

AT FOUR O'CLOCK IN THE MORNING

DR. KARL KÖNIG, M.D. (VIENNA)

A little while ago a young man of 25 came to see me who suffers from chronic asthma. A thin person, rather tall, and leaning forward. Posture and psyché appeared to be typically asthenic. Questioned in detail about the occurrence of his attacks, he told me the following: For many years now the attacks begin in a very typical way which has not changed despite varied and manifold treatments; even changes of environment as far apart as Scotland, the South of England, Germany, and Switzerland made no difference. The attacks start suddenly from sleep, *at or about 4 a.m.*; at this time the patient wakes up, has gushing, watery stools, which recur about every half-hour. In addition, there is strong and very frequent passing of urine, and at the same time a good amount of dyspnoea. All this continues until about 10 a.m., the critical time. For now diarrhoea and diuresis stop, and the patient is able, as long as he manages to maintain sufficient inner peace, to overcome the asthmatic troubles with his will-power. If, however, he is too hasty and restless, the asthma takes hold of him and continues for about 2-3 days and nights. After such an attack begins. During the attacks of asthma the patient feels sick all the time, and there is a strong sensibility to pressure over the sternum. During this time the aversion which he usually has to fatty foods and those rich in sulphur (onions) is increased.

On hearing this case-history I was reminded of another case. This was a man of somewhat over fifty; a typically pyknic habitus. Corpulent and lively, one of those who pretend to know everything, and also believe that they do. This man suffered from angina pectoris, and the E.C.G. at that time did in fact show typical evidence of coronary insufficiency. He described his attacks as follows: *At, or about 4 a.m.* I wake from my sleep; I feel a bit dazed, and do not know why I woke up. But then the typical attack develops more or less quickly,

usually in a matter of minutes. The chest is gripped in front as with pincers, then a sharp burning sensation arises behind the sternum, radiating into both arms. I can feel it pulsating in the elbows and finger-tips of both arms and hands. Breathing becomes difficult, the anxiety increases, and my thoughts are directed towards death. At the same time the epigastrium is swollen and painful. The duration of the attack varies and can be anything from minutes to hours.

Every doctor, and especially one who tries to get an exact anamnesis, will have heard similar stories from his patients. I have also observed in some cases of epilepsy that the attacks started suddenly at 4 a.m., straight out of sleep.

These are chronic diseases (epilepsy, bronchial asthma, angina pectoris), which are interspersed by sudden attacks which commence at or about 4 a.m. What does actually happen, and why does it happen just around 4 a.m.? Why does it affect some patients and not many others?

No further explanation is needed when I state that bronchial asthma, epilepsy, and angina pectoris are not diseases sui generis, but syndromes which may manifest themselves on the background of a great variety of psychogenic and pathophysiological causes. But when this happens at four in the morning, is there a common factor behind the sudden symptom? Can one anyway put the question in this way? What is "at or about 4 a.m." and what is its meaning?

II

If we now take the next step and look in Stauffer's *Symptomen-Verzeichnis* under "Time", we find under 4 a.m. the following specifications:

- 4 a.m. *Acidum nitricum* (cough).
- 4 a.m. *Ammonium muriaticum* (chill).
- 4 a.m. *Angustura vera* (backache).
- 4 a.m. *Arsenicum album* (anxiety).
- 4 a.m. *Aurum met.* (waking).
- 4 a.m. *Causticum* (waking and sweat).
- 4 a.m. *Chelidonium* ;
Cyclamen eur. (waking with aggravation).

- 4-5 a.m. *Kali. sulph.* (asthma).
 4-5 a.m. *Lycopodium* (palpitations).
 4-5 a.m. *Nux vomica* (chill and cough).
 4-5 a.m. *Petroleum* ;
 Podophyllum pelt. (abdominal pain).
 4 a.m. *Ptelea trifoliata* (stomach troubles).
 4-9 a.m. *Rumex crispus* (diarrhœa with cough).
 4 a.m. *Sarsaparilla* (waking, with hammering head-
 ache).
 4 a.m. *Stannum met.* (sweat, with phthisis).
 4-5 a.m. *Sulphur* (wakes chilled).
 4 a.m. *Tabacum* (waking, and then sleeplessness).
 4-5 a.m. *Veratrum alb.* (abdominal pain).

The homœopathic materia medica does therefore know quite a number of remedies which include "about 4 a.m." in their drug picture. This single symptom, however, is accompanied by others which vary according to the remedy; we find cough, anxiety, abdominal pain, chill, asthma, etc. Looking for a first rough classification of all this variety, one soon discovers a two-fold order. Most of the symptoms mentioned either concentrate around the chest, or are of an abdominal nature. Those belonging to the thorax are : cough (three times), asthma, fear, sweat with phthisis, palpitations. The abdominal symptoms are : abdominal pain (twice), stomach troubles, diarrhœa. The remaining symptoms simply have the sign of waking and of chill; chill and coldness, however, usually occur in connection with sudden awakening and do not have any particular meaning here.

If we now make a first attempt to outline the symptomatology of "at 4 a.m.", the main sign found from simple awakening (*Aurum met.*) to waking followed by sleeplessness (*Tabacum*), is chill and cough; but also cough and diarrhœa, waking and sweat. If the sign of asthma, palpitations, and anxiety is added to all this, one can easily imagine that altogether this awakening-process is due to the congestion which has arisen within the region of the chest. If we go through the remedies whose symptoms fit, we find among them : *Arsenicum alb.*, *Chelidonium*, *Lycopodium*, *Nux vomica*, *Podophyllum pelt.*, *Ptelea*, *Stannum*

met., *Sulphur*. All of them are remedies which particularly attack the stomach, duodenum, and liver, and always, within the framework of their whole drug picture, and liver, and always, within the framework of their whole drug picture, tend in that direction. In addition, a small number of these remedies have a special relationship to the arthritic process (*Ammonium carb.*, *Rumex crisp.*, *Sarsaparilla*). This brings them, too, into the wider orbit of the liver-metabolism.

A first impression of the symptomatology at hand could therefore result in the following picture :

Awakening at 4 a.m., with signs of congestion in the chest which appear in the form of coughing, anxiety, sweat, palpitations, and asthma. These symptoms seem to originate from the epigastrium. They might originate from a dysfunction of the liver.

Thus we have made the first step forward in the elucidation of this symptom. But now the question is : "Why does all this happen just at or about 4 a.m.?" Is it simply by chance, or are there regular processes which until now we have failed to understand? Does not time itself in its daily configuration need to be recognized as a structure which manifests itself in a different form at each hour, and thus brings about certain happenings and events which cannot occur in such frequency at other "points" of time?

The novelty of such a hypothesis does not speak against it. I would like to try and give a tentative answer by means of the phenomenon "at 4 a.m."

III

For about twenty years now biology and medicine have started to concern themselves more closely, definitely, and scientifically with the problem of Periodicity. The investigations made by Jores in Hamburg, De Rudder in Frankfurt, and especially Forsgren in Stockholm have brought remarkable and important results in this new field of research. Günther Wachsmuth presented a lucid and at the same time explanatory summary of many partial results in his book *Erde und Mensch* (Earth and Man).

Already in 1935 Forsgren published a comprehensive paper in which he pointed out that the activity of the healthy liver-cell shows a periodic change in the course of a day. He described an assimilatory phase which lasts from about 2 p.m. to 2 a.m. and during which glycogen is formed. From about 2 a.m. onwards the dissimilatory phase follows, with continually increasing activity. During the latter bile is formed and excreted. Forsgren summarizes his views on the liver function as follows: "We can now visualize the sequence of events as follows. During the afternoon or evening an individual has taken his last meal of the day. Gastric digestion is completed after about 4 hours (10 p.m. to 11 p.m.), and the duodenum is passed after another 4 hours (2-3 a.m.). During this time resorption proceeds from the intestine, and the liver, which is in the assimilatory phase, takes in water, albumin, and carbohydrates, thus increasing the size of the liver-cells and of the liver, and the weight of the organ. The deposition of water, albumin, and glycogen already began in the liver-cells during the afternoon, especially in the central region of the lobules, and now proceeds towards the periphery. This increases the glycogen content of the liver, but the secretion of bile which at the beginning of the assimilatory phase was still very active, decreases more and more as the numbers of cells containing secretion diminishes. At 2 a.m., when digestion and resorption have ceased, it is at its lowest, whilst the assimilatory phase has at the same time reached its maximum, and all the liver-cells are filled with the assimilated substances. Now a new phase begins, the secretory phase." And Forsgren describes in detail the formation of bile-secretion granules within the periphery of the liver-cells, and the gradual diminution of the products assimilated until 2 a.m., especially of water and glycogen.

Wachsmuth has tried to find an explanation for this phenomenon. He was able to show convincingly that the phases pointed out by Forsgren, which occur within the liver-metabolism between 2 p.m. and 2 a.m., can also be found in other functional cycles. A. Jores, for instance, has pointed out that: "the graphs of Volker's investigations show quite clearly that cor-

responding to the fluctuations of the blood-pressure there exist also those of the pulse frequency, which are quite independent of the mode of living. The maximum lies at about 6 p.m., the minimum at about 4 a.m. According to Hagen's investigations there is also a cycle in the width of the lumen of the capillaries. About 6 o'clock in the evening very wide capillaries are found, and at about 2 in the morning the narrowest".

Many other phenomena are connected with this daily rhythm. For instance, according to Schenk "hematopoiesis in the bone-marrow is strongest at about 4 p.m. The vital capacity of the lungs varies in this daily rhythm and reaches its lowest point at about 3 a.m., and its highest at about 3 p.m. The body temperature is lowest between 3 and 5 a.m., rises steeply during the morning until noon, and then remains stationary during the afternoon and evening".

Wachsmuth has put together in his book the various phenomena of the daily periodicity in man, and for the phase "at 4 a.m." which is of particular interest to us, he gives the following list :

MAXIMUM OF THE CENTRIPETAL AND ASSIMILATORY PHASE

AT 3 A.M.

Maximum	of glycogen assimilated in the liver, of fat resorption in the intestinal wall, of blood retention in lungs and legs, of water retention in the blood, amount of melanophoren hormone, of narrowing of the lumen of capillaries ;
Minimum	of bile secretion, of diuresis, elimination of water, of pulse rate, of blood pressure, of blood circulation, of venous return, of cardiac output, of vital capacity of lungs, of consumption of oxygen, and carbon dioxide output,

of the metabolism,
of body temperature.

This synopsis is most instructive regarding our problems. The phenomena mentioned under Maxima alone correspond almost exactly with the above-mentioned symptoms. For the swelling of the liver in its state of assimilation can cause palpitations and stomach complaint. Maximum fat resorption in the intestine leads to diarrhœa, the congestion of blood in the lungs to asthma and coughing, the narrowing of the capillary vessels to anxiety and chill, so that we really have an almost complete correspondence between the phenomena due to periodicity and the symptoms taken from the homœopathic materia medica.

It now becomes more obvious why "at 4 a.m." does altogether happen. But why do only some individuals wake up suddenly whilst most people sleep on peacefully?

The statements made by Forsgren, Jores, Wachsmuth, and others show quite clearly that the phase of the maxima and minima which are listed here begins at about 2 or 3 a.m. The change-over from assimilatory to dissimilatory phase occurs at about this time. If, however, this change-over is held up, and assimilation continues without changing into dissimilation, the above-mentioned symptoms may appear. We simply have to imagine this vividly enough: the accumulation of blood in the lung region, the contraction of the capillaries, the retention of water in the blood, the enlargement beyond a given limit of the liver—and we arrive at a direct understanding of the impulse of wakening at 4 a.m. For that is probably the critical time. A further delay in the onset of dissimilation leads to a dangerous condition. Now the human being wakes up, and at this very moment dissimilation begins abruptly and acutely; cough, sweat, diarrhœa, palpitations are symptoms of this. Thus a first understanding is gained of what actually happens "at 4 a.m."

This critical point of time, "at 4 a.m.," pervades the whole structure of human existence. Thus we have the highest incidence of births at this time; but death, too, more frequently occurs around this early hour in the morning. Exact details about this can be found in Wachsmuth's book. He also quotes a rather dramatic description given by E. Jenny: "The physio-

logical over-loading of the circulation at night, when 3-800 c.c. of blood can be retained in the lungs and a definite swelling noted in the lower legs, is easily managed by the healthy individual. In people with circulatory disorders, however, the adjustment to these periodical changes is endangered. The early morning attack of stenocardia is encouraged by the diminution of cardiac output and the lower blood-pressure, in connection with the parasympathetic contraction of the coronary arteries. The nightly cerebral hæmorrhage occurs at a time when the cardiac output is below the daily average, and the cerebral vessels with their changed walls do not sufficiently respond to the parasympathetic stimuli for widening. The pulmonary œdema of pneumonia at night is encouraged by the increased amount of blood in the pulmonary vessels due to this daily periodicity, and the dilution of the blood".

All this points to the results which all these facts and symptoms can and must lead to. The question, however, remains: Why are the remedies which have "At 4 a.m." in their drug picture exactly those whose particular points of action lie in the liver and upper gastro-intestinal regions? Let us try and look at the phenomena we have discussed so far in such a way that an archetypal image begins to stand out and becomes common to them all. For if we even begin to see it, understanding and hence therapeutic action will follow.

IV

The phenomena we are discussing, which occur in daily periodicity, are not limited merely to the human organism. A 24-hour periodicity is found in the animal- and plant-kingdoms and is conditional to certain meteorological phenomena. During the last two decades various attempts were made to get to the bottom of the complex cause behind all these phenomena.

In his work *Über sogenannte "kosmische" Rhythmen beim Menschen* (The So-called "Cosmic" Rhythms in Man) de Rudder has obscured this issue rather than clarified it. He writes: "If therefore many other experiences already show us the reaction of the human organism to atmospheric changes, the assumption becomes obvious that a reaction may also follow the daily

rhythm in atmospheric changes. Such influences have in fact already been very much looked for, especially in botany, but until now with no definite result... The concept given here, however, doubtlessly paves the way, at least in principle, to regard the appearance of a daily rhythm in man as the result of congenial fluctuations of terrestrial processes which some day will be perfectly measurable."

Such statements are hardly a help to positive research; for de Rudder knows that the meteorological phenomena to whose manifoldness he refers have completely different maxima and minima in the course of the day, and therefore belong to different causes and factors. The pointer to "terrestrial processes which some day will be perfectly measurable" is a consolation which is of little use to science.

Since then Wachsmuth's book was published where the author tries to pursue a purely phenomenological way of observation. He tries to order the great number of facts about daily periodicity which have so far been discovered and revealed. First he concerns himself with the phenomenon of the rhythmical double wave of air pressure every day, which has been known for more than 200 years. This fact, which remains a kind of mystery until this day, has been studied by Goethe already, and led him to ascribe to the organism of the earth an intrinsic rhythm which he described as "the basic movements of the living body of the earth". To Eckermann he spoke of "the inhalation and exhalation of the earth in accordance with eternal laws".*

* Goethe's statements are to be found in the essay written in 1825. "Versuch einer Witterungslehre", where he says about this phenomenon: "Apart from the movement of the barometer mentioned so far which is not bound to the time of the year or the day, another movement of mercury has lately become known to us, after manifold observations, which runs its determined course in 24 hours...."

"We base this on a passage from Simonow's description of a 'Journey of Discovery' (Vienna, 1824), which goes as follows (p. 33): 'The phenomena which, according to these observations, appeared on the barometer are such that every day the mercury gradually rises to the highest degree of the barometer, and then slowly begins to fall again. This rising and falling of the mercury in the barometer occurs twice in 24 hours, i.e. at 9 a.m. and at the same hour in the evening (it stands at the highest), after midnight and in the afternoon at the lowest point.'"

This view which Goethe had of the earth as a living being which therefore also shows a rhythm of breathing, expressed for instance, in the daily rhythmical change of air pressure, is taken up by Wachsmuth. He is supported in this by further indications which were given by Rudolf Steiner. Goethe's idea and Steiner's indications are taken one step further by Wachsmuth. He explains very clearly that the assumption of a respiration of the earth which occurs once during the day and has its time of exhalation between 3 a.m. and 3 p.m., and of inhalation between 3 p.m. and 3 a.m., and whose maxima are to be found at 9 p.m. and 9 a.m., respectively, brings all the meteorological and biological phenomena which have so far been discovered under one common denominator.

The hypothesis is a very comprehensive one which may be accorded a high degree of probability. Wachsmuth describes the respiration of the earth as a rising and falling of those forces which Rudolf Steiner described as the etheric formative forces, and which are the basis of all living things. Particularly predominating in the respiration of the earth are those forces which Wachsmuth describes as the "living chemism". (Further details are given in Wachsmuth's book.)

If we take this concept as a possible working hypothesis and test its value by means of the material so far known, astonishing concordances result, particularly for the phenomena pertaining to man.

The maxima and minima mentioned in part III, which appear at the end of the "inhalation period" of the earth at 3 a.m., take place mainly in two regions of the human organism. One of these regions is the circulation, and the exchange of fluids which is so closely bound up with it. Blood is accumulated in the lungs and legs, water is retained in the blood, the capillaries narrow, the pulse frequency drops to a minimum, blood pressure is reduced, and venous return and diuresis are very low. This is mainly a question of a shifting in the water and blood distri-

Goethe then adds: "... this movement undergoes a certain pulsation, without increase or decrease, without which one would not be able to think of a living process; it is also a regular expansion and contraction which repeats itself within 24 hours and is weakest in its action in the afternoon and after midnight, and reaches the highest point at 9 a.m. and in the evening."

bution. The fluid surface is changed, independently of whether the individual is asleep or waking, resting or at work. This change in the distribution of blood and fluid is dependent only on the local time of the earth, and not the behaviour of man.

Further phenomena enter more deeply into the human organization. Here it is not only a matter of displacements, but of physiological changes which go deep down into the sphere of cell-metabolism and cell-growth and decomposition. I mean the phenomena of the intrinsic rhythm of the liver which find expression in the dissimilation and assimilation within the liver-cell, and which Forsgren described. But there is also a further phenomenon which is given by Schenk. He was able to prove that the formation of blood in the bone marrow reaches a maximum at about 4 a.m., whilst the number of circulating leucocytes is highest at 4 p.m.

Isn't it a fully justified concept then to say that the liver in its metabolic rhythm fully corresponds to and follows the breathing process of the earth? That the phase of assimilation runs parallel to inhalation and that of dissimilation to exhalation, and that within the human organism the liver represents the true "barometer" for the earth's respiration?

Such a concept does indeed come much closer to the actual facts and an understanding of what is called the "living chemism" is evident in the formation of glycogen and bile in the periodic alternation in the physiology of the liver.

In lectures for doctors which he gave in 1921 Rudolf Steiner pointed out that "the liver breathes in the human organism", and that this occurs in that sphere where "the intake of food and the digestion of food" takes place. In this statement he anticipated in a rough outline something which Forsgren demonstrated scientifically and in detail.

A concordance does therefore exist between the physiology of the liver in the human organism and the respiration of the earth. Once, in 1920, Rudolf Steiner conceived the liver as a "meteorological" organ and expressed this as follows: "Although the liver seems to enclose itself in the organism, it yet belongs to the world outside to a high degree. You can prove this association with the outside world insofar as you will always

find that the condition of the liver, as it were, depends on the condition of the water of a given locality".

Insofar as it is borne by the living chemism, the respiration of the earth takes place in the region of the hydro- and atmosphere of the earth. It pulsates through the atmosphere in exhalation, and during inhalation enters the waters of the earth (rivers, streams, brooks, ground water). This breathing process, however, acts in harmony or disharmony, in resonance or dissonance, in conjunction with the assimilation- or dissimilation-process in the liver-metabolism.

Since 1920, when Eppinger began to see the physiology of the liver in close connection with the spleen and formulated the concept of the "hepatolienal" diseases, and since the bone marrow was then seen in relation to this system, and the reticuloendothelial system recognized as its anatomical and functional basis, the formation and decomposition of the single blood-cells has also been woven into this sphere. Now we derive a further understanding of the 24-hour periodicity described above.

In harmony with the respiration of the earth, the liver has its processes of inhalation and exhalation in the form of the assimilation of glycogen and albumin, and dissimilation in the preparation of bile fluid. This phasic process, however, expands into the region of the reticuloendothelium, and thus brings the production of the elements of the blood into the 24-hour rhythm; parallel to the maximum assimilation in the liver goes the maximum of production in the bone marrow. This again reacts onto the distribution of the blood and hence the whole fluid household, which again is subject to the 24-hour periodicity.

I think we should gradually get away from the hypothesis which relates any displacement of periodicity in the organism to the sympathetic nervous system as the final impulse. A nervous system hardly ever is an actively inciting element, but one which receives and reacts passively. Considering the phenomena, we have much more reason to ascribe the central position in the 24-hour periodicity to the liver itself, and starting from this centre come to understand the other disturbances of periodicity.

Now we also come to understand why so many of the re-

(Continued on page 501)

Vitamin P. People with weak blood vessels, especially fragile capillaries, require more vitamin P. Hence it is called for in cases for which vitamin K is also advisable. Sufferers from high blood pressure, and in cases where there is a danger of thrombosis, should take vitamin P daily.

The vitamin is found mainly in the peels of lemons and oranges. Also in the juices of lemons, oranges, grapes, plums, prunes, grapefruit and rose hips.

I advise all my high blood pressure sufferers to chew some lemon or orange peel daily, ejecting the chewed substance and swallowing the juice.

Several other vitamins have been isolated, but only the more important have been listed. Of this one may be certain : if natural, unfaked, unadulterated foods are taken daily, and they are of good variety, all the necessary accessory food substances will be taken into the system.

—*The Homœopathic World, Oct.-Dec., '59*

AT FOUR O'CLOCK IN MORNING

(Continued from page 497)

medies which show the symptom "at 4 a.m." are the ones which have a direct claim to be liver remedies ; but in its action every one of them belongs to the rhythmic play of the liver-physiology, to the periodicity of blood displacement, to the phasic changes in the water household.

In this way the remedy and the pathological physiology meet. "At 4 a.m." is a symptom which has its point of origin in the liver metabolism. The asthenic patient reacts to this with diarrhœa and asthma, the pyknic develops a stenocardiac attack, the athletic an epileptic fit.

All these syndromes are the result and effect of the achemical image which now is obvious. It consists of the interplay between the liver periodicity and the respiration of the earth. Thus perception of the disease leads directly to the finding of the remedy, and there is truth in Paracelsus' saying : "It is the physician's task to be led through Nature's examination."

—*The British Homœopathic Journal, Jan., '58*