true, alas! that such a spirit of toleration has not always ruled in the past (and I regret to say not even altogether in the present) either in theology or in medicine.

It is a curious and most singular fact, whereto the history of both religion and medicine bears abundant and deplorable witness, that quarrels are ever bitterest where differences are least and the grounds of toleration most ample. Witness the official hatred of Homœopathy by the members of the other school. Indeed the hatred of it is worse than that of full-blown quackery, whose professors possess no medical degree of any kind. Yet we did not separate ourselves from the Old School, but they repudiated, and do still repudiate, us, though to reasonable minds surely the grounds of toleration are most ample in every way.

How then, can we best spread the knowledge of Homœopathy? The great obstacle to its spread and acceptance is ignorance. How are we to combat this ignorance? One thing is quite certain, that if everyone knew what Homœopathy is and what it can do there would be no trouble about its spreading. I doubt if we can expect great results from public lectures and besides they are apt to give occasion to the enemy to blaspheme. Nor can we all hope for "a place in the sun" and lecture to crowds of admiring students. Perhaps it is just as well, for the days of preaching are, I trust, nearly over—even for women. The world is more than weary of it. But although there fs no room for preaching, there is an urgent demand for teaching—not crowds, but individuals.

In the later days of Greece, under the lame and laconic king Agesilaus, when Sparta was predominant, there lived two famous men. Their names were Socrates and Plato. Socrates was a native of Athens, and began life as a sculptor, and served the State with great credit as a soldier. He was hardy, wore only the lightest of clothes, and went barefoot summer and winter. In time he became known as one of the wisest men and deepest of thinkers who have ever lived. He did not write books or teach in a school, like other philosophers, but (and this is the point) he mixed familiarly with the common people and discussed with them all things human and divine. Like most great men he made many enemies and at last they were able to

bring him to trial on a false charge, and get him condemned to death. He accepted his fate with calmness, and drank the cup of hemlock juice without a murmur or any sign of hesitation. Had it not been for his devoted pupil Plato, who carried on his work, in a plane-tree grove at Athens, and wrote many books, we should have known but little of this great and good man, for the central figure of all Plato's writings is his master Socrates.

It is curious how like in their methods of teaching are the two men—the Carpenter of Nazareth and Socrates. No hankering after great crowds, but each content to talk to all who were willing to hear. Neither so far as we know wrote anything, so that in both cases we have to thank devoted followers for an account of the doings and for a report of the sayings. Let these methods be our model: we can attain to no higher. We have all some confiding patients, and surely some of them will be glad to be taught, though many will not trouble and will not care. To those who are "keen" I have always made it a point to tell them all I know or at any rate as much as they could be expected to understand without special training. I avoid scientific jargon and talk in a language they can understand. We must never forget that in a very real sense he who teaches is himself taught, I think I hear someone say, "That is all very fine, but if one teaches one's patients too much, the patients will soon learn to do without the teacher. Further, suppose patients are at some distance from the doctor, there is a big chance that they will call in the nearest allopath, in case of illness, to give them his diagnosis and then they will treat the patient homœopathically themselves." All this is quite true and there is even a more serious danger, and that is that the energetic layman may think he knows enough for anything, and go on treating till the case goes from bad to worse and may ultimately become quite hopeless. Nevertheless, though I freely admit all these objections and have suffered from them, I still think this method is the best. It is like sowing seed; some may fall by the wayside, or on the rock, or among thorns; but some *will* fall into good ground and bear fruit for generations yet to come. But we ourselves must be faithful and honest: our words and works must agree. Disappointments and unkindnesses both from friend and foe we must be prepared for; for such are sure to come some time or other, and often too from a quarter we least expected. At such times, when weary and disheartened, we are inclined to cry

with the poor old patriarch Jacob, when about to be (as he thought) deprived for ever of his beloved baby, Benjamin, "All these things are against me." But let us rather doggedly stand by our guns, and take up the cry of the great apostle of the Gentiles—"None of these things move me." But to do so we must be like him, not merely possess an idea, we must be possessed by an idea which is quite a different matter.

I think the method I have advised must have been that used by the old stalwarts of Homœopathy—"the boys of the old brigade." I have often been surprised at the accuracy of the knowledge possessed by some old patient, dating from the "globule" days; a knowledge, too, one could easily see not derived from the usual ruck of domestic works on Homœopathy. The advocacy of this method is a plea for individual effort—that each of us should do our bit. Further, we may rightly expect that patients who are homœopaths will be much more intelligent than the ordinary rank and file of allopathic patients. In carrying out the method we shall, in effect, be adopting a policy of "peaceful penetration"—a policy the least likely to court active opposition.

But we must exercise a wise discretion in the knowledge we impart. It would be quite useless to tell patients about the more abstruse facts of anatomy and physiology, for such they could not be expected to understand. It would be equally useless, as well as unwise, to tell a patient who comes to consult me regarding a discharge that drops from the back of the nose into the throat, along with earache and deepseated pain behind the eyes, that it probably means disease of the sphenoidal sinuses, and that this is apt to affect the interior of the skull, setting up meningitis, thrombosis of the cavernous sinus, and cerebral abscess, and that such a condition is often due to the pneumococcus, the micro-organism so often present in pneumonia.

One thing is quite certain, that it is not all loss to teach patients to understand the meaning of symptoms, for depend upon it, the more a patient knows, the less likely he is to trust to his own devices and the more likely he is to call in a medical man as soon as he possibly can. It is the knowledge to know when to do this that he needs.

It is said that everyone should know enough of law to keep out of it; and so our patients should know enough of the signs of disease and their meaning to avoid any attempts to treat serious cases, or only "till the doctor comes."

There is an unreasoning fear of a "temperature," and most patients fly at once to *Aconite*. But to do so, in many cases, is quite wrong. I always teach my patients not to trouble about the temperature, that it is merely a symptom among other symptoms, and that within common-sense limits the higher the temperature the better. The temperature is merely the heat of the conflict between the powers that make for life and health and the powers that make for death. Forcibly to lower temperature, by any means, is to play into the hands of the enemy, and instead of helping hinders recovery. I do not mean that a patient with a temperature should be ignored; far from it, but the temperature should be ignored and the patient treated, the temperature being allowed to look after itself. If a person with some serious microbic infection has no temperature, that means that the body has ceased to fight and has succumbed to the poison, and the end thereof is death.

Witness, for example, those septic cases, surgical or otherwise, where the temperature has fallen to normal, but *pari passu*, with the fall of temperature, the pulse keeps mounting up. This state of affairs, so far as I know, only means one thing—that the patient is going to die. Again, a child with a high temperature and rapid pulse, probably means—jam: but a high temperature with a slow and irregular pulse probably means brain trouble, *e.g.*, tubercular meningitis.

Patients are apt to neglect little things (doctors too, sometimes) as of no importance, *e.g.*, night terrors and nervousness in children may be due to adenoids, or be the "home signals" of chorea, this latter being often associated with a tubercular tendency. Mothers should be taught to observe and to record their observations to the doctor, as he cannot be always on the spot. I always encourage patients to give me their own views of an illness or its cause. Never despise a patient's or lay attendant's views, even though they may not agree with one's own, nay, may be even diametrically opposed to it. The day has gone past, I trust, when patients looked upon their doctor as a little god, and every word of his was to be accepted and

acted on without question or criticism. I do not want to be looked upon as a god, but as a friend and brother in adversity. It is a great mistake to adopt the high and mighty Pharisaical attitude, and say in effect—"As for these people who know not medicine they are cursed." Mother can do so much to help the doctor if they are trained to watch and record, and they can do it far better than we can, as on the doctor's visit the little sufferer may either brighten up or be unduly frightened and deceive us. I see no reason why we should not tell mothers what to look for, *e.g.*, the contracted and wrinkled brow of brain trouble; the sharpness of the nostrils and disordered breathing of chest trouble: and the drawing of the upper lip of abdominal disorder. Again, great irritability in children is often put down to "original sin" when probably it is the prodrome of rheumatism or meningitis, and along with the irritability there may be night terrors and nervousness. In the adult irritability may be a sign of diabetes, chronic nephritis with hyperpiesis, the early stage of general paralysis of the insane, or alas! be a symptom of most un-original sin. Then again, continuous crying that nothing can pacify is often put down to bad temper in infants and young children, but is far more likely to be due to the cutting of an eye, tooth, or earache; in the latter case, the child will probably roll the head from side to side and pull at the ear of the painful side.

Another condition that ought to be always very carefully investigated is when a child does not like to be touched. This may arise from many conditions, but early rickets, syphilitic periostitis, osteochondritis, trauma, *e.g.*, a fractured collar-bone, and infantile scurvy are the chief. Again, mothers should be warned as to the real meaning of frequent attacks of tonsillitis, and of chorea, and their possible relation to endocarditis.

Before closing, I wonder if the lectures themselves will suffer a word of exhortation!

(1) Don't overload your lectures with "strong meat," and don't expect your hearers to assimilate too many facts at once. That is a mistake the enthusiastic lecturer is very apt to make and thereby to lessen the usefulness of the lecture. Too concentrated food is not good either for stomach or brain. The stomach wants *bulk* even though some of it is quite useless for the purpose of nutrition. It is the same with the mental digestion. It is not what is put in but

what is assimilated that makes body or mind grow. Few acts are more injudicious, more unkind or more destructive than that of "overloading" one's lectures. "The last straw" will break the back of the kneenest of students not alone of a camel.

(2) It is necessary to be dogmatic and definite, even though you may have some mental reservations on the subject when teaching beginners. With men well up in their work it may be different.

(3) All Materia Medica lectures should be largely comparative. I have sometimes thought that the lectures of Dr. Kent—whose death we all deplore—might have been a little more comparative than they are with advantage.

(4) In illustrating your lectures do not lay too much stress upon, or use too often, the semi-miraculous examples of the action of medicines you may have known. Such are very useful to us personally, but I think should be used very sparingly as illustration, lest a wrong impression be conveyed to the hearers at the outset of their study. A word of caution here: before giving the credit to the medicine for the apparently marvellous result, first make sure that the patient has taken it. The pleased medicine man says, "Ah! I thought *that* medicine would soon put you right," while the patient innocently remarks, "But, Doctor, I have never been "had" in this way myself but I like to be cautious.

(5) Do not be afraid to mention the need for a repertory, explaining what it really means, and how to use it. It is quite impossible for a human memory to remember something like a quarter of a milllion necessary points about our meteria Medica. Other sciences have to adopt similar devices. Take the science of Botany. The known species of plants are something like 100,000; even the genera are above 6,000, and these are still far too numerous to study without further arrangement, and so we have the Natural Orders, of which there are about 200.

I myself am very fond of wild flowers, but not quite in the spirit of Peter Bell—

> "A primrose by the river's brim,
> A yellow primrose was to him,
> And it was nothing more."

Nor yet, I trust in that of an acquaintance described by La Bruyere, who was swept off his feet by the seventeenth century craze for tulips. "God and Nature," says La Bruyere, "are not in his thoughts, for they do not go beyond the bulb of his tulip, which he would not sell for a thousand pounds, though he will give it you for nothing when tulips are no longer the fashion and carnations are all the rage. This rational being, who has a soul and professes some religion, comes home tried and half-starved, but very pleased with his day's work. He has seen some tulips."

Now I make no claim to such enthusiasm, nevertheless I am not satisfied unless I can place the flowers in their proper natural order, and still further indicate the genus and name the species and variety. For this purpose we must have some sort of analytical key. Such a key is necessarily artificial, just like our repertories, and it is solely intended to assist us in finding out the name of the plant and its place in the system, like the letters of an alphabet in an index. To take an example—we will suppose we have an unknown flower to examine and identify :—

1. The perianth is double, *i.e.*, the floral envelopes consists of a calyx and corolla.
2. The corolla consists of several distinct petals.
3. The ovary is free, within or above the petals.
4. The ovary is solitary (simple or compound).
5. The corolla is regular, the petals being equal and similar to each other.
6. The stamens are fewer than ten.
7. The leaves are alternate, or radical or none.
8. It is a herb, not a tree or a shrub.
9. The petals are four.
10. The stamens are six, of which two are shorter than the others.

The plant in question, therefore, must belong to the natural order Cruciferæ.

In this particular case we might have used the "key-note" method, when the four petals and the six stamens of which four are

long and two are short, would tell us at once what we want to know. But our plant is not yet identified by any means. We have only found the natural order. The eight tribes of this order must now be examined, these comprise twenty-seven genera, which in turn represent sixty-six species at least. But for this purpose, we must consult a treatise on Systematic Botany, just as we must consult our Materia Medica when the Repertory has enabled us to limit the likely remedies for any particular case to a few medicines, or perhaps to one only.

I am afraid, Mr. Chairman, Ladies and Gentlemen, you will be tempted to pass a somewhat similar criticism on this lecture, to that of an old Scotch lady, who, when asked how she liked the prayer of the new minister, replied: "He gave the Almighty a deal of miscellaneous information." Be that as it may, I thank you for the patience with which you have listened to me and trust that I have not taxed that patience too much.—*The Homœopathic World*, November 1, 1916.