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THE

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OF

MEDICINE:

A MONTHLY RECORD OF THE MEDICAL AND AUXILIARY SCIENCES.

तदेव युक्तं भैषज्यं यदारोग्याय कल्पते।
सचैव भिषजां श्रेष्ठो रोगेभ्यो यः प्रमोचयेत्॥
चरकसंहिता।

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

VOL. XXV.

Calcutta:

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SANITATION OF CALCUTTA.

I.

According to Captain Hamilton, it was Job Charnock who selected the site that has developed into the Capital of the British Empire in the East. The attraction the place possessed was "a large shady tree," although, in other respects, as Captain Hamilton adds, "he could not have chosen a more unhealthy place on all the river." In Pinkerton's Voyages and Travels, there is an account of the city given by Captain Alexander Hamilton who visited India between the years 1688 and 1733. The Captain says:

"One year I was there, and there were reckoned in August about twelve hundred English, some military, some servants of the Company, some private merchants residing in the town, and some seamen belonging to the shipping lying at the town, and before the beginning of January there were four hundred and sixty burials registered in the clerk's book of Mortality."

Mr. Ranald Martin in the Topography of Calcutta added the following remarks:

"In more recent times it was the custom of the European inhabitants of Calcutta to meet on the 15th of December of each year to congratulate each other on their escape from the period so emphatically marked by Captain Hamilton; but though this is no longer considered necessary on account of the insalubrity of the place, still I think it will not be difficult to shew that we are far indeed

from having effected for our 'emporium' all that might, or ought to have been done for it."

Again,

"In Calcutta we have no longer such terrible epidemicks as those of 1757 with its cold stage of 12 hours, and that of 1762 which carried off 50,000 Blacks and 800 Europeans . . . . . Stavorinus speaking of the sort of sickness and fever which prevailed among the inhabitants of Calcutta during his visits (1768-71) says that it generally sweeps away those who are attacked by it in the space of three days. . . . . Of Major Kilpatrick's force of 240 men stationed at Fultah, not 30 of the whole detatchment, according to Mr. Ives, were left alive between August and December, 1756, by one of these epidemicks. The same authority adds that the number of men buried in Bengal amounted to more than half of all who died in the several hospitals in India during the whole term of General Watson's command, a period of three years and one month. . . . . Dr. Bogue, who also served in Watson's Fleet, says that out of three ships of the line and a twenty gun ship, and those not fully manned, they lost in six months upwards of 200 men, most of whom died of these fevers; so much worse was the climate of Bengal in those times than that of any other part in our Eastern possessions."

The reputation of the town as regards mortality was so well that it was called by the name of Golgotha or the City of Skulls.

The Rev. James Long writes in his Hand Book of Bengal Missions that the town was reclaimed from swamps. The curious fact is the selection of the site of Calcutta, the future capital of India, in a swampy land by Job Charnock. It was so with St. Petersburgh.

According to a writer in the Calcutta Review "Job Charnock landed at Sutanati (now Hatkhola) on the 20th December 1686." It was Christmas season and he spent his Christmas there. Forced to leave Hugli he came to Sutanati, which with Gobindapur and Kalikata, "formed the swampy fever-stricken nucleus from which the present splendid city of Calcutta has, as if magic, spread." Calcutta was then a city of huts—"the factors and soldiers lived in huts until they could provide proper habitations." In 1698, Sir John Goldsborough, the Com-

missary General and Chief Governor of the Company's Settlements says: "No body knew where or how to build, but every one built, traggingly where and how they pleased and there dug holes and tanks that will cost the Company money to fill up again."

Notwithstanding these disadvantages, the site was selected, the city founded and it is now a city of palaces. There is no monument to Charnock in this city, except the mausoleum, said to be the oldest piece of masonry in Calcutta, in St. John's Church yard, in which he lies buried. The Municipal Commissioners have named a part of an old street, Charnock's Place. No man of war, but of peace, he thoroughly identified himself with the place of his choice, and married a Hindu widow, whom he had rescued from the pyre of her dead husband. For then were the days when Hindu widows burnt themselves alive with their departed lords. A reference to this incident is to be found, as said by the same writer, whom we have quoted from the Calcutta Review but which is not recorded in Holmes and Co.'s "Bengal Obituary," in another epitaph in the same Church yard, on the tomb of Joseph Townsend:

"Shoulder to shoulder, Joe my boy,—in to the crowd like a wedge!
Out with your hangers, mess mates, but do not strike with the edge!"
Cries Charnock—"Scatter the faggots! Double that Bramhan in two!
The tall pale widow is mine, Joe—the little brown girl's for you."
Young Joe (you're nearing sixty), why is your hide so dark?
Katie was fair with blue eyes—who blackened yours?—why, hark!
The morning gun!—Ho! steady—The arquebuse to me.
I've sounded the Dutch High Admiral's heart, as my lead doth sound the sea.
Sounding, sounding, the Ganges—floating down with the tide.
Moor me close by Charnock, next to my nut brown bride,
My blessing to Kate at Fairlight—Holwell, my thanks to you,
Steady!—We steer for Heaven through scud-drifts cold and blue.

So far with Charnock. We come to the Minute of the Marquis of Wellesley, Governor-General of India, dated the 16th June 1803. It is as follows :—

The increasing extent and population of Calcutta, the Capital of the British Empire in India, and the seat of the supreme authority require the serious attention of government. It is now become absolutely necessary to provide permanent means of promoting the health, the comfort, and the convenience of the numerous inhabitants of the great Town.

The construction of the Public Drains and Water-courses of the Town is extremely defective. The Drains and Water-courses in their present state neither answer the purpose of cleansing the Town, nor of discharging the annual inundations occasioned by the rise of the River, or by the excessive fall of rain during the South West monsoon. During the last week, a great part of this Town has remained under water, and the Drains have been so offensive, that unless early measures be adopted for the purpose of improving their construction, the health of the inhabitants of Calcutta, both European and Native must be seriously affected.

The defects of the climate of Calcutta during the latter part of the rainy seasons may indeed be ascribed in a great measure to the state of the Drains and Water-courses, and to the stagnant water remaining in the Town and its vicinity.

The health of the Town would certainly be considerably improved by an improvement of the mode of draining and cleansing the Streets, Roads, and Esplanade. An opinion is generally entertained, that an original error has been committed in Draining the Town towards the River Hooghly. And it is believed, that the level of the country inclines towards the Salt-water Lake, and, consequently, that the principal channels of the Public Drains and Water-courses ought to be conducted in that direction.

Experience has manifested, that during the rainy season, when the river has attained its utmost height, the present drains become useless; at that season the rain continues to stagnate for many weeks, in every part of the Town, and the result necessarily endangers the lives of all Europeans residing in the Town, and greatly affects our Native subjects.

Other points connected with the preservation of the health of the inhabitants of this Capital, appear also to require immediate notice. No general regulations at present exist, with respect to the situation of the public markets, or of the places appropriated to the slaughter of cattle, the exposure of meat, or the burial of the dead. Places destined to these purposes must necessarily increase in number with the increasing population of Calcutta. They must be nuisances, wherever they may be situated, and it becomes an important branch of the Police, to confine all such nuisances to the situations wherein they may prove least injurious and least offensive. It must, however, have been generally remarked, that places of burial have been established in situations wherein they must prove both injurious and offensive; and Bazars, Slaughter houses, and Markets of meat now exist in the most frequented parts of the Town.

In those quarters of the Town, occupied principally by the native inhabitants, the houses have been built without order or regularity, and the streets and lanes have been formed without attention to the health, convenience, or safety of the inhabitants. The frequency of Fires, by which many valuable lives have been annually lost, and property to a great extent has been destroyed, must be chiefly ascribed to this cause.

It is a primary duty of Government to provide for the health, safety and convenience of the inhabitants of this great Town, by establishing a comprehensive system for the improvement of the Roads, Streets, Public Drains, and Water-courses, and by fixing permanent rules for the construction and distribution of the Houses and Public Edifices, and for the regulation of nuisances of every description.

The appearance and beauty of the Town are inseparably connected with the health, safety, and convenience of the inhabitants; and every improvement, which shall introduce a greater degree of order symmetry, and magnificence in the Streets, Roads, Ghauts and Wharfs, Public edifices and private habitations will tend to ameliorate the climate, and to promote and secure every object of a just and salutary system of Police.

These observations are entirely compatible with a due sense of the activity, diligence, and ability of the present Magistrates of

Calcutta, by whose exertions, considerable improvements have been made in the general Police of the Town. The Governor-General in Council has frequently expressed his approbation of the conduct and services of the present Magistrates of Calcutta, who have zealously and judicially employed every effort, within their power, to mitigate the effects of the evils described in this Minute. But the Magistrates of Calcutta must be sensible, that the establishment of a more comprehensive system of permanent regulations is indispensably necessary for the purpose of securing to the Town the full benefit of the laudable services of the officers, to whom the administration of the Police has been entrusted by Government.

With these views, the Governor General proposes that the undermentioned gentlemen be appointed a Committee to consider and report to His Excellency in Council the means of improving the Town of Calcutta.

(Here follows a list of the Committee).

The Governor General further proposes, that the following special instructions be issued to the Committee.

1st.—To take the level of the Town of Calcutta and the adjacent country, and ascertain and report what alteration may be necessary in the direction of the Public Drains and Water courses.

2ndly.—To examine the relative level of the river during the rainy season, compared with the level of the Drains and Water courses.

3rdly.—To suggest what description of Drains or Water courses may be best calculated, (1) to prevent the stagnation of rain water in Calcutta and the vicinity thereof, and (2) to cleanse the Town.

4thly.—To consider and report what establishment may be necessary for cleansing the drains and water courses, and for keeping them in constant repair.

5thly.—To take into consideration the present state of all the places of interment in the vicinity of Calcutta, and to propose an arrangement for the future regulation of those places, in such manner as shall appear to be best calculated for the preservation of the health of the inhabitants of Calcutta and its vicinity.

6thly.—To examine the present state and condition of the Bazars and Markets for meat and of the Slaughter houses in Calcutta, and

to propose such rules and orders as shall appear to the Committee to be proper, for the regulation of those already established, for the removal of such as may have actually become nuisances, and for the establishment of New Markets or Slaughter houses hereafter.

7thly.—To enquire into all existing nuisances in the Town and vicinity of Calcutta, and to propose the means of removing them.

8thly.—To examine and report, for the consideration of Government, the situations best calculated for opening new Streets and Roads, leading from East to West, from the new Circular Road to Chowringhee and to the River, and from North to South, in a direction nearly parallel with the new Road.

9thly.—To suggest such other plans and regulations, as shall appear to the Committee, to be calculated to promote the health, convenience, and comfort of the inhabitants of Calcutta, and to improve the appearance of the Town and its vicinity.

10thly.—To form and submit to the Governor-General in Council, an estimate of the expense required to complete all such improvements, as may be proposed by the Committee.

The means of raising the necessary funds for the purpose of defraying the expense, which must attend the execution of the important improvements suggested in this Minute, will claim the early and deliberate consideration of Government. The Governor-General in Council entertains no doubt that those Funds may be raised without subjecting the Hon'ble Company to any considerable expense, and without imposing a heavy tax on the inhabitants of Calcutta; it will certainly be the duty of Government to contribute, in a just proportion, to any expense which may be requisite for the purpose of completing the improvements of the Town.

Fort William, June 16th, 1803. (Sd.) WELLESLEY.

The Committee appointed for consideration of the two recommendations on that behalf consisted of Major-General Fraser, Major-General Cameron, Mr. P. Speke, Mr. T. Graham, Mr. W. A. Brooke, Mr. J. Taylor, Mr. R. C. Birch, Colonel Pringle, Mr. Davis, Mr. G. Dowdeswell, Lieutenant Colonel Harcourt, Captain Shawe, Lieutenant Colonel Garstin, Mr. T. Dashwood, Mr. H. Tucker, Mr. W. Fairlie, Mr. A. Colvin, Mr. D. Ross, Mr. J. Alexander, Major R. Colebrooke, Captain

Wyatt, Captain Anbury, Captain Preston, Captain Blunt, Captain Sydenham, Mr. C. F. Martin, Mr. C. W. Blaquiere, Mr. E. Thornton, Mr. A. Macklew and R. Blechynden.

These gentlemen were informed of their appointment by the Chief Secretary, Mr. J. Lumsden, on the day in which the resolution was drafted. Captain James Blunt, of the Engineers was ordered to officiate as Secretary and Mr. Tiretta as clerk. This notification was issued from the Council Chamber, Fort William.

Before this another committee had been formed, but why they were superseded can not be traced. A third Committee was subsequently appointed:

"The Governor-General in Council is pleased to appoint the following gentlemen to be a Committee to consider and report on the means of improving the Town of Calcutta:—

Major General Cameron, P. Speke, Esq., T. Graham, Esq., J. Taylor, Esq., R. C. Birch, Esq., S. Davis, Esq., G. Dowdeswell, Esq., Captain James Armstrong, Major Shawe, Lt.-Col. Garstin, Thomas Dashwood, Esq., Henry St. George Tucker, Esq., W. Fairlie, Esq., A. Colvin, Esq., James Alexander, Esq., Lt.-Col. Colebrooke, Captain Thomas Anbury, Lt. B. Sydenham, C. F. Martyn, Esq., W. C. Blaquiere, Esq., E. Thornton, Esq., Alexander Russel, Esq., John Shoolbred, Esq., the Rev. Mr. Brown, the Rev. Mr. Buchanan, Lt.-Col. Mercer, R. P. Smith, Esq., H. T. Colebroke, Esq., Col. Green, M. G. Prendergast, Esq., and R. Blechynden, Esq.

Ordered, that the Committee be informed that the general objects to which their attention is to be directed will be notified to them forthwith, as well as their place where Meetings are to be held, and that his Excellency in Council in the meantime desires they will immediately obtain such information as can be procured with respect to the causes of the late destructive fires in Calcutta, and suggest, for the consideration and orders of Government, such measures as shall appear to them to be best calculated to guard the Town from the recurrence of this calamity at any future period.

Ordered that the Committee be also informed that Mr. Prendergast is appointed to officiate as their Secretary.—Criminal. 2nd June 1804"

On 4th July 1804, a few gentlemen of this Committee submitted a brief report. In it they stated:

"That the houses be constructed in straight lines, or nearly as straight as may be practicable, leading from East to West, with streets or passages running North and South, at the distance of 150 or 200 feet from each other.

That tanks or wells, as shall appear most convenient on local examination, be dug in the different wards of the Town. That a fire engine be established in the principal wards, or at such other places as shall appear to be most convenient for affording assistance in cases of fire.

In consequence of the present singular and ill-judged construction of most of the houses and buildings of the Natives, they are extremely difficult of access at any time, and on the occasion of fires the narrow passages become destroyed either by the fall of some of the buildings, or by the populace themselves, so that individuals frequently find it impracticable to escape from the flames.

The question above stated of digging tanks and wells at convenient places in or near the different wards, is obviously calculated to facilitate and expedite the extinction of flames, particularly when aided by the Fire Engine, which we have also proposed should be established at convenient places. The earth which may be excavated from the tanks would likewise be of essential use in filling up the inequalities of the ground. The Natives would also, by these means, be furnished with pure and wholesome water.

In the progress of our enquiry, it has been suggested to us that it would be expedient to encourage the erection of houses with tiled instead of straw roofs, by a remission on the former, of the tax on the houses, or of the ground rent, or of both. We were sensible of the advantages which tiled roofs possess over straw choppers, and should be happy to suggest any means calculated to promote the most general use of the former, consistent with the pecuniary circumstances of the lower order of the Natives.

We do not, however, conceive that the end proposed could in any degree be attained by the remission of the Land Tax, or the Assessment on Houses. On a reference to the Collector of Calcutta, it appears that the aggregate amount of the Tax on the ground

occupied by all the tiled and straw houses throughout Calcutta, i only sicca Rupees 7,346-13-4 per annum.

Immediately connected with the improvements above mentioned is a measure which appears to be highly desirable, and to which our attention has been directed by your Excellency in Council. We mean that of opening new streets with a view of facilitating the communication between the different parts of the Town, of affording a more free circulation of air in the populous quarters—and, finally, of improving draining of Calcutta.

We take the liberty to suggest that the proper offices be directed to take necessary measures, as soon as circumstances will admit, for purchasing, on account of Government, the ground requisite for opening the streets or passages through the different wards in that quarter of the Town, to which these remarks allude (in such cases as it shall appear to be necessary, to make purchases on that account) and likewise for obtaining the ground required for the tanks and wells proposed to be dug.

The quarters of the town lying to the South of Durrumtollah having suffered more than others from the effects of the late fires, we do ourselves the honour of transmitting to your Excellency in Council a plan of that part of the city. The houses there have in a great measure been destroyed, which circumstance induces us to recommend that the projected improvements be in the first instance, carried into effect in that quarter."

These recommendations relate to improvements to be effected for extinguishing fires in the town, but they also have other purposes. The report was signed by W. N. Cameron, C. Green, H. Colebrooke, G. Dowdeswell, R. H. Colebrooke, Thos. Anbury, Thos. Preston, A. Russel, C. F. Martyn, E. Thornton, W. C. Blaquiere, R. Blechynden and M. G. Prendergast.

The special Committee met twice at Major-General Cameron's quarters in Fort William, on the 11th and 25th June respectively. This was attended by Major-General Cameron, the Rev. Mr. Brown, Captain Anbury, W. C. Blaquiere, J. J. B. Proby and R. Blechynden.

On July 24th 1804, the Chief Secretary, Mr. John Lumsden, wrote a letter to Major-General Cameron and the Committee.

It went over the arguments and came to the following conclusion :—

1. It is desirable to open roads on the South of the Durrumtollah street.

2. The Governor-General in Council wished the Committee to enquire the best means of draining the town.

3. The creation of small avenues and the digging of tanks though necessary yet the considerable expenditure is in their way. But something can be done for the construction of roads, digging of tanks, and sinking of wells in convenient places. The necessary ground is to be purchased by the Government.

4. Fire engines with small establishment shall be maintained in each ward.

5. Houses thatched with straw form more convenient accommodation than houses with tiled roofs, the option is left to the inhabitants to construct them. The Magistrates of Calcutta can adopt any arrangement for the extinction of accidental fires.

On the 30th July 1804, the Committtee consisting of W. N. Cameron, C. Buchanan, C. Green, J. Taylor, R. H. Colebrooke, J. Shoolbred, D. Brown, G. Dowdeswell, T. Preston, T. Graham Marricke Shawe, T. Anbury, W. C. Blaquiere, E. Thornton, Alexander Russell, W. Fairlie, R. Blechynden, J. J. B. Proby, T. Colebrooke, J. Alexander, H. St. G. Tucker, T. Dashwood, S. Davis, C. F. Martyn, and M. G. Prendergast, submitted a report which contained the recommendations, forwarded to them by the Special Committee as well as of their own.

1. The assessment to be raised on houses which may carry a rent of one rupee per mensem, from 5 to 7½ per cent.

2. The surplus revenue of Tolly's Nullah be applied for town improvement.

3. The fees collected by the Magistrates be appointed for the same purpose.

4. The surplus revenue of markets be applied.

5. The surplus receipts of the Court of Requests be given.

6. An annual lottery be established for the same purpose under proper management and control.

On the above recommendations of the Sub-Committee the Committee added :—

1. The increase of assessment is justifiable by the Act of Parliament passed in the 32nd year of His Majesty's reign (King William the Fourth). But the expenditure is restricted to the cleansing, watching and repairing of streets.

2. For the lottery they said that " We are aware of the objections which are usually urged against raising supplies in that way, but whatever force those objections may have in other countries, it does not appear to us that any ill consequences are likely to result from the establishment of a Lottery in India. The habits and confined means of the lower orders of the Natives, effectually exclude them from any participation in a Lottery conducted on a large scale. Even in England the evil does not arise so much from the purchase of tickets as from the Offices which are opened for ensuring them which would of course be entirely prevented in this country.

At all events, if Lotteries be necessarily injurious to the morals of people, the evil at present experienced in Bengal is of as great a degree as it could be if the plan now proposed by us were to be adopted as Lottery tickets are regularly sent round for sale from Madras."

3. As for other supplies, they can be done without much inconvenience to the Government.

4. The Committee could have proposed addition to taxes, for the improvements in contemplation but they are unable to do them for restrictions existing by law on raising taxes within the town.

5. For the improvement of environs of Calcutta they received an additional report, which, pointed out the necessity of constructing new roads, widening old roads and maintaining ditches in proper order in Garden Reach, Allypore, Callyghaut, Russapugla, Baloogunge, Boitacaunah, Bally Ghaut, etc.

It will be seen from these reports that advantage was taken of the fire to open new roads in the town south of Dhurrumtolla. The great plague of London in 1665 is said to have been checked by the memorable fire of 1666 and the conflagration led to the sanitary improvements of the city. It was so with Chicago.

The two offices for the improvement of the town were the Lottery Committee's and the Chief Magistrate's. They evolved order out of chaos and greatly improved the sanitation. The Lottery Committee were foremost in the construction of new roads and tanks and the improvement of bustees. The Committee started with the object as given in the resolution passed by them on the 18th December 1817.

1stly.—That the health of the inhabitants be considered as the first object to which the attention of the Committee ought to be directed, and that with this view their funds ought to be applied in the first place to the filling up of altogether or deepening and cleansing miry Tanks and Jheels, several of which exist at present in the most populous parts of the Town. In the second place, to preventing the accumulation of filth, by means of new Drains, common Sewers and Kennels. And in the third place, to promote ventilation, as far as can be effected, by cutting down high and spreading trees, and by increasing as much as possible the number and size of Streets or Roads running in a straight line from South to North.

2ndly.—That next to the health of the inhabitants, the Committee should direct their attention in their improvements to the personal safety of passengers in the Streets with a view to which object it would be highly desirable to widen the narrow parts of the most frequented Streets, where more commodious Roads in a parallel direction can not be opened, and particularly to round off sharp angles. The safety of foot passengers should also be considered, and Foot paths formed betwixt the Wall and Kennel, wherever the width of the old Streets will admit of this, and in all the new Roads that may be opened by the Committee.

3rdly.—That convenience and ornament be also considered disirable. But that none of the funds of the Committee be appropriated to purposes where these are the only objects proposed, until all the foregoing objects have been accomplished, as far as may be in the power of the Committee.

4thly.—That a preference be given to such plans of improvement laid before the Committee as combine the greatest number of the important objects, at the smallest expense.

Mr. H. J. Shakespear recorded a minute on the 13th January 1820 and wrote to Mr. John Trotter, Secretary to the Lottery Committee, recommending the construction of Roads in the portion of the town north of Burrabazar, between Chitpore and Circular Roads, containing a dense population. In another memorandum dated 7th February 1820, he proposed the appropriation of a considerable sum of money without which substantial improvements would be hopeless. But with all the existing evils of the time he had "reason to believe that the Town was never kept more free from accumulation of dirt or the drains less uncleanly than they have been during the last six months." He also submitted a statement of the number of Hindus taken to Kashee Mitter's Ghat for cremation. Here it is:—

Years—	1815.	1816.	1817.	1818.	1819.
Fever	645	442	493	668	839
Dysentery, Diarrhoea, etc.	1081	852	1269	951	1080
Coughs and Pulmonary Complaints ...	223	153	147	149	140
Various diseases ...	465	235	326	227	142
Cholera morbus ...	182	141	1323	2776	889
TOTAL ...	2596	1823	3558	4771	3090

Babu Rupanarain Ghosaul, Sheristadar of the Lottery Committee, in his deposition before the Fever Hospital Committee, stated that the Lottery Committee were always gainers by sale of lands after improvements. The dearest portion of their acquisition was in the Strand and Clive Road and the cheapest in the Loudon Street and Short's Bazar. In Amherst and Cornwallis Streets they made also many improvements. Chitpore Road, Wellington Square, places near the new mint also shewed progress as other portions. During the course of their acquisition the Lottery Committee were involved in a long and heavy litigation with Gopee Mohun Deb, the father of Raja Sir Radha Kanta Deb, who, in April 1824, proceeded against the Committee for forcibly and against the will of the complainant, breaking and entering upon divers lands partly in the possession of the complainant and partly in possession of tenants, and commenc-

ing to make public roads, and blocking up ghauts and destroying them. He, therefore, prayed that the defendants might be restrained by injunction from making the roads and from committing trespasses, and that a decree be given against the Committee for the damages done. The Hon'ble Sir Edward Ryan, Chief Justice, Mr. Justice Grant and Mr. Justice Seton delivered judgment on the 5th June, 1840 by dismissing the case. Though the Committee triumphed, the triumph may be said to have exhausted their efforts and resources. At any rate, the body had ceased to be useful. For, in a letter addressed to the owners and occupiers of premises in Calcutta by Mr. D. M. Farlan, dated the 1st December 1833, we find that "The Lottery Funds may now be said to be extinct for all purposes of improvement in Calcutta."

On the 2nd March 1837, Mr. Joseph de Hezeta, Secretary to the Lottery Committee, gave a statement for the twelve years from 1825 to 1836, from which we find that the profits were Rs. 12,72,193 and the expenses Rs. 2,43,709. Perhaps the balance was disbursed for the town improvement. On December 15, 1836 the inhabitants of Boitackhana petitioned C. Trower, C. R. Barwell, J. Master, D. Macfarlan and G. J. Gordon Esq., Members of the Lottery Committee, for a public tank in that quarter. The application was refused on the ground that they had no power to entertain it.

It must be said that the Lottery committee by opening the large roads and excavating the tanks in Calcutta mostly contributed to its salubrity. Since then only four roads worth the name have been constructed. They are Canning Street, Grey Street, Beadon Street and Harrison Road. Many small outlets have also been made. The parallel ways in the southern part of the town are the most prominent features of the improvement. Their construction was possible for the great fire which occurred before the advent of the Lottery Committee.

EDITOR'S NOTES.

Venom in Reptiles' Eggs.

In the supplement of the Scientific American for December 21, the following interesting note is recorded:

"M. C. PHISALIX, of Paris, shows that the venom of reptiles is contained in the eggs, and seems to play a certain part in their development. He already pointed out that the eggs of the toad contained a certain number of the active principles of the venom, and drew the conclusion that these specifics had an important role in the phenomena of heredity. His new experiments seem to prove conclusively that this is true. He describes specially his researches upon the eggs of the viper (*Vipera aspis*). In this reptile the ovary commences its functions at the end of March, and if removed about the end of April we find in each ovary a collection of five or ten ovules whose large diameter varies from 0·08 to 0·7 inch. Cutting the ovule we extract a thick yellowish liquid. When this is diluted with water and inoculated in the guinea pig it causes effects which have all the characteristics of poisoning by the venom itself, a local swelling followed by progressive cooling and respirating trouble, ending in death. The substance which produces these symptoms has physical properties identical with those of the venom. It does not pass by dialysis and becomes more liquid when heated. The quantity of the extracted liquid which is needed to cause death by sub-cutaneous injection is 2 cubic centimeters. Double the quantity of the blood is needed for the same effect, and it seems that the ovules collect the active principles of the venom which circulate in the blood. The larger ovules have more of it, and the small ones scarcely any. None of the other organs of the reptile collect the venom, the liver, pancreas, thyroid glands, etc., and when inoculated, have no effect. To sum up, the active principles of the venom accumulate in the ovules. It is probable that other specific substances also pass from the blood into the ovule, and that these substances, like the venom, have an effect in the development of the egg. If this is the case, the mechanical phenomena of ontogenesis are accompanied by chemical phenomena which play an essential part in the formation of the organs and in the mechanism of heredity."

The deposit of poison in the ovules of reptiles during the process of fecundation is a new discovery. No other organ except the ovules seems to the repository of the poison. This is a peculiar phenomenon amongst the reptiles. The common notion prevalent in India is that the young snakes just after their birth are more poisonous than their adults.

An Action for Nuisance arising out of Noise.

In the Lancet of December 23, we find :

"A recent decision of Mr. Justice Warrington in the Chancery Division has been upheld by the Court of Appeal and may some day come under the cognisance of the House of Lords when it assembles under the presidency of a new Lord Chancellor. The point raised is a curious one, as it involves the right of a person who comes to live in a naturally noisy neighbourhood to prevent an increase of the noise arising after his arrival so as to interfere with his enjoyment of such quiet as may be said to have existed before. In other words the court was asked to say, and did say, that a person may "come to a nuisance" and then may complain if it is substantially increased. The plaintiff, to put his story shortly, lived and carried on business in the midst of newspaper offices and printing works, at Gough-square, Fleet street; new premises near to his house were opened for printing, where business was carried on by day and by night and it was of the noise of the machinery thus employed that he complained. The judge and the Court of Appeal have found in his favour, Lord Justice Cozens Hardy putting the case on this point thus: "It does not follow," said his lordship, "that because I live, say, in the manufacturing part of Sheffield, I cannot complain if a steam hammer is introduced next door and so worked as to render sleep at night almost impossible, although before its introduction my house was a reasonably comfortable abode, having regard to the local standard." It would be interesting to see what success would be met with by a litigant residing near one of the omnibus routes now traversed by the new motor omnibuses, should he endeavour to prevent the passage of vehicles which travel more noisily and at later hours than those drawn by horses. Whether the evil can be arrested or not in the case of highways, traction engines and motor omnibuses have made substantial addition to the disquiet of London life."

A nuisance is an objectionable thing, in any part of the world. Nuisance arising out of noise is not a less disturbance than other

kinds of nuisances. Any great noise after 10 P.M. is particularly bad as it disturbs sleep, and destroys good health. It is a provoking affair when a person of bad health has to suffer from the same cause. A precedent has been created by law against noise and we hope that its effect will be far reaching even in the continent of India.

Adulteration of Food and Drugs in Bombay.

We read from the Lancet of December 23, as follows:

"A paper on the Adulteration of Food and Drugs in Bombay by Mr. Dosabhai Rastamji Bardi, senior tutor in chemistry and medical jurisprudence at the Grant Medical College, appeared recently in the *Transactions of the Bombay Medical and Physical Society* (vol. ix., No. 1). From this paper it appears that the municipality of Bombay, which rejoices in the proud motto *Primus in Indis*, is unfortunately behind many civilised cities in the provision of means to detect and to prevent the adulteration of food and drugs. It has only one officer designated "analyst," whose principal duty seems to be to examine samples of municipal stores, but the work is so light that he is allowed to undertake private work in addition to his municipal duties. No facilities exist in Bombay for procuring samples of food and drugs for analysis and no recognised standards have been set up. In fact, present conditions would appear to be somewhat similar to those which existed in this country prior to 1860, when Parliament passed the first Act against the adulteration of food and drugs, being roused to activity by the reports of the Analytical Commission appointed by THE LANCET. That the adulteration of food and drugs in Bombay is very prevalent is shown by the results of the analysis of certain taxable foods and drugs which were examined by the Government chemical analyst, Bombay, for revenue purposes. Of 219 samples of ordinary foods and drinks examined from 1890 to 1900 no less than 105 were adulterated or unfit for consumption, while of 78 samples of drugs examined during 1892-95 no less than 65 were adulterated or unfit for consumption. Mr. Bardi describes in an able manner the various forms of adulteration which are practised on foods and drugs intended for consumption in Bombay. Of these, reference need only be made to those presenting unusual features. Milk is chiefly adulterated with water and is one of the most fruitful sources of disease in Bombay owing to the impurity of the water. As a result the infantile mortality reaches the high figure of 786·5 per 1000 births,

though this abnormal death-rate is partially attributed to the large use of adulterated condensed milks for the feeding of infants. In addition to the various products of the dairy known in this country the natives prepare large quantities of ghee and dahi. Ghee, also known as clarified butter, is prepared by boiling butter until it becomes granular and dahi, which is sour boiled milk in a coagulated form, is prepared by adding dahi or butter to boiled milk. Both these foods are extensively used, especially the former, and are adulterated to a great extent, the former with various fats and starches and the latter with impure water. The Hindus, who as a class consume a large quantity of ghee, suffer from digestive troubles which they, in common with their physicians, ascribe to its adulteration. In the case of bread a vetch, *lathyrus sativus*, Khesari Dal, or *l. cicera*, is employed as an adulterant of barley and wheat. Mr. Bardi gives a list of poisonous chemical substances which are used for colouring sweets and confectionery. Thus, compounds of barium, arsenic, antimony, and lead are used for producing a yellow colour; compounds of arsenic with copper to give a green colour; compounds of barium and zinc to confer whiteness; and Prussian blue for producing a blue colour. In the case of tea, exhausted leaves are sometimes treated with catechu. Turning to drugs, Mr. Bardi enumerates those which have been found to be adulterated. Of these, santonin calls for special mention owing to the large proportion of boric acid with which many samples of it were adulterated. This is an ingenious fraud, advantage being taken of the similar flaky appearance of boric acid and santonin. Mr. Bardi then proceeds to suggest suitable standards of purity and means of detecting adulteration. In the case of infants' food he proposes that it must be free from woody fibre, mineral matter insoluble in acids, and preservatives. It must not consist chiefly of starch and should be accompanied by directions as to the proper quantity for a child during 24 hours. Foods with a low percentage of fat should be made up with milk and milk foods should not be deprived of the milk fat. In reporting upon tinned foods, Mr. Bardi suggests the rejection as unfit of all tins that are perforated by nails or show angular indentations, together with those that are bulged out with gas and which are rusty or not hermetically sealed. When a tin produces a hollow sound on being gently struck with a small wooden mallet it should be condemned. Finally, Mr. Bardi considers the various means of preventing adulteration and suggests measures based on the English sale of Food and Drugs Act. A clause is inserted for

the examination of imported foods and drugs at the port of entry by properly qualified Government examiners, so as to prevent the importation of all adulterated articles. In the case of perishable drugs, Mr. Bardi urges the necessity for adopting special precautions similar to those suggested by the Medico-Legal Society of New York, whereby such drugs should be marked with the date of manufacture and a time limit fixed, after which the drug would be unfit for use. As regards repressive measures, Mr. Bardi approves of the Parisian method of fining a dishonest shopkeeper and then condemning him to a public confession of his guilt by stating the particulars on a large placard conspicuously exhibited in his shop during the pleasure of the court."

Mr. Bardi's interesting note wants a large circulation so as to adopt steps for the prevention of adulteration of food and drugs. The chemical analysis has discovered many condemnable state of things. If bacteriological analysis is carried on with them, more horrible state of affairs will be divulged. All the towns of India, including Calcutta are suffering from consumption of objectionable articles of food and drugs. The patent foods and medicines are great dangers to the child-life. The mischievous gain is allowed in India for the sake of commercial profit. The land of abundant milk is supplied with foreign condensed milk. The depravity of taste allows that unwholesome diet. The country of fresh meat is over-burdened with preserved animal foods. Fashion overrules the common sense at the cost of health. It is nothing but an infatuation that we submit to the use of the bad articles of food, which were prepared months and years before. The fashionable physicians recommend them. Trade unionism has deprived our sober sense. Stringent laws should be enforced to regulate the sale of foods and drugs.

Science in the Service of Fraud.

The *Lancet*, of February 10, has published the following note :

"In some ways the detection of adulteration is resolving itself into a scheme for exposing the devices of skilled scientific men, for there is little doubt that there are men who in the name of science aid and encourage the practice of adulteration and who place their knowledge and skill at the disposal of manufacturers, knowing full well that their advice and suggestions are to be applied with the deliberate aim of defeating the detection of fraud. The manufacturers of such goods may, of course, have received sufficient training themselves in scientific and technical matters to enable them to apply their knowledge to dishonourable practices but

it is more probable that the services and counsel of an expert are called in. The occupation which such an expert chooses to follow for his own gain can only be described as contemptible, and if his services in this direction can be proved to have been offered with the object of defeating justice it seems to us that the law should be able to reach him and to mete out to him a severe reward in the shape of imprisonment. Analysts are constantly confronted with considerable difficulties in the detection of modern fraud, so ingenious are the tricks of unscrupulous persons. Indeed, the tricks bear unmistakeable evidence of a scientific conjuror who knows perfectly well what the analyst is guided by in making a search for adulterations. The analyst looks, for example, for certain factors in a food which when he has found them to satisfy a given standard he regards as evidence of genuineness, and yet the article may be a fraud, the factors being artificial and manipulated by the scientific adviser. Such may be the case especially with oils and with butter, the genuineness of which is judged partly by physical constants and partly by chemical behaviour. The physical constants and the chemical behaviour may respond as though the article were genuine but all the same it may not be so but may only show the characteristics of the genuine substance which after all may have been artificially given to it. A sample of genuine brandy, for example, contains a certain proportion of ether but it does not follow that because a spirit contains this amount of ether it is genuine brandy. There can be no doubt that when a standard of ether, rightly or wrongly, was laid down for brandy this deficiency in spurious brandy was made up, on the advice of an expert, by adding artificial ether. Yet another example. A genuine wine contains fairly constant amounts of alcohol, tannin, glycerine, and so on, but it would be utterly unscientific to conclude that because an article described as wine contained these things in the same amount it was genuine wine. And there is little doubt that advice is cheerfully offered by experts in the name of science to give a false *tout ensemble* to many articles of food as well as clothing. Their education, knowledge, and skill do not exempt them from being branded as infamous cheats; on the contrary, their conduct is more contemptible than if they were ignorant men."

Artificial preparation of food stuffs is becoming dangerous in consideration to the preservation of health. There are artificial butters, oils, wine, brandy, etc. The sordid gain of money has induced scientific experts to prostitute their genius of discovery in enhancing adulteration or produce artificial substances of food which are quite inappropriate for preservation of health. The chemical analyses of the artificial foods may be equal to the genuine substances. The physiological consideration amply shows that the artificial food can not impart that nutritious character which can be found in the natural products. The attempt to substitute the imitated substance in the place of the real object is not only bad, but it is also a dangerous practice which should be prohibited by the rigorous force of law.

Medical Observations in the Arctic Regions.

The British Medical Journal of February 3, has the following interesting note on Eskimos:

"Dr. Nicholas Senn, who appears to be wandering about the world like a medical Ulysses observing the manners of men and their mode of life, gives in a recent number of the *Journal of the American Medical Association* an account of a summer trip to North Greenland which he made in the supply ship of the Peary expedition. The Smith's Sound Eskimos, he says, are the original unadulterated stock and present many peculiar racial features, especially as regards their habits and resistance to disease. To their exclusively carnivorous diet Dr. Senn attributes not only their freedom from scurvy—the scourge of Arctic expeditions—but also the absence of enlarged tonsils and cervical lymphatic glands and goitre. Their splendid teeth and strong lower jaws are ascribed to the same cause. He suggests that the absence of all vegetable food from the diet has shortened the gastro-intestinal canal; that the appendix, if present, is only rudimentary, and that the glands concerned in the digestion of starchy food have become atrophied, while those needed in the digestion of meat and the emulsification of fats are hypertrophied. The large precentage of oils in the diet acts as a laxative, and protects the Eskimos from a multitude of ailments met with in civilized communities. Notwithstanding their uncleanly habits, their freedom from skin diseases is remarkable; and Dr. Senn is inclined to think that perhaps their avoidance of the external use of water may have something to do with this. This somewhat startling view would doubtless have the support of Professor Neisser, who sees in the abrasion of the horny layer by too vigorous ablution the removal of the chief protection of the skin against infection. Tuberculosis is unknown among Eskimos in their own country, though they quickly succumb to it in a different climate. Venereal diseases run a very mild course. Insanity is unknown, but in the long winters an anæmic condition becomes developed, which may give rise to certain hysterical symptoms; the anaemia, however, never becomes chronic. During the summer there is a corresponding plethora and attacks of epistaxis are common. Degenerative diseases, arteriosclerosis, Bright's disease, etc., are rare. In the ordinary course of their lives Eskimos are not subject to coughs and colds, but catarrhal attacks follow visits to ships. Introduced epidemic disorders have played havoc among them. Dr. Senn especially mentions a sort of Arctic dysentery that seems to have started from Finland and travelled nearly arround the Arctic circle. He suggests that the infection must have been conveyed over the vast uninhabited tracts by migratory birds. Influenza has also been very destructive among the Eskimos. They appear to have no native medicine, and their surgery is of the most rudimentary kind. Suppurating wounds, however, are rare in the germ-free atmosphere in which they have their being. Tumours seem to be unknown—a circumstance which Dr. Senn is disposed to attribute, in part at least, to the highly iodized meat diet. Their obstetric methods are primitive, but

childbirth is not with them a severe process. Children are nursed until they are 2 or 3 years old, and are generally healthy. Dr. Senn believes that uterine and ovarian diseases are uncommon. In conclusion, he mentions a peculiar distemper of dogs, resembling rabies, but differing in certain respects. Animal parasites, such as tapeworm, appear to be rare."

Dr. Senn's remarks on the causes of the freedom of the Eskimos from many diseases are open to criticism. He attributes every thing to meat diet. It is an undoubtable fact that the heat due to animal life is kept up by consumption of meat and fat. The absence of scurvy may be the result of taking fresh meat. It is not a fact that scurvy depends on taking meat alone without vegetables. Fresh vegetable or fresh meat prevents scurvy. The reason is that micro-organisms producing the putrefaction of animal and vegetable diet create the diseases. In Eastern Bengal a kind of scurvy is observed which seems to be the effect of putrefactive diet. The immunity of Eskimos from many diseases may be ascribed to their secluded position and abnormal cold which prevent the spread of pathogenic microbes and create their forced dormancy, if they happen to come amongst them.

CLINICAL RECORD.

Foreign.

CLINICAL CASES.

By J. R. P Lambert, M. D.

Case 1.—Mrs. B., housekeeper, came to see me January 16, 1895, complaining of rheumatism, chiefly in the knees, which were slightly swollen. From thence the pain ran up the thighs. She had suffered from this two years. She also had a pain in the back, like lumbago, and sometimes pain in the hands and wrists. She used previously to have great pain in the feet.

There was < on movement at first, but > from continuous movement. She had no pain on sitting, but on getting up was very stiff; can heardly move hand after sitting. < when warm in bed, but the pain was very severe only on movement. Weather no effect. No nodosities. No headache.

She also suffered at times from great pain (tearing) after all food. "Can't take eggs." She had flatulence, with eructations, which sometimes gave relief. There was no vomiting or nausea. The tongue was coated and brown at the back. She had also obstinate constipation. No inclination, stools very dry and often grey in colour. No pain on defecation. Liable to attacks of very acute abdominal pain, which brandy relieves. Takes *Cascara* habitually. Urine too frequent—no sediment. Hot flushes very often; was passing through climacteric period. Skin very sensitive and itchy. On examination heart sounds noted, ringing in character, no bruit heard. Was ordered *Sulph.* 30 n. and m., *Cimic.* 3x, t.d.s.

I did not see her again till September 21, 1895, when she brought her daughter to see me, and reported herself very much better. after one week she was quite changed. Bowels quite regular.

Remarks.—The only unsatisfactory point about this case is the prescription. If she had come ten years later she would have received only one medicine, and unless some symptoms were not noted the *Cimicifuga* seems quite superfluous, and the result may, I think, be quite well attributed to the *Sulphur*. The motion modalities would, of course, suggest *Rhus t.*, but it has > not < from warmth, and when *Rhus* is indicated there is generally < from wet weather.

Case 2.—Mrs. W., daughter of the above, came to me on September 21, 1895. She had suffered from dyspepsia for years, and presented the following symptoms: Pain in epigastrium half hour after food. > pressure. Also pain in abdomen and between the shoulders. Flatulence immediately after food, always a great deal. Eructates a little with relief. Bowels quite regular under use of massage, previously constipated. Tongue coated and dirty at back. Frontal headache like a weight. Sleeplessness—difficulty in getting to sleep; dreams very much and waks often, and is not refreshed by sleep. Three years ago she lost her husband, having nursed him through a long illness, and has not been well since. She suffers with her throat, which feels as if swollen. Has had it cauterised often. without effect. Feeling of weakness in throat. Occasional tightness down trachea. Always languid and tired. Nervous, easily startled; very depressed at times. Catamenia regular, scanty, no pain. Gets a peculiar headache before and aching in the thighs, > by flow. The dyspepsia is worse after the period. *Ign.* 3 m v t.d.s.

October 5th.—Sleeping much better, is less depressed. Dyspepsia no better. Still much flatulence and pain. Always feels very well in the morning. Voice no better, and throat uncomfortable. *Puls.* 30 t.d.

October 17th.—Reported much better in every way—throat stronger.

In this case *Pulsatilla* in the first instance might have been sufficient, but the nervous symptoms strongly suggested *Ignatia*, which had a beneficial effect.

Case 3.—Miss G. B., 19, consulted me October 21, 1895, for indigestion, from which she had suffered for three years. Her principal symptom was heartburn all the way up the esophagus. It came on 1—2 hours after meals, occurred after all food, sometimes lasting all day. Occasional pain in epigastrium after food. Flatulence with eructations (tasteless) gives no relief. Borborygmus. No nausea or vomiting. Bowels regular. No headaches. Tongue clean. Catamenia scanty and too frequent. General health and spirits good. When she has indigestion her face burns. She has had homœopathic treatment, and used to find relief from *Puls.* 3x. This treatment confirmed my choice of medicine *Puls.*, which was given in the 30th potency.

November 14th.—Much better. After a week no more pain. So she stopped the medicine and has only taken it a few times since. Burning of face and flatulence also better.

January 7, 1896.—Complains again of heartburn and pain in chest shooting upwards, about one hour p.c., and lasts till next meal. Burning in face better. Took *Puls.* 30 a few days ago, but without relief. *Puls.* 200.

January 29th.—Report much better. No pain. This time the improvement was maintained.

The chief interest in this case is in connection with the potency question; the publication of all such cases would help to elucidate this difficult problem.

CASE 4.—Miss M., 21, (?) complained of great pain in her chest and shoulders, chiefly right side, which had lasted nine or ten weeks. Pain greater at night and morning. Not worse after food. Wants to take deep breath. Pain shoots through from front to back, and is very sharp at times. She had also a slight cough, with scanty expectoration. Worse on first getting up. Wakes every two or three hours. Occasional perspiration at night. Slight discomfort after food. Examination of the lung was negative. She was given *Kali carb.* 12 on October 25, 1895, and in a fortnight was much better and nearly well, and the cure has proved permanent.

CASE 5.—Miss M. B. came to me on February 26, 1895, complaining of "gout" in the first metacarpo-phalangeal articulation of each hand only. These joints were much thickened, but not painful to touch, nor red. Bad two years. Pain like a burning wire thrust in. Always better in summer. Worse in cold weather, and in water. Can't bear water in winter. Cold air aggravates movement. Her general health is fair, suffers from her heart and dyspepsia. She has suffered from palpitation and faintness since she was 16. Auscultation showed the sounds to be very weak at the base, but no bruit was heard. Pulse weak and soft. She had rheumatic inflammation of the eye twelve years ago.

Gastric Symptoms.—Nearly always hungry as if not enough, or as if too much. Flatulence after meals. Can't bear clothes on. Eructations give relief. No pain in stomach unless she is cold. Sinking if moves about quickly. Generally hungry 10—11 a.m.

Acidity in mouth. Can't take milk. Meat suits best. Bowels regular; inclined to be loose with griping pain. Suffers very much with cold feet. Ordered *Sulph.* 30 t.d.

March 30th.—Has been better. Less swelling of stomach after meals. Acidity still. Rheumatism not much better. Never feels satisfied. No appetite. Feels the cold in her hands very much. Least draught on abdomen causes diarrhœa. *Sep.* 30.

April 13th.— Fulness much better, and still has acidity. Never feels satisfied. Cannot stand fresh air, or draughts of air, which increases rheumatism. *Sil.* 30.

I publish this case as a failure rather than a success. It shows how remedies partially homœopathic may help to a considerable extent. From a review of the symptoms now *Calc. c.* seems to me the best indicated remedy. It meets the following generals: worse from cold, better in summer, worse from water, can't bear water in winter, worse in cold air. Can't take milk, as well as many other symptoms, as hunger, sinking, acidity. These symptoms are sufficient to show a close analogy.

Case 6.—Miss A., a young woman of about 20, shop assistant, came to me on March 16, 1896, complaining of pain in the chest and vomiting after all food. The pain was continued all day, worse one to two hours after food, very acute at times. Feeling of pressure in epigastrium as if something would not move. Also a "raw" pain all along esophagus. Vomits after all food, the pain seems to cause vomiting; on one occasion vomited some blood from retching; often coffee-ground vomiting.

She also suffered from frontal headache, shortness of breath on exertion, some palpitation, and great weakness. She had a slight cough, for which she had been attending the Brompton Hospital. Losing flesh lately; occasional night-sweats; low-spirited. Catamenia regular. Bowels regular usually.

Examination of lungs was negative. The tongue was dirty at the back.

She was put on liquid diet and given *Puls.* 30 m iij every three hours.

March 26th.—Has not been sick for a week. The bad pain was relieved after three days. Still has heartburn, but less than before.

Less headache. Tongue cleaner, rather denuded. Cough same. Continue.

April 9th.—Is much better. Pain now only when tired, and does not amount to more than a feeling of soreness. Has eaten bread and butter and lightly boiled egg without pain. Tongue clean, less denuded. To try minced beef. Continue *Puls.* 30 night and morning.

May 28th.—Has been away, and is much better and stronger, still has occasional pain after food, soreness, and burning. Tongue denuded. *Ars.* 30 t.d.s.

Here my notes end, but I have seen patient several times, and she has since married, and till a year or so ago had no return of her trouble.

CASE 7.—Mr. A. D., a married man of about 35, has had urethritis for three weeks, and been under an allopath, but cannot take the medicine; it caused painful erections. He had no pain to speak of, but some smarting after taking alcohol. Thick, white creamy discharge, not profuse. Micturition normal in frequency.

Seen June 4, 1896, and ordered *Can. sat.* 1x m iv four hours.

June 15th.—Almost instantaneous relief from the *Cannabis.* During micturition has a sort of thrill all over, and has to go again in about twenty minutes. At night micturition frequent; gets up several times. Discharge has practically ceased for some days. He has taken three doses of *Canth.* 3x on his own account. Has a pleasant sensation on pressing perineum. *Camph.* pill, occasional doses.

June 17th.—Last night able to empty bladder completely; previously experienced a sudden stoppage like putting one's foot on a hose. This morning experienced same symptom, so took a *Camphor* pill, and had no trouble next time, but still experiences stinging pain during and for some minutes after micturition. Has sensation of urine dribbling. He was instructed to continue the *Camphor* a little longer, and then resume the *Cannabis* freely diluted, *i.e.*, about 4 minims to half a pint of water, dessertspoonful doses.

June 24th.—Is better. Micturition quite free, more so than for a long time. Still few drops of discharge. For three days he had violent headache (unfortunately no details noted). Continue *Cannab.*

July 17th.—Has had some return of pain, a sort of spasm, for which he took *Camphor* again. Has had slightly painful erections

every morning three or four times. There is still slight discharge, but one day he took four drops of *Cannabis*, and it produced a free discharge. He was now given *Thuja* 12.

August 6th.—He took the *Thuja* two days only, and the erections ceased. The discharge, which also had ceased, has now returned. Repeat *Thuja*.

I did not see the patient again till the following May, when he consulted me about some gastric symptoms and a large warty growth the size of a pea, on the scalp. He had had it then for six weeks, and attributed it to a scratch from a comb. He said he easily broke pieces off it; and that it bled easily and profusely. He was told to paint it with *Thuja*, which first aggravated it, but on stopping its application the wart went.

Remarks.—The interest in this case lies in the aggravation produced by *Cannabis* 1x, which *Camphor* pilules antidoted.

Whether the peculiar symptom of "sudden stoppage of flow with sensation as if one stepped on a hose with one's foot" can be attributed to *Cannabis* needs confirmation. It has "spasmodic closure of sphincters while finishing" (Kent).

I did not at the time regard the urethritis as specific, but there might have been a causal connection between it and the wart.

Case 8.—Miss S., 51. Seen first October 2, 1896, complaining of soreness in left breast down into the abdomen. Any exertion, such as hurrying, brings it on, and also causes numb sensation in the head as if she would fall. Sensation on vertex as if hair lifted up. Appetite bad—no pain after food, but much flatulence, with very loud rumbling, and eructations. Sore, aching feeling in left groin. Bowels constipated—takes liquorice powder. Cold hands and feet. Urine very clear, colourless, not excessive. Catamenia irregular a long time. Sleep bad, restless. Cold chills Fluttering all over, Palpitation at times. Heart sounds normal, no bruit. Feels worse in morning, at 9 a.m. All symptoms left side—chest, abdomen, throat, face. Prescribed Sulph. 30.

October 23rd.—Not much better. Bowels not acting. *Lycop.* 4x. (*Ign.* 3, p.r.n., for sleep.)

November 16th.—Much better. Thinks the powders set her going. Bowels acting daily. Flatulence much better, not quite so well since the powders were finished. Repeat *Lycop.*, *Ign.* at night.

December 11th.—Better, but still gets palpitation and fluttering, which prevents her getting her breath, wakes up with it. Feels worse on waking. Hot flushes. Flatulence still much better. Bowels daily. *Lach. 30.*

December 30th.—Left side more painful for a week, feels sick and faint. "Cramp in spine." Pricking like pins and needles in left arm and leg. Fluttering better at night. Flatulence occasionally. Urine contains a thick red sediment at times. *Lycop. 30.*

Remarks.—I regret that the prescriptions are not given more fully, but in those days my practice was to give medicine thrice daily in chronic cases, and such may be fairly assumed.

The main interest in the case to me centres in that fact of the good effect of *Lycop.* 4x (even in a left-sided patient with morning aggravation), as I have for some years seldom used it below the 30th, and it has been asserted by some great homœopaths of the past that it is no use below the 12th potency. The notes show that the *Lycopodium* did act and not merely play the part of an inert placebo to *Sulphur*. The *Lycop.* 30 was presumably complementary to *Lachesis*, which also helped.

Case 9.—Mrs. F., seen February 27, 1897. Complaining of palpitation since December, and feeling as if heart rolled over and over instead of beating; this causes a sort of suffocation. She feels it on getting to bed as soon as she lies down.

She has also a dull pain under the left shoulder in the morning, not worse after eating.

She is very depressed at times. Last October she lost a child through diphtheria.

Liable to sick headaches—seldom goes four weeks without an attack (used formerly to have them more often). Attacks last eight hours. Pain comes and goes gradually. Pain is localised to one spot in the temple, then she vomits two or three times, which relieves the pain. The attack may begin on waking or in the evening. Has had these attacks as long as she can remember.

Appetite good. No pain after food. Bowels regular. Catamenia regular, and never much pain at the time.

She had rheumatic fever at 14, attributed to getting wet, and has had occasional joint pains since.

The heart's action was regular, no bruits heard, but tendency to reduplication of first sound noted. She suffered no dyspnea. *Ignatia* 3x was prescribed, and eighteen months later she reported, "medicine acted surprisingly, was better in a week and well since," and I have not seen her since.

Remark.—The peculiar heart symptoms are worth noting.

CASE 10.—*Apropos* of this case and the remarks by Dr. Clarke in last month's HOMŒOPATHIC WORLD in his letter to the *Medical Press*, headed "*Nux Vomica* and *Ignatia*," I record the following case, which I had passed over.

Mrs. S. came to see me June 13, 1895, complaining of great pain across the epigastrium and vomiting. The latter symptom of a week's duration, the pain two weeks. The pain was not constant, but occurred after food, sometimes not for two or three hours or more after a meal. It did not occur after all food, and was aggravated by fruit. She had a good deal of flatulence and slight eructation. The vomit was very sour. The stomach, she said, was sore to touch; she felt sick on walking.

The pain was gnawing, acute, and worse from bending forward; "has to take her corsets off." Sinking in stomach. Bowels constipated. Tongue denuded, glazed.

Urine said to be clear, "has to get up at night very often, very urgent." Backache relieved lying down.

Examination negative, abdomen not very sore to touch, bears pressure.

Patient is very low-spirited, languid, very nervous, and worrying very much about her mother. *Ignatia* 3x t.d.s. ordered.

I did not see her again, but on February 26, 1897. Case 9 came to me through her recommendation and brought report that medicine did her a lot of good.

Remark.—The gastric symptoms alone in this case would have suggested *Nux* to most homœopaths and perhaps a few of Dr Murrell's colleagues, but the mental symptoms lead to the selection of *Ignatia* in preference. It shows, too, that the characteristic *Nux* symptom—pain two hours after eating—would apply to *Ignatia* also, other symptoms corresponding.

CASE 11.—Miss E. B., servant, seen first March 10, 1897, complaining of dyspepsia, from which she had suffered for twelve months. Symptoms noted—flatulence, without eructations, distension, has to take her stays off. It occurs after all food immediately; sudden satiety. Great pain in chest and back, sharp. At night feels quite empty. Aggravation from 5 to 6 p.m. Has to go to bed after dinner. Bowels regular. Urine thick, and pain at times, on micturition. Bad frontal headache at times, with pain in eyes. Lips sore and peel. *Lycop.* 30 t.i.d.

March 30th.—Has no pain now after food. Flatulence much better. Urine still thick at times. Headache a few times. Repeat.

On July 27th the medicine was again repeated, but no notes made.

November 1st.—Complained of indigestion again "very badly." Flatulence about half-hour after food. Rumbling occasionally. Sharp pain in epigastrium. Has to take off stays. A change in the symptoms will be noted here in that the flatulence only began to trouble her half-hour after meals instead of immediately, and the pain is noted in the epigastrium, but the *Lycopodium* having acted so well was again given.

November 8th.—Not so well. Pain still sharp like flint stones cutting. Has to bend double with the pain. Better on lying flat and taking clothes off. Is very thirsty. *Bry.* Q powders to be mixed in half a tumbler of water, ʒij doses.

November 15th.—Is much better. Pain not sharp now. Repeat. This apparently relieved her for some time, as I did not hear of her till October 25, 1898, when she consulted me by letter, saying, "Indigestion bad again, flatulence, but eructations. Pain all round the loins." On these scanty symptoms I prescribed *Lycop.* 30 again every four hours.

October 30th.—Letter. No better. "Spasm" several times last week. *Bry.* Q

November 7th.—Much better. Still has pain, but not acute, and no spasms. Repeat *Bry.* 3.

Remarks.—The initial indications in this case for *Lycopodium* were as typical as one could wish, and clearly show that *Lycopodium* is not a remedy for intestinal flatulence only. On the second occa-

sion, November 1st, it was clearly an incorrect prescription, and *Bryonia* was just as clearly indicated, and acted well in low potency though I think it better to use it higher as it is apt to aggravate when used too low.

Case 12.—Miss A. consulted me July 5, 1897, complaining of anemia, for which she had been treated by a doctor of the old school for a long time, without result. She had been gradually going down in health for three or four years. She gave the following symptoms :—

Is very short of breath, and gets very yellow; has lately been getting very dark, whereas she used to be fair. Hair falls out. Is very low-spirited, but all right in company.

Headaches severe, as if everything going to the top of the head.

Memory very bad indeed.

Head very confused, "reeling" in head.

Burning on top of head.

Objects look larger at a distance than near.

Appetite good, as a rule; no pain after meals, but occasionally pain like a weight all round stomach. Feels very sick, but never vomits.

Hunger at 11 a.m. Eats very little breakfast.

Bowels regular. Tongue clean.

Dragging pain in right side of abdomen, feels as if would faint.

Backache less on lying down.

Catamenia scanty, practically nothing for a long time—painless.

She was dark, sallow complexion, dark hair, spotty skin, and the conjunctivæ showed some icterus. Prescribed *Sulph.* 30 t.d.s.

July 21st.—Is feeling somewhat better, but has been doing no work. Back very bad; nettlerash at night.

Examination of eyes showed some slight hyperopia with astigmatism in each eye, which was corrected. *Ign.* 3x t.d.s.

August 16th.—Has been much better. Can't do without the glasses. Has had headache this week. Was much better while taking the medicine. Rep.

September 11*th.*—Not quite so well. Has had less headache, but otherwise the same. Always feels tired. Amenorrhea; still feels very miserable. Is not gaining flesh. Worse after brain-work. *Senecio* 2x t.d.s.

November 17*th.*—Came to report herself perfectly well. I saw her again a year or two later for her eyes, and she had remained well.

CASE 13.—Mrs. D., seen September 24, 1897. Pregnant five months. A few days ago sudden hemorrhage for a few minutes, about half a pint. Had no pain at the time, but now has a feeling as if something wants to come away. The hemorrhage has now ceased.

Examination revealed no dilatation of the os. Ordered *Vib. prun.* dose not noted.

October 14*th.*—There has been some more hemorrhage, and on October 4th a considerable amount.

Has had sciatica badly both sides (worse left) and crams. Abdomen swells after meals. Is quite flat in the morning first thing. *Nux mosch.* 3x.

October 21*st.*—Has had sciatica all night, chiefly right side. Pain very sharp, has always been subject to it. Worse from movement, wet weather, and in winter. Flatulence has been better. *Coloc.* 3 p.r.n.

November 11*th.*—Sciatica quite gone. Has had fainting fits lasting an hour, usually at dinner time; better by loosening the clothes. Suffocating sensation at the heart, "not due to tight clothes, but better from taking clothes off."

The flatulence has quite gone. (Increase by *Nux m.*) There is no bleeding now, but a white discharge like milk. For these symptoms *Lach.* 30 was ordered. I did not see her again for some time, but she went to full time; the accouchement taking place in a remote suburb I did not attend.

I pass over a few other items in the notes till December 15, 1902, when she complained of constantly feeling tired, which increases if she does nothing. Had been so two months. Catamenia every two weeks; loses a good deal every other time. It lasts a week or so, and is accompanied by very little pain. The blood is bright, and is more profuse after getting about in the morning.

Appetite bad—no hunger.

Very tired after work, feels it in the epigastrium.

Sobs in sleep. Yawns a great deal.

Headache frontal, and occipital, sometimes wakes with it.

Aggravation after second sleep; feels as heavy as lead.

Lessens towards evening. *Lach.* 30 t.d.s.

December 22*nd.*—Is much better; not as well for a long time, except that she has slept badly for some days.

Appetite good. *Ign.* 5 to be taken at bed time if required.

CASE 14.—Miss B., about 20, servant, complained on October 15, 1897, of dyspepsia, and swelling of the abdomen, aggravation after meals. There was no rumbling or passage of flatus. She also had pain through the chest to between the scapulæ, of a dull, heavy character, one hour or more after eating.

She suffered also from headache, frontal, almost constant, aggravation in evening, but wakes with it.

Palpitation and shortness of breath. Scanty menses.

Face burns after meals.

Constipation, some days no inclination at all.

Urine, thick white sediment.

Nothing was found on examination, except a venous hum in the neck. *Lycop.* 30 t.d.

November 19*th.*—Is much better, hardly any flatulence now, and no pain after meals. Bowels regular now.

Catamenia delayed two weeks, but more profuse.

Palpitation and dyspnea still and some swelling of stomach. Rep.

I did not see her again till October 5, 1900, when she complained of great palpitation and shortness of breath.

Stomach swells immediately after meals, wants her clothes off; aggravation in the evening.

Headache very bad in the temples, constant, wakes with it. *Lycop.* 30 ♏ ij t.d.

December 10*th.*—Was much better till last week, when she had an abscess in the mouth, which upset stomach again. Rep.

March 21, 1901.—Flatulence bad again, and short of breath. She had some of last medicine left, which she has taken for two weeks without relief.

Present symptoms: Pain in back, stomach swells as soon as she eats. Face burns after meals. Constipation. *Lycop.* 30 ♏ iv t.d.

I did not see her again till the following September, when she complained of similar symptoms, and no note of previous result.

Remarks.—This case presents one if not two errors in the later prescriptions. It will be noticed that after the first good effect in 1897, followed by a lengthy period of amelioration, the similar symptoms recurred at shorter intervals, and a change in potency if not of remedy was called for, especially on March 20, 1901, when the remedy had apparently failed. As to the change of potency, Kent would say it should be given higher to get a deeper effect; Hahnemann said after 30 has done good, one may give it lower. My own impression now is that *Natrum mur.* was better indicated.

CASE 15.—Mrs. L., an elderly lady, consulted me January 6, 1898 for pain in her right knee, from which she had suffered since the previous August. The pain was great at times, and she had difficulty in straightening the leg. It began gradually and was more or less constant, but always stiff. It was easier when extended. The following modalities were noted: worse after sitting; better after moving; but worse on long moving; worse before damp, can tell when damp is coming; worse at night. *Rhus t.* 12.

January 20th.—No better. If anything, knee is rather more painful; worse to-day, being wet. *Rhus t.* 3x m iv. t.d.s.

June, 1899.—She reported great relief from the second medicine, not troubled since.

The moral of this case is not that low potencies are always to be preferred to high, but it shows that the higher are not always the best.

CASE 16.—Miss C., servant, about 20 years of age, complained of dysmenorrhea. She always had great pain for one day. The period was delayed and irregular, occurring every five or six weeks, and was too profuse, clotted and very black.

There was great pain in the hypogastrium and aching of the legs. No pain in the back. The pain makes her bend double and press against something.

She also suffered from pain in the chest, of a sharp cutting character going through to between the scapulæ, occurring immediately after food. The pain catches her breath. No flatulence. Bowels regular. No headaches. Sleep good. For these symptoms she was given on June 11, 1900, some powders of *Kali mur.* 6x, to be dissolved into fractional doses. I have no note as to frequency of doses.

October 8th.—She reported that the period is much better, quite right now. On this occasion she complained of indigestion; pain like a stone behind the lower part of sternum all last week. worse

after tea, better when lying down, better out of doors. No other pain, on flatulence. *Puls.* 30 t.d.s.

October 17th.—Reported great relief from the medicine.

On June 20, 1902, when consulting me for a cold and cough, she stated that since June, 1900, she never had much pain with period and sometimes none.

CASE 17.—Miss S., middle-aged. Seen July 25, 1901. Complaining of attacks of faintness, with pain in the left side and arm. Loses use of the left hand sometimes.

Two years ago had influenza, and since then has lost weight, 6 lbs. in all.

Appetite not very good. Not much pain after meals, but discomfort and fulness very soon after eating, has to loosen her clothes. Nausea.

The pain in the side was described as fulness and tenderness, not a sharp pain.

Bowels constipated—stools large.

Always worse in morning; better towards evening.

She also complained of headaches on vertex and down the back; wakes up with headaches; heavy feeling, fulness in head; can't hold her head up; nausea with the headache.

Sleep very good. *Nux v.* 6 t.d.s.

August 14th.—Is better. The pain under the arm was relieved after a few doses. Not nearly so much nausea; no headaches. Still flatulence immediately after meals. Bowels about the same. Breath very offensive in the morning. *Nux v.* 30 t.d.s.

September 10th.—Flatulence a little more worse after breakfast. Vertigo in the morning, worse on stooping.

Bowels better. No headache since beginning treatment. Hungry, sinking at 11 a.m. Suffers from cold hands and feet in the winter. Discomfort in left side.

Fulness at back of head, worse on stooping and turning quickly. *Sulph* 30 t.d.s.

November 4th.—Is much better. No sickness and indigestion much better, but still a little flatulence and soreness in side. Rep. *Nux v.* 30 t.d.s.

Not seen since.—*Homœopathic World*, Oct. 1905 to Feb. 1906.

Gleanings from Contemporary Literature.

OLD AGE.

By Elie Metchnikoff, Sub-director of the Pasteur Institute.

(Continued from page 43.)

In the case which we have just cited there occurs an acute poisoning, occasioned by the toxic products of microbes and of mushrooms introduced into the intestines. Now, there is no doubt but that there occur besides these examples others in which the poisoning is less violent and less rapid and in which the microbes of the intestinal contents secrete their products for a long time, thus setting up a chronic poisoning. It is exactly among these products that we should seek for the cause of the weakening of our noble elements and the stimulation of the destructive activity of the macrophages. It is true that certain poisons once absorbed by the organism initiate the production of counter poisons. Thus, Ehrlich, after having caused his mice to swallow quantities of vegetable toxines, ricine and abrine proved that the blood of these animals became the best antidote against these poisons. The human organism after absorbing for years the microbic products elaborated in the intestines might indeed thus acquire an immunity with regard to them. This supposition is very probable, but it does not at all apply to a whole series of microbic poisons, such as the phenolic substances, the ammoniacal salts, and others, for their absorption occasions no production of counter poisons.

According to the hypothesis we are advancing, the principal phenomena of old age depend upon the indirect action of microbes that become collected in our digestive tube. And, since the wearing away of the substance of the bones in tuberculosis and leprosy is effected by osteoclasts excited by the poisons derived from the bacilli characteristic of those two maladies so the same wearing away of the bones may come from a stimulation of the same osteoclasts by the poisons of intestinal microbes. If this is the case, our organism contains within itself the cause of its own destruction, in the same way that grapes carry upon their surface the germs of the ferments that set up alcoholic fermentation by destroying the sugar the fruits contain.

This hypothesis rests upon a great number of well-established facts, but it lacks direct proof, which can only be furnished by investigations carried on for long years. In this imperfect state it becomes necessary to bring together as many arguments as possible in order to justify our supposition.

If it is really intestinal microbes that are the cause of our senile atrophy we must believe that the more the flora of the intestines is reduced the fewer manifestations of old age there will be.

If we compare an old mammal with an old bird we are at once struck with the great difference in their external appearance. An old horse or an old dog can easily be recognized by its ugliness, its lazy movements, its worn teeth, its lusterless hair turned white on certain portions of the body. A dog of 12 to 15 years shows very markedly all these signs of senile

decrepitude. Birds keep their age much better and longer than mammals do. An aged duck, more than 20 years old, is alert in its movements and does not show externally any sign of its advanced age. Parrots and parroquets also remain for long years in a very youthful state. A little parroquet from 15 to 19 years old, which I observed very closely for several years, manifested no signs whatever of old age. It was very lively and curious, interesting itself in all sorts of things about it, and its plumage was brilliant and richly colored. We have possessed for some years past a parroquet that, according to reliable information, must be from 70 to 75 years old. It is impossible to recognize its advanced age, so normal is its appearance and so easy are its movements.

The few examples just cited confirm the general rule that birds have a much greater longevity than the large majority of mammals. Now birds are distinguished by having an intestinal flora very much poorer in microbes than that of mammals. Possessing no large intestine, birds lack that great reservoir for alimentary refuse which, in mammals, breeds an enormous quantity of all sorts of microbes. A very simple method of assuring ourselves of this consists in a microscopic examination directed toward ascertaining the comparative quantity of microbes contained in different parts of the digestive tube of a small mammal, a white mouse for example. We find quite a large number in the stomach; very few in the upper portions of the small intestine. The lower part of the small intestine contains many microbes, but it is in the cæcum and the large intestine that are found quantities truly enormous. The examination of the digestive organs of a small bird, a canary for example, having the same weight as the mouse above mentioned, gives quite a different result. In canaries microbes are found, but in very small numbers. The stomach and the small intestine contain throughout their course only a few isolated specimens. The inferior portion of the intestinal tract contains a few more microbes, but their number is very far from being equal to that found in the mouse. The cæcum, that large reservoir for intestinal microbes in the mouse, is represented in the canary merely by two rudimentary *culs de sac* destitute of microbes. It is not astonishing that, under these conditions, the toxic effects derived from intestinal sources should be much less in the canary (and in birds in general) than in the mouse and most other animals. So we see that while the mouse is already old after a few years, and lives hardly five years at most, the canary is vigorous for a much longer period and may attain the age of 15 or even 20 years.

When we see that cold-blooded vertebrates, such as turtles and crocodiles attain a very advanced age without showing any extensive signs of senility we are tempted to ascribe this fact to the rather inactive life of those animals. As they do not need to maintain a high bodily temperature, they take but little food and are not forced to expend much energy in procuring it. Birds have none of these advantages. They lead a very active and agitated life; in order to preserve their normal condition they must maintain a higher bodily temperature than is necessary for mammals, yet they

attain a greater and more active old age than do mammals, even including man.

Notwithstanding the great difference between the life of birds on the one hand and that of turtles and crocodiles on the other, these animals have this point in common, that in them the large intestine is very slightly developed, if not absent, and their intestinal flora is extremely scanty.

In spite of the imperfect state of our knowledge at the present time, the mass of facts we have cited may well justify us in maintaining the hypothesis that the intestinal microbes play the part of one of the preponderant causes of that chronic malady, our old age.

Since science has already found very efficacious means both for protecting the organism against infectious maladies and for curing such maladies when they are not too far advanced, why should not one seek for something to render old age less painful, it also being a state which should be considered as having a microbic origin?

If, as seems more and more probable, the source of our early decay is found in our intestinal flora we ought to seek some means either for eliminating it more or less completely or for modifying it profoundly. The idea of suppressing the large intestine, that useless part of our digestive tube that we have inherited from our animal progenitors and that serves as the principal reservoir for noxious microbes, can not be considered seriously. It is evident that we can not count upon the extirpation or even upon the surgical exclusion of the large intestine. In the cases in which this operation becomes unavoidable we find that the organism tends to form a second large intestine. We have under observation at the present time a young woman in whom the suppression of the greater part of this organ, made nearly a year ago, has by no means suppressed the disadvantages due to intestinal microbes. It even seems that there is produced at the expense of the remaining portion of the large intestine a pocket which collects the alimentary waste and nourishes a multitude of microbes.

In the present state of our knowledge we are inclined rather to consider the question of modifying our intestinal flora. There is now present in it many injurious microbes. It is only necessary to have some lesion in the intestinal wall that allows these to escape into the peritoneum to set up an infectious disease of the gravest character.

The microbes capable of inducing putrefaction are among the most dangerous. Now, these microbes have bitter enemies in other microbes, especially in those that set up the fermentation of sugars and produce lactic acid. Are there no means of acclimatizing such microbes within our digestive tube in order to combat with their aid intestinal putrefaction?

Bacteriological researches have shown that many microbes, even when taken in very large quantities, perish in the intestines of man and of animals. Thus, for example, the vibrio of cholera, that dread agent of Asiatic cholera, has many times been swallowed with impunity by various persons. Its destruction was so complete that it was impossible to find it

again in the alimentary waste. Schutz introduced directly into the small intestine of dogs a quantity of vibrios which he saw soon after had disappeared. The same phenomena were observed in chickens, the microbes being destroyed in their digestive tubes.

In every attempt at a modification of the intestinal flora it is, then, necessary to find out whether a given microbe is really capable of living in the intestines. For certain lactic microbes this fact has been established by experiment. In curdled milk prepared by a ferment of Bulgarian origin, placed at our disposal by Prof. Massol, at Geneva, there is found a large bacillus remarkable for its ability to produce a great amount of lactic acid. The bacillus, when swallowed by man, does not suffer the fate of the vibrios which we have mentioned. It is is not destroyed in the intestines, but passes through alive. Its presence has been demonstrated by Dr. Cohendy even many days after its introduction by the mouth. Here, then, is a microbe not normally present in our intestinal flora which may be implanted there artificially, either with curdled milk or under the form of a pure culture ; endowed with great power of producing fermentation, it will be capable of effectively combating intestinal putrefactions.

It is interesting to note that this microbe is found in the sour milk consumed in large quantities by the Bulgarians in a region famous for the longevity of its inhabitants.

We have, then, reasons to suppose that the introduction of this Bulgarian clotted milk into our diet may counteract, or at least diminish, the injurious effect of the intestinal flora. This would be the first example of artificial modification of that flora.

To sow useful microbes within our digestive tube is not sufficient. It is also necessary to prevent the introduction of injurious ones. With this end in view we should avoid, as much as possible, uncooked foods that serve as vehicles for all sorts of microbes. In spite of the washing vegetables and fruits, such as salads, radishes, strawberries, cherries, and others, they are yet contaminated with dust, soil, manure, and fecal matters. Now, these often contain injurious microbes and eggs of animal parasites. Dr. Bienstock found in the earth of his strawberry beds tetanic spores, which he found would be destroyed in his own digestive tube when a little of that earth was swallowed. But we must not count too much on the antimicrobic power of our intestines, and it is much more prudent not to use these vegetables and fruits until they are cooked—that is to say, until after the destruction of all or a large part of the microbes that they contain. This measure, together with the use of water that has been boiled, will prevent, once for all, the penetration into our body of wild microbes whose injurious effects can not be denied.

Thanks to the means we have just outlined, as well as to others which we may add thereto later on, we may in the future transform our intestinal flora, now so varied and uncultivated, into a flora of much fewer species exempt from injurious microbes but containing useful ones—in a word, into a cultivated flora.

But independently of this prospect, it is possible to avoid the disadvantages of our present intestinal flora by specific serums, prepared with a view to neutralizing the injurious action of certain microbic poisons and of destroying the microbes themselves.

As according to our hypothesis, these microbes act upon our organism by weakening our noble elements and stimulating their adversaries, the macrophages, it will be rational to seek the means for reinforcing the former. The weakening of the latter can not be considered for the moment, as the macrophages are of great use to us in the struggle against several infectious diseases, and notably against the most terrible of all, tuberculosis.

The idea of reinforcing our noble elements is based upon the study of certain poisons called cytotoxines. Not being able to enter into the details of this question we will content ourselves with remarking that, while strong doses of these poisons destroy our cells, minute doses, on the contrary, reinforce them. We should, then, attempt to assist our noble elements in their struggle against the macrophages by the aid of cytotoxines. This problem is complex and delicate, and requires numerous preliminary researches of long duration. These were begun a year ago. At this time the question is not sufficiently mature for any kind of discussion.

The theory of old age and the hypotheses which are connected with it may be summarized in a few words; the senile degeneration of our organism is entirely similar to the lesions induced by certain maladies of a microbic origin. Old age, then, is an infectious chronic disease which is manifested by a degeneration, or an enfeebling of the noble elements, and by the excessive activity of the macrophages. These modifications cause a disturbance of the equilibrium of the cells composing our body and set up a struggle within our organism which ends in a precocious aging and in premature death, contrary to nature.

It is very probable that during the time we are growing old the intestinal microbes that have set up within our body permanent factories for different poisons play a very important part. It is, then, entirely possible to struggle against premature senility by modifying our intestinal flora and by reinforcing our noble elements, so sensitive to microbic poisons.

But, you may say, all this is theoretical. It may be scientific, but it has not been proven. You may ask me to speak to you of our present established knowledge concerning old age, of what modern medicine proposes to do in the way of remedying this unenviable condition. This question has for a long time been under consideration, and I will now give you the last utterance of empiric wisdom. A much-esteemed physician of London, Dr. Weber, who is himself very old, has quite recently summarized the means that he used to make his own age supportable and to ameliorate that of his numerous clients.

These are the rules that he drew up for this purpose: "All the organs must be preserved in a state of vigor. Morbid tendencies, whether here-

dition or acquired during life, must be recognized and combated. Moderation must be used in the consumption of food and drink as well as in the pursuit of other corporeal pleasures. The air within and about the dwelling must be pure. Corporeal exercise must be taken daily in all conditions of weather. In many cases it is also necessary to take respiratory exercises as well as to walk and climb. One must retire early and rise early. Sleep should be limited to six or seven hours. Every day a bath should be taken or the body be well rubbed. The water employed for this may be cold or warm according to individual temperament. Sometimes warm and cold water may be alternately employed. Regular work and intellectual occupation are indispensable. The mental attitude should be that of enjoyment of living, tranquillity of mind, and a hopeful conception of life. On the other hand, the passions and nervous disturbances of sorrow should be combated. Finally, one should have a firm determination that will compel the preservation of health, the avoidance of alcoholic liquors and other stimulants as well as narcotics and analgesic substances."

These counsels are certainly very useful to follow, but very frequently they are insufficient for the attainment of normal old age. Many very sober persons, not addicted to alcoholism nor any other excess, contract chronic maladies of the kidneys, of the blood vessels, of the digestive organs, and of the nervous system which result in premature and most painful old age.

Empirical rules, even when dictated by the widest experience, can not, then, suffice to solve the problem, and we must seek the aid of science in order to obtain an effective result. The scientific study of old age is therefore indispensable. In order to make this study possible, we must, first of all, have material upon which to work; that is to say, old people, and indeed, many old people. The opinion that old people are merely a burden upon society, which ought to support them simply because of our moral laws, is certainly erroneous.

Not only do the young, but many older persons share the opinion that old people incapable of work are no longer good for anything. Some ten years ago a celebrated German physiologist, who had reached a great age, told me how he felt because of his uselessness to society, and added: "What can one do? I can not decide to kill myself." Well, now that science has taken up seriously the study of the problem of old age, old people have become very useful subjects, especially so for the young, who may be able to profit by the results of these studies. If we should make way with the aged, as certain savage tribes still do, old age could never be modified nor ameliorated. If we should make way with the sick, as was formerly done, and as is still done among certain tribes, we should never discover any means for curing diseases. If we had killed diphtheritics under the pretext that the greater part of them were going to die and that they were a source of danger to their healthy neighbors, we should never have discovered the serum which now cures them.

Old people, even in their condition of decrepitude, may be very useful, on condition that scientists can be found who will undertake the task of carefully studying them. There is also a certain consolation in the thought that when we ourselves have become incapable of studying old age we may serve as subjects of study to other observers. In any case, it is to be hoped that in the future, which is, without doubt, somewhat distant as yet, old age may cease to be one of the greatest misfortunes of humanity, and that this chronic disease may yield to the ever-increasing progress of exact science.—*Scientific American Supplement*, November 11, 1905.

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