**Uric acid in the clinic : a clinical appendix to "Uric acid as a factor in the causation of disease" / by Alexander Haig, assisted by Kenneth G. Haig.**


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# URIC ACID IN THE CLINIC

William McGowan
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1910

# Uric Acid in the Clinic

A CLINICAL APPENDIX TO

"URIC ACID AS A FACTOR IN THE CAUSATION OF DISEASE"

BY

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## PREFACE TO "URIC ACID IN THE CLINIC."

In "Uric Acid as a Factor in the Causation of Disease" so much space had to be devoted to the records of experimental work and the discussion of theories that I have till now been unable for want of space and time to give anything even approaching a fair sample of the cases on which that work was founded.

In the present volume, which is issued as a clinical appendix to the original work, I have endeavoured to remedy this defect to some extent, and the cases here recorded may be regarded as a selection from the clinical work I was doing some fourteen years ago, when the earlier editions of "Uric Acid" were passing through my hands.

In now looking through and recording these cases, my more recent experiences have enabled me, I trust, to throw some new light on the work of previous years, of which I did not at the time grasp the full import; so that this volume is both a part of the foundation of the larger work and a new contribution to clinical medicine.

In this volume I have had the assistance of my son, Mr. K. G. Haig, whose case is now for the first time placed on record in its proper place beside my own.

To him also I am greatly indebted for help and assistance both in the arrangement of the cases and in seeing this volume through the press.

7, *Brook Street, W.*

*June*, 1910.

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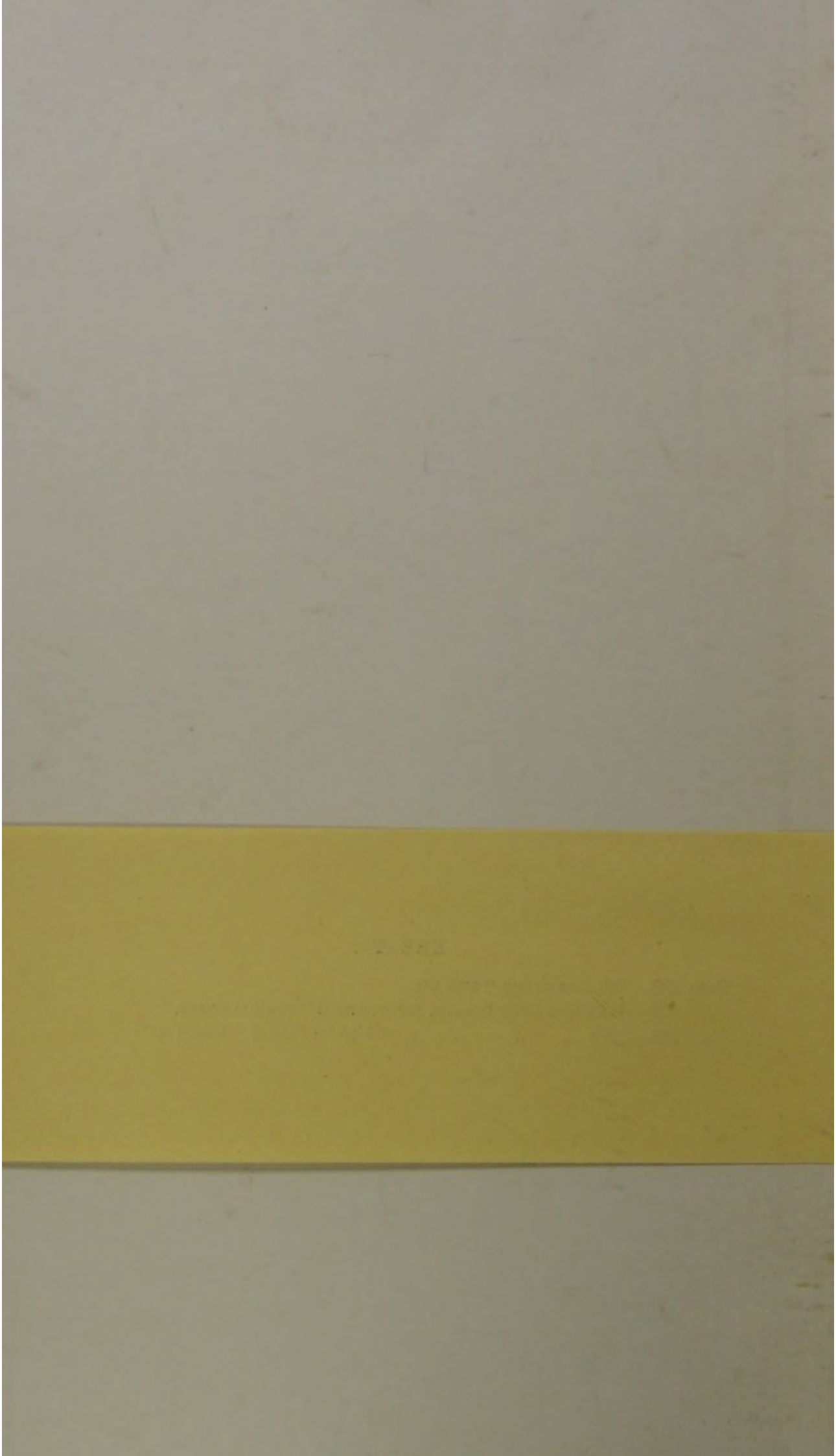
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ERRATA.

Page 139.—7th line *delete* "and are."
,, 173.—12th line from bottom for "caused" *read* "cured."
,, 193.—10th ,, ,, ,, ,, "1 to 35" *read* "1 to 3·5."



# URIC ACID IN THE CLINIC.

A CLINICAL APPENDIX TO

*"URIC ACID AS A FACTOR IN THE CAUSATION OF DISEASE."*

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## CHAPTER I.

### Circulation and Metabolism.

That the clinical records in this volume may be understood, it is necessary to make a few preliminary statements and definitions, which, however, will be kept as short as possible.

The most important point about the circulation is that, within certain limits, the rate of the capillary circulation varies with the amount of uric acid in the blood. This is best seen by measuring the rate of the capillary circulation in the skin, which, as described in "Uric Acid,"[1] is done by pressing the blood out of the skin by a known pressure, applied to a definite area for a known and constant time. The rate at which the colour returns into the whitened patch, as measured by a metronome beating half-seconds, is called the capillary reflux, or shortly C.R.

As there is more uric acid in the blood in the morning and less in the evening, the capillary reflux is generally slower in the morning and quicker in the evening. For the same reason there are generally also more granules of uric acid in the blood in the morning and fewer in the evening, and the blood pressure (B.P.) is generally higher in the morning and lower in the evening.

For those who have been some years (four or more) on the uric-acid-free diet and who are moderately free from accumulations (gout or rheumatism) the following are the common ratios and relations of these things: Morning (8.0 a.m.), capillary reflux, 6

[1] "Uric Acid as a Factor in the Causation of Disease." 7th. Ed., 1908.

to 6·5 half-seconds; blood pressure, 120 mm. of mercury; granules to red cells in blood, 1—8 to 1—12. Evening (10.30 p.m.), capillary reflux, 5 half-seconds, blood pressure 100 mm., granules 1—25.

In those who are not uric acid free the capillary reflux will generally be slower, the blood pressure higher and the granules more numerous, and this will pass through various stages of uric acid increase till we arrive at the circulation conditions met with in pathology, *e.g.*, in Bright's disease, diabetes, morbus cordis, &c., where capillary reflux may be 10—12 or above, blood pressure 200 mm. to 240 mm. or above, and granules showing various increases above physiological numbers up to 1—1.

Those who have read my writings will know that the capillary reflux of a meat eater is not always slower than that of a uric-acid-free dietist; *e.g.*, when he is retaining or accumulating uric acid in his joints or fibrous tissues, it may be quite quick, and the same in fever, as the blood is then almost cleared of uric acid for a time.

A useful rule is that capillary reflux multiplied by 20 gives the corresponding blood pressure, which is often true in physiology, but there are exceptions in pathology, for when the heart is weak the blood pressure may fall below what is expected, and when it is strong and hypertrophied it may rise above what is expected in accordance with the rule. I will give an illustration: Weak heart; pulse, 80—90; capillary reflux, 8; blood pressure, 150. Strong heart, as in chronic morbus Brightii; pulse, 60; capillary reflux, 8; blood pressure, 170. The blood pressure here spoken of is the mean diastolic, or maximum oscillation, pressure. There is no very constant relation between capillary reflux and systolic pressure.

Roughly speaking, everything that increases the uric acid in the blood slows the capillary reflux, and, if the heart is strong, raises blood pressure. The chief drugs that do this are alkalies and salicylates, though their effect is always dependent upon the amount of uric acid available in the body.

Thus, 20 gr. of sodii bicarb. given to a gouty man and to a uric-acid-free man will slow capillary reflux much more in the former than in the latter.

Heat, whether of water, Turkish bath, clothing, or climate, acts as an alkali; but here again, in those free from uric acid, heat may quicken capillary reflux by improving the solubility of the uric acid already in the blood. This will quicken the capillary reflux if there

is no fresh uric acid brought into it. But, in the urate-laden, heat slows the capillary reflux by bringing fresh uric acid into the blood, hence its very depressing effects in their case.

Conversely drugs that clear the blood have a great effect in the opposite direction, quickening capillary reflux and lowering blood pressure. The more important of these are the metals, *e.g.*, mercury and iron, iodides, sulphides, chlorides, lithia, and opium.

In pathology, conditions of debility, anæmia, dyspepsia, collæmia, early Bright's disease, and malnutrition in general, act like alkalies and slow capillary reflux, because they lower the acidity of the urine and increase the alkalinity of the blood. Conversely, fever (*i.e.*, apart from dyspnœa) quickens capillary reflux, because it raises the acidity of the urine and lowers the alkalinity of the blood, clearing it more or less of uric acid. But when there is dyspnœa the acidity of the urine is not raised by fever, and then the blood is not cleared of uric acid, the granules are not diminished, the capillary reflux does not quicken, and the blood pressure does not fall. The slow capillary reflux of pathology has already been mentioned ; in fever it may be 3 to 4 half-seconds, and the corresponding blood pressure 70 to 80 mm.

With the exception of conditions of morbus cordis or cardiac debility, the rate of the capillary reflux is a measure of the uric acid in the blood. Any excess of uric acid in the blood above that met with in physiological conditions is commonly spoken of as collæmia. Obviously, when the driving power is deficient, the capillary reflux will be slowed more by a given amount of uric acid than when the heart is strong and its driving power good. As we shall see in the following chapters, we have in this ratio of capillary reflux to blood pressure an extremely useful guide to the extent of the cardiac debility, or the severity and congestive effects of a morbus cordis.

The capillary reflux is estimated by the capillary dynamometer,[1] which provides a measure of pressure and a constant surface of application.

The blood pressure, except where otherwise stated, is measured with the small instrument of Hill and Barnard ;[2] but for a full consideration of the working of these instruments, as well as for the details of the estimation of the blood granules, I must refer to my larger work. I may say, however, that I have used the instrument

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[1] Hawksley, Oxford Street, London ; price 10s. 6d.

[2] Hicks, Hatton Garden, London ; price 30s.

of Hill and Barnard constantly for many years, and have compared it with most of the instruments more recently invented, without finding that there was any important difference in the results obtained. But those who will observe capillary reflux with my instrument and blood pressure with any instrument they may prefer, will soon find a correct ratio for themselves. No doubt all these measurements will vary somewhat with the individual observer (*e.g.*, some will call a capillary reflux of 6 either a little more or a little less). I only say that there is a ratio between capillary reflux and diastolic blood pressure, and that C.R. × 20 = B.P. is fairly correct for my individual factor and the instruments mentioned.

I am sure that very many cases of cardiac debility are more or less completely overlooked, because, apart from the ratio of capillary reflux to blood pressure, there is no simple means of measuring either their extent or their duration. Apart from capillary reflux and blood pressure and their relation, and the quickened heart-beat, the only other signs may be a slight alteration of the first sound, and a more or less slight increase in the cardiac area. The diameter of the cardiac area, or C. D., is measured transversely across the chest by auscultatory percussion, and commonly extends, in normal conditions, from a little to the left of the right border of the sternum to the left nipple line, or left mid-clavicular line in females. The ratio of capillary reflux to blood pressure is also most useful in pneumonia, where towards the time of crisis it gives a very reliable prognosis. With a quickening pulse and a blood pressure falling ever more and more below the proper ratio to capillary reflux, the prognosis is bad. Thus, on an early day of the disease one may get a pulse of 90, a capillary reflux of 8, and a blood pressure of 160, and this in spite of fever, as the blood is not cleared of uric acid on account of the dyspnœa. Later, near the crisis, we may see pulse 100 and above, capillary reflux slowed to 9 or 10, and yet blood pressure has fallen to 130. And here we see at a glance the great value of the uric-acid-free diet, not only in pneumonia, but in all forms of morbus cordis and cardiac debility, for in the uric acid-free the peripheral resistance in the capillaries is always diminished, and this may easily make an enormous difference to the chances of recovery of a damaged heart, for, if it is not damaged beyond repair, and its muscle degenerated and atrophied, it at least gets some chance of recovering its contractility. This ratio is most useful also in Bright's disease, in the early stages of which blood pressure often

fails to reach its proper ratio to capillary reflux; later, when the heart has had time to hypertrophy and get level with its work, it may rise, not only to its proper ratio, but above it; and this, again, is most useful in prognosis as well as for a correct estimation of the action of drugs.

Again, when one sees Bright's disease in pregnancy one may find a wrong ratio between capillary reflux and blood pressure at first, with much albumin and a doubtful prognosis, but in a subsequent pregnancy, when the heart has had time to hypertrophy and get equal to its work, the ratio may be more normal and the loss of albumin less. And indeed the whole treatment of Bright's disease is to strengthen the heart (if it is weak), clear the blood of uric acid by drugs and diet and get the capillary reflux and the capillary reflux to blood pressure ratio as near normal as possible.

I may here describe the method of using the capillary dynamometer to estimate the capillary reflux. Take the instrument in the right hand and place the thumb opposite the mark which indicates 15 oz. of pressure. The thumb feels the button on the piston rod impinge on it when this pressure has been reached, and so the amount of pressure used is regulated. Now place the padded end of the piston on a surface of skin, preferably the front of the chest about the heart level (though, if the patient is horizontal in bed, other surfaces will do), feel that the button just touches the thumb and keep up the 15-oz. pressure for six half-seconds by metronome. Then withdraw the instrument and count the time in half-seconds that the colour takes to return into the whitened patch. It is well to make three or four observations on different spots and take the mean of them, and this is so quickly done that there is no appreciable loss of time. A skin surface which is irritated, rubbed by clothing or made red by erythema must be avoided, as here the capillary reflux will be quicker than on normal skin. On the other hand, a surface exposed to cold must be avoided, as, other things equal, this will make the capillary reflux too slow. For rough work in the out-patient room a mere touch with the end of the finger, with time and pressure left uncertain, and the rate of return being measured by counting half-seconds (which it is easy to learn to do with considerable accuracy), will give interesting and very useful indications; but for more careful work and especially in measuring various physiological conditions, or the effects of drugs, or where you wish to gauge the strength of the heart, it is well to use the capillary dynamometer, though those who can count half-seconds

accurately may dispense with a metronome. I may point out in passing that even on an erythematous surface the capillary reflux is a correct index of the uric acid in the blood, for blood drawn from such an inflamed surface is almost free from uric acid, and the granules in it are few; but then this local condition is no safe index of the state of the blood as a whole.

The blood decimal, *i.e.*, the result obtained by dividing per cent. of hæmoglobin by per cent. of cells, is represented by B.D. Some of these results, where hæmoglobin and cells are not given, were obtained by my colour card,[1] which is an artist's copy of the mucous membranes of those whose hæmoglobin and cells were known, and these colours have since been compared with the instrumental results in large numbers of cases, so that the cards are approximately quite reliable. My colour card gives decimals from 0·5, which is the colour often met with in chlorosis, through 0·7, and 0·9 to 1·1; this highest colour being somewhat above the cent. per cent. of cells and hæmoglobin commonly regarded as normal. Young people who live on a correct uric-acid-free diet, in place of being anæmic, as boys and girls very frequently are among the meat eaters, not very rarely attain to 1·1, and the colour corresponding to this was an artist's copy of the gums of such a patient. This colour is not often attained by those who up to adult age have been flesh eaters and tea drinkers, and even 0·9, 0·95 and 1·0 are generally only attained by those who have been three or four years on correct diet, while those who started with large stores of retained urates in joints and fibrous tissues will take longer still to attain to it. The average meat and tea taker who comes to see me about his health has generally a blood decimal of 0·7 to 0·75 (the second palest colour on the card or between it and the next), and what I watch is that their colour must never get worse than this, but slowly and gradually improve as they get clear of poisons, moving towards 0·8 and better.

I will now say a few words on the **classification of diseases** due to uric acid, and on drugs and climates in that connection. The diseases caused by uric acid fall naturally into two groups:—

(1) The far larger and more important **collæmic, or circulation, group,** in which the blood is thickened and its circulation hindered by floating particles of colloid uric acid. And this again affects the circulation, and through it the nutrition, function, and eventually the structure of every cell and tissue of the body.

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[1] Colour Card. Bale, Sons and Danielsson, Great Titchfield Street, London. Price 1s.

Here we can make some subdivisions according as the "diseases" are the results of mere high blood pressure (the first and most simple result of the collæmic obstruction of the capillaries that we have been discussing in this chapter), and amongst such are :—

(*a*) Headache, some forms of convulsions, depression, vertigo, insomnia, asthma, &c.

Or the results of collæmia no longer acting alone, but complicated by varying degrees of heart strain, heart debility, or morbus cordis ; among such are :—

(*b*) Some other forms of convulsions, syncope, chorea, hysteria, neurasthenia, melancholia, nervousness up to severe excitement and mania, and various forms of periodic or chronic paralysis.

Or again to the results of collæmia plus heart strain, &c., may be added the secondary effects of continued defective cardiac circulation and anæmia (*e.g.*, dilated, feeble, or even fatty heart), resulting in such things as :—

(*c*) (i) Dilated stomach, dyspepsia, and congested liver, which lead on to glycosuria and diabetes (permanent or temporary).

Or when the skin circulation is also defective owing to concomitant exposure to cold, to :—

(ii) Paroxysmal albuminuria, paroxysmal hæmoglobinuria, &c., up to Bright's disease.

Or similar congestion, similarly caused, may affect the pelvic organs, resulting in :—

(iii) Menorrhagia, pruritus, piles (some forms, others are probably gout of rectal fibrovascular tissues).

Or similar congestion similarly caused may affect the vascular system in general, giving rise to :—

(iv) Dead hands, Reynaud's disease, Graves's disease, dropsy, uræmia, cerebral hæmorrhage, cerebral degeneration, spinal degeneration, retinitis, neuritis and other nerve degenerations.

Or vascular disease as the results of vascular pressure (high blood pressure), strain and congestion, giving rise to :—

(v) Atheroma, calcification, dilated veins and venules, purpura, thrombosis, phlebitis, aneurysm and angina.

(vi) Anæmia in all its forms, the more severe anæmias being secondary to defective circulation and eventual degeneration of structure in the blood-forming glands and tissues.

(2) The **precipitation or retention group,** in which local retention of uric acid causes irritation or pain Any fibrous tissue may be

the seat of such retention, and, as there are fibrous tissues in every region and structure of the body, such irritation may occur anywhere, wherever cold, injury, acids, or other precipitants leave some imperfectly dissolved urate or uric acid to set up trouble. Such precipitation may be called at once "gout" of the fibrous tissue affected, for that is what it really is. But, as one is apt to forget some of the structures in which such irritation may occur, I shall here enumerate the more important ones, such as meninges, iris (rheumatic iritis), ear, nose, pharynx, larynx, trachea (catarrh), bronchi (bronchitis), lungs (broncho-pneumonia), pleura (rheumatic pleurisy), heart (endo-peri and myo-carditis), diaphragm, œsophagus, stomach, duodenum, liver, peritoneum, cæcum, appendix, colon, uterus (fibroma), pelvic fascia, ovaries, testes, epididymis, bladder, penis, kidneys, fibrous tissues of neck, back, spinal cord, nerves, muscles, skin (fibromata, eczema, psoriasis), periosteum of bones and teeth, &c. There is probably also some relation between cancer and the chronic irritation of many tissues by gout. (See "Uric Acid," previous reference, p. 420, and *British Medical Journal*, 1909, vol. ii., p. 1441). And if we remember that precipitation may also be produced or facilitated by microbic action, or by the products they produce (*e.g.*, acids, fever, &c.), we shall understand the causation of such things as catarrh (infectious), influenza, and some forms of acute rheumatism, phthisis, pneumonia, and malaria, from which, among other things, those who are uric-acid-free do not, as a rule, suffer.

It may make this classification clearer if I give here a short scheme of causation of some of the principal "diseases," the effects of collæmia.

*Headache.*—Migraine, the uric acid headache, is simply an effect of high pressure in the intra-cranial cavity. It is increased by every rise and diminished by every fall of pressure. People vary as to the pressure at which they get headaches; some suffering at 140 mm. of mercury, others not till 160 or 180 mm. But for an individual person headache begins each time the pressure rises above a given height. (See "Uric Acid," p. 247).

*Convulsions or Epilepsy.* — These are related to high blood pressure, but the relation is generally indirect. There is not a convulsion because there is high blood pressure, but because the heart fails owing to high blood pressure. Hence the sudden onset of the convulsion, which corresponds with the sudden heart failure. The heart falters, flutters, or drops one or more beats, and down

goes the patient in a convulsion produced by the defective intra-cranial circulation.

A similar failure on the part of the heart underlies syncope, and a similar, but more chronic, failure to keep up the pressure against the continued strain of fatigue and collæmia underlies chorea, hysteria, neurasthenia, and many nervous conditions, and, as is well known, a normal person can be converted into an hysterical one by overtiring him, *i.e.*, by rendering his heart *pro tem.* incapable of sending a sufficient supply of blood to the brain and nerve centres.

*Bright's Disease.*—We have here to do with a similar collæmia, and a more or less similar heart failure or debility; on this there follows defective circulation in all the great digestive viscera, the skin and muscles—in a word, in all the great metabolic tissues; on this there follows defective metabolism of albumin leading to hetero-albuminæmia. This foreign albumin soon begins to pass through the kidney into the urine. In passing it irritates the kidney structure, eventually producing nephritis; and, as the result of this kidney irritation, some serum albumin also begins to pass in the urine. Bright's disease is thus a defective combustion of albumin due to defective circulation throughout the body. Hetero-albuminæmia causes hetero-albuminuria, but serum-albumin, when present in the urine, is due to the lesion of the kidney structure. The hetero-albumin can be removed quickly by improving the combustion; the serum-albumin will only disappear slowly as the kidney lesion heals up. When we cure Bright's disease we do it by improving the combustion (*i.e.*, stopping the collæmia and strengthening the heart). The hetero-albumin disappears first, and then the kidney irritation more slowly subsides, and with it the serum-albumin also disappears from the urine.

*Glycosuria and Diabetes.*—These are similar failures of combustion, in which, however, the liver, stomach, duodenum, and pancreas are specially affected by the general cardiac congestion (see "Uric Acid," p. 616), and in which, owing to general defective combustion, sugar is left uncombusted, causing glycæmia and glycosuria. The sugar fluctuates with the uric acid, and like this is generally more in the morning and less in the evening. Here, again, in cases which are curable, cure is effected by stopping collæmia and strengthening the heart (*i.e.*, by improving circulation).

*Anæmia.*—Anæmia means a similar defective circulation and metabolism affecting the blood forming glands and tissues. This defect must undoubtedly be greatly intensified if serious heart

failure complicates the collæmia. Anæmia practically accompanies all collæmic troubles, and is cured along with them. As we cure Bright's disease, for instance, we commonly find a rise of 10 to 15 points in the blood decimal. As we shut out uric acid from the food, the blood decimal invariably improves.

On such classification this book is arranged, two chapters being given to the larger collæmic group, and one chapter to the precipitation (gout) group. In Chapter II. we have as far as possible the simple uncomplicated effects of collæmia; in Chapter III. collæmia is more or less complicated by structural and organic change; but the whole collæmic group is one without a natural dividing line, and the headache of Chapter II. merges insensibly into the Bright's disease, or diabetes, the uræmia, granular kidney and cerebral hæmorrhage of Chapter III., or may be mixed in various proportions with the arthritis, endocarditis, catarrh, eczema, appendicitis, ovaritis, cystitis and periostitis of Chapter IV. The only real dividing lines between any of these groups are produced by the great nutritional stages of life, in which there are two chief retention stages, 1 to 14 in girls, 1 to 16 in boys, and 25 to 55 in adults of both sexes, if healthy and strong; and two chief collæmic stages, 15 to 25 most marked in girls, *e.g.*, by chlorosis, headaches, &c., at times alternating with retention (gout or rheumatism), and 55 to end of life in both sexes, as the fires of life die down, Frequent reference to these stages will be found in the case records which they serve to explain. (See also "Uric Acid," previous reference, p. 236). The retention group is represented in the two retention stages by such things as bronchitis, acute rheumatism and eczema in the first (1 to 14); rheumatism, gout, eczema, psoriasis, bronchitis, fibromata, cancer in the second. The collæmic diseases of 17 to 25 are anæmia, headaches, epilepsy, depression, syncope, chorea, hysteria, neurasthenia, nervousness; and of 55 to end of life, headache, neurasthenia, melancholia, dyspepsia, strong heart, and cerebral hæmorrhage, or weak heart, uræmia, severe anæmia, dropsy, also vascular degeneration, aneurysm, thrombosis and angina.

It is now evident that these are but various prominent results of one and the same process, which, seen apart from their real causation and surroundings, have been regarded as separate diseases and dignified by names. There is in all this no single disease at all, for the rash of belladonna, the headache of opium, the spasms of strychnine are not diseases but poisonings, and it is the same here. There is behind all these names but one cause—food poisoning

the taking of foods unnatural to the human animal containing poisons; poisons from several sources, but all belonging to one chemical group and having one or two main actions, *i.e.*, local irritation and obstructed circulation, of which all the rest are but primary and secondary results.

In the same way all drugs can be classified according as they are solvents or precipitants of uric acid, solvents increasing its quantity in the blood and its excretion in the uriue, thus aiding its elimination from the body, and retentives or precipitants having the opposite effect.

It is necessary to say here that uric acid poisoning is due to a mere increase of a substance normally present in blood and urine in small quantity and having a physiological purpose. Only its excess becomes pathological.

As the action of drugs has been gone into at length in "Uric Acid," it is only necessary here to mention the more important solvents and precipitants, that their action in the clinical records may be easily grasped.

The solvents are few in number and may be mentioned first; they are the alkalies and their carbonates, chiefly potassium and sodium, also salicin, salicylic acid and its compounds. There are other solvents, but they are less powerful or less convenient, and so are but little used. It must be noted also that heat is a solvent.

The precipitants are a larger group, containing all substances that are known to form insoluble compounds with uric acid, *e.g.*, the metals, also calcium, magnesium, &c.; all acids (with one or two exceptions, such as salicylic), iodine and iodides, bromine and bromides, and compounds of ammonium, sulphur and phosphorus, which either form acids by oxidation in the body, or otherwise form insoluble compounds with uric acid. Lithia, though a solvent of uric acid in glass, yet acts as a retentive by chemically putting out of action some normal blood solvents. Probably the action of iodine and some other things is explained in the same way.

Then there is cold, and damp, which acts in the same way as cold, by removing heat from the body, and both these, in this country, have very important effects at all times of the year. Cold is not only a direct precipitant of uric acid, but it raises the acidity of the body fluids by preventing the excretion of acid from the body in perspiration.

Then foods which contain a preponderance of acids over alkalies act as acids, while those which contain a preponderance of alkalies

have the opposite effects. Many grain foods are instances of the former, and potatoes and some other well-known vegetables of the latter class. Fruits often have a double action, first as acids for a few hours after they are eaten, then their alkalies come into play and their total effect may be neutral or alkaline, and yet not a few of them may cause retention during their acid action, and this retention may not be completely removed by the later-coming alkali; thus they may, especially acting with cold and damp, when taken out of season, cause precipitation (gout).

In the same way climates have to be classified into hot and cold, relaxing and bracing, solvent or retentive. A cold, and especially a cold damp, is retentive, and a bracing climate the same, while a mild and relaxing climate is a solvent. The relaxation and depression produced by climate is largely a matter of the quantity of uric acid in the blood; those that increase the quantity depress. Conversely those that diminish the quantity stimulate and brace, just as do drugs, that bring about the same result.

Those who live uric-acid-free and have little or no excess or storage of urate are practically not depressed or relaxed by any climate, as no climate then avails to bring excess of uric acid into the blood. There is however another powerful factor which produces great effects in individual cases and must therefore be mentioned to avoid confusion, and that is the strength of the heart muscle. The circulation in the brain, great nerve centres, nerves and muscles is obviously dependent, not only on the quantity of colloid urate blocking the capillaries, but also on the power of the heart. With a given quantity of urate the obstruction in the circulation will obviously be greater the weaker the heart muscle. Conversely, in a given individual an identical quantity of urate in the blood will produce more depression when the heart is weak, and less when it is strong and the total or resultant effect of climate is powerfully influenced by this cardiac factor. Thus Bright's disease, the most serious effect of collæmia, is generally speaking not a result of collæmia alone, but of collæmia with its effects extended and intensified by more or less absolute or relative heart weakness. Hence, as has long been known, the prognosis in Bright's disease depends upon the blood pressure; and when the blood pressure is low owing to heart failure the prognosis is poor indeed, as no clearance of the blood from uric acid will then suffice to make the fire burn up.

Thus a collæmic individual with a weak heart muscle will be terribly depressed by a warm, relaxing climate which increases his collæmia. Send him to a rather bracing but still warm climate, and he will be much better, for the bracing will diminish collæmia and reduce the work of the heart. Send such a man to a cold climate and his fire is nearly put out by it, for cold directly hinders skin and peripheral circulation, and the weak heart is unable to cope with this, and so defective circulation and depression are increased. This is in all cases a matter of degree, for in the coldest climates all are depressed by the cold, if exposed to it; but in less cold climates those are least depressed who have the strongest hearts, and for each there is a point at which the cold merely braces them and acts as a tonic; the bracing clears the blood of uric acid, the heart is strong enough to deal with the direct effects of cold on the circulation, so the fire burns up and all goes well; but urates are being stored and retained, and there will therefore be a quite corresponding depression on return to a warmer climate. Here we have the effect of the winter vacation in Switzerland, *i.e.*, bracing and retention, followed by increased spring collæmia and depression.

I have often seen all these effects of climate in one and the same individual, according as he had collæmia alone or collæmia with weak heart muscle; but those who are free from collæmia and have good, useful hearts and normal ratio of capillary reflux to blood pressure and normal pulse rate are comparatively little affected by any climate. They may be braced and stimulated somewhat by a cold mountain climate and may even retain a little urate in the process, if they do not take measures (warm clothing, exercise, and potatoes) to counteract these influences; but the effects will be very small, because the amount of urate available is very small.

It is necessary to bear in mind the heart factor if confusion is to be avoided, as very severe depression of mind and metabolism (combustion) is to be expected even in the most bracing climate if the heart is weak, and yet the very same individual may benefit by this climate when his heart has been strengthened.

Bracing climates correspond to retentive drugs and should not be used except to help those who are in immediate danger from collæmia, *i.e.*, when the primary gain is so great that the after-coming depression need not be counted, as is always the case with opium and other retentive drugs when used medically; or when solvent drugs can be used to counteract or prevent the after effects.

This is only a matter for those who are full of poisons; to

those who live uric-acid-free, all climates are more or less indifferent, though careless exposure to cold may in anyone produce some retention and they may thus store and provide the urate for a subsequent collæmia. Those who live uric acid free in this climate have only one danger, and that is by retention. This may be produced by bracing, exposure to cold when insufficiently clothed, cold bathing, especially in the morning hours, acid drinks, acid fruits, fruit out of season, excess of sugar, salt, and breadstuffs, many of which are acid (especially if these are not balanced by a more than equal quantity of potato or alkaline vegetable); all these retentives are aided in their action by cold, damp, deficient clothing, deficient exercise, cold houses, cold, damp soils, exposed situations, water containing lime, iron or other metals and similar conditions of daily life.

As a rule, several of these causes act together, and several must act together to produce any important effect in those who live on uric-acid-free foods. But if anyone who lives on uric-acid-free foods begins intentionally or accidentally to swallow any uric acid (even ½ gr. a day will do it) he also very soon begins to get notice of it in one of these ways: some of his old troubles show slowly increasing signs of an intention to return, and with this capillary reflux tends to slow, and blood pressure to rise.

I will now give, in further illustration of circulation ratios and metabolism, the pulse rate, capillary reflux, and blood pressure, in 129 cases (130 records).

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1, E. A. (F.), | aged | 45, | Migraine all life | ... | P. 108, | C.R. | 7·5, | B.P. 145 |
| 2, M. V. (F.) | ,, | 58, | Chronic arthritis | ... | ,, 96, | ,, | 7·5, | ,, 135 |
| 3, M. B. (F.) | ,, | 37, | Dyspepsia; dilated stomach | | ,, 88, | ,, | 7·5, | ,, 135 |
| 4, M. B. (F.) | ,, | 48, | Dyspepsia ... | ... | ,, 84, | ,, | 6·5, | ,, 140 |
| 5, F. B. (M.) | ,, | 54, | Dyspepsia; neurasthenia | | ,, 60, | ,, | 6·0, | ,, 130 |
| 6, F. W. (F.) | ,, | 39, | Dyspepsia; nerves... | | ,, 116, | ,, | 7·5, | ,, 140 |
| 7, H. C. (F.) | ,, | 55, | Headache; depression | | ,, 96, | ,, | 7·5, | ,, 140 |
| 8, M. B. (F.) | ,, | 64, | Mental depression... | | ,, 88, | ,, | 7·5, | ,, 150 |
| 9, R. A. (M.) | ,, | 50, | Headache; depression | | ,, 84, | ,, | 7·5, | ,, 160 |
| 10, W. H. (M.) | ,, | 50, | Headache; insomnia | | ,, 68, | ,, | 6·5, | ,, 145 |
| 11, M. B. (F.) | ,, | 45, | Headache; nerves... | | ,, 76, | ,, | 8·0, | ,, 145 |

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|---|---|---|---|---|---|---|---|---|
| 12, R. C. (M.), | aged | 33, | Collæmia; depression | P. 104, | C.R. | 8·0, | B.P. | 155 |
| 13, P. A. (F.) | ,, | 45, | Nerves; insomnia... | ,, 120, | ,, | 9·0, | ,, | 145 |
| 14, R. B. (M.) | ,, | 43, | Chronic dyspepsia... | ,, 72, | ,, | 8·0, | ,, | 140 |
| 15, H. B. (M.) | ,, | 29, | Debility; chronic arthritis | ,, 68, | ,, | 7·5, | ,, | 145 |
| 16, M. B. (F.) | ,, | 44, | Eczema; hay fever | ,, 70, | ,, | 7·0, | ,, | 140 |
| 17, C. W. (M.) | ,, | 40, | Collæmia; depression | ,, 66, | ,, | 7·0, | ,, | 145 |
| 18, D. C. (F.) | ,, | 70, | Chronic arthritis ... | ,, 70, | ,, | 7·0, | ,, | 135 |
| 19, R. B. (M.) | ,, | 57, | Periodic depression; nerves | ,, 80, | ,, | 8·0, | ,, | 145 |
| 20, E. A. (M.) | ,, | 50, | Lumbago ... ... | ,, 84, | ,, | 7·5, | ,, | 135 |
| 21, E. W. (F.) | ,, | 37, | Chronic arthritis; dyspepsia | ,, 88, | ,, | 8·5, | ,, | 165 |
| 22, C. C. (F.) | ,, | 43, | Diarrhœa (gout of intestines) | ,, 92, | ,, | 7·5, | ,, | 155 |
| 23, J. H. (F.) | ,, | 48, | Collæmia; dyspepsia | ,, 88, | ,, | 8·0, | ,, | 150 |
| 24, D. H. (F.) | ,, | 36. | Migraine; morbus cordis (?) | ,, 84, | ,, | 8·0, | ,, | 150 |
| 25, H. C. (M.) | ,, | 55, | Chronic high blood pressure; heart failure | ,, 96, | ,, | 8·5, | ,, | 145 |
| 26, F. B. (M.) | ,, | 44, | Chronic arthritis ... | ,, 72, | ,, | 9·0, | ,, | 155 |
| 27, H. C. (F.) | ,, | 40, | Headaches; nerves | ,, 80, | ,, | 8·0, | ,, | 145 |
| 28, A. C. (F.) | ,, | 35, | Neurasthenia; anæmia | ,, 76, | ,, | 7·0, | ,, | 140 |
| 29, M. C. (F.) | ,, | 39, | Systolic apex murmur | ,, 72, | ,, | 7·0, | ,, | 135 |
| 30, J. C. (M.) | ,, | 20, | Collæmia ... ... | ,, 56, | ,, | 8·0, | ,, | 135 |
| 31, M. C. (F.) | ,, | 43, | Migraine (? Graves's disease) | ,, 116, | ,, | 8·0, | ,, | 155 |
| 32, M. C. (F.) | ,, | 23, | Acne; hay fever ... | ,, 76, | ,, | 8·0, | ,, | 155 |
| 33, T. C. (M.) | ,, | 28, | Dyspepsia; constipation | ,, 64, | ,, | 6·0, | ,, | 125 |
| 34, W. R. (M.) | ,, | 55, | Collæmia; depression | ,, 80, | ,, | 7·0, | ,, | 135 |
| 35, E. M. (F.) | ,, | 35, | Neurasthenia ... | ,, 108, | ,, | 8·0, | ,, | 140 |
| 36, M. C. (F.) | ,, | 69, | Arthritis; collæmia | ,, 76, | ,, | 9·0, | ,, | 165 |
| 37, G. W. (M.) | ,, | 60, | Chronic arthritis ... | ,, 96, | ,, | 12·0, | ,, | 165 |

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|---|---|---|---|---|---|---|---|---|
| 38, W. J. (M.) | aged | 46, | Migraine (? morbus Brightii) | P. | 76, | C.R. | 7·0, | B.P. 140 |
| 39, M. H. (F.) | ,, | 35, | Depression ; insomnia | ,, | 96, | ,, | 8·0, | ,, 145 |
| 40, M. H. (F.) | ,, | 51, | Chronic arthritis ; collæmia | ,, | 84, | ,, | 11·0, | ,, 195 |
| 41, M. H. (F.) | ,, | 71, | Psoriasis ; debility | ,, | 96, | ,, | 6·0, | ,, 110 |
| 42, L. C. (F.) | ,, | 45, | Gouty throat ... | ,, | 96, | ,, | 8·0, | ,. 160 |
| 43, E. L. (F.) | ,, | 24, | Nervous debility ... | ,, | 84, | ,, | 8·0, | ,, 145 |
| 44, M. H. (F.) | ,, | 55, | Migraine ; chronic arthritis | ,, | 88, | ,, | 8·0, | ,, 145 |
| 45, M. H. (F.) | ,, | 43, | Anæmia ; debility... | ,, | 96, | ,, | 7·0, | ,, 135 |
| 46, D.L.H.(F.) | ,, | 50, | Chronic arthritis ... | ,, | 80, | ,, | 6·0, | ,, 125 |
| 47, E. H. (F.) | ,, | 42, | Migraine ; anæmia | ,, | 86, | ,, | 8·0, | ,, 145 |
| 48, J. T. (M.) | ,, | 39, | Collæmia ; neuritis | ,, | 72, | ,, | 9·0, | ,, 155 |
| 49, M. K. (F.) | ,, | 78, | Chronic arthritis ... | ,, | 76, | ,, | 7·0, | ,, 135 |
| 50, M. H. (F.) | ,, | 28, | Collæmia ; anæmia | ,, | 76, | ,, | 8·0, | ,, 135 |
| 51, S.H. (M.) | ,, | 51, | Dyspepsia ; depression | ,, | 84, | ,, | 7·0, | ,, 115 |
| 52, J. C. (M.) | ,, | 72, | Chronic arthritis ... | ,, | 72, | ,, | 7·0, | ,, 150 |
| 53, M. H. (F.) | ,, | 17, | Epilepsy ... ... | ,, | 72, | ,, | 6·5, | ,, 125 |
| 54, E. B. (M.) | ,, | 40, | Chronic arthritis ... | ,, | 80, | ,, | 7·0, | ,, 140 |
| 55, M. H. (F.) | ,, | 51, | Migraine ; chronic arthritis | ,, | 84, | ,, | 7·0, | ,, 135 |
| 56, M. H. (F.) | ,, | 60, | Chronic arthritis ... | ,, | 64, | ,, | 6·0, | ,, 115 |
| 57, C.L.E.(M.) | ,, | 55, | Intermittent albuminuria | ,, | 68, | ,, | 8·0, | ,, 155 |
| 58, H. Y. (F.) | ,, | 52, | Chronic arthritis ; dyspepsia | ,, | 76, | ,, | 7·0, | ,, 135 |
| 59, H. T. (M.) | ,, | 65, | Chronic arthritis ; morbus cordis | ,, | 68, | ,, | 9·0, | ,, 175 |
| 60, P. I. (M.) | ,, | 58, | Migraine ... ... | ,, | 65, | ,, | 8·0, | ,, 165 |
| 61, J. C. (M.) | ,, | 68, | Dyspepsia ... ... | ,, | 68, | ,, | 8·0, | ,, 155 |
| 62, A. H. (M) | ,, | 47, | Migraine ... ... | ,, | 88, | ,, | 11·0, | ,, 120 |
| 63, W. J. (M.) | ,, | 47, | Morbus cordis from strain | ,, | 112, | ,, | 7·0, | ,, 135 |
| 64, M. H. (F.) | ,, | 49, | Migraine ... ... | ,, | 96, | ,, | 8·0, | ,, 120 |
| 65, M. H. (F.) | ,, | 29, | Graves's disease ... | ,, | 120, | ,, | 8·0, | ,, 140 |
| | | | The same fifteen months later ... | ,, | 88, | ,, | 7·0, | ,, 135 |
| 66, J.G.(M.), | aged | 38, | Asthma ... ... | ,, | 75, | ,, | 8·0, | ,, 145 |

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|---|---|---|---|---|---|---|---|---|---|
| 67, J. L. (M.), aged | 31, | Chronic arthritis ... | P. | 84, | C.R. | 6·5, | B.P. | 130 |
| 68, J. M. (F.) | ,, | 45, Headache ... ... | ,, | 96, | ,, | 7·5, | ,, | 120 |
| 69, F. H. (M.) | ,, | 50, Dyspepsia; insomnia | ,, | 84, | ,, | 8·0, | ,, | 140 |
| 70, M. K. (F.) | ,, | 45, Migraine ... ... | ,, | 85, | ,, | 7·5, | ,, | 155 |
| 71, D. J. (M.) | ,, | 41, Gouty pharyngitis... | ,, | 84, | ,, | 6·5, | ,, | 125 |
| 72, N. B. (M.) | ,, | 69, Collæmia; dyspepsia | ,, | 100, | ,, | 6·5, | ,, | 135 |
| 73, T. P. (M.) | ,, | 40, Chronic headache ... | ,, | 84, | ,, | 7·5, | ,, | 130 |
| 74, F. L. (M.) | ,, | 35, Rheumatism and migraine | ,, | 64, | ,, | 7·0, | ,, | 150 |
| 75, W. W. (M.) | ,, | 55, Severe headache ... | ,, | 68, | ,, | 9·0, | ,, | 170 |
| 76, J. A. (F.) | ,, | 50, Chronic arthritis ... | ,, | 96, | ,, | 7·0, | ,, | 135 |
| 77, J. H. (M.) | ,, | 57, Chronic fibrositis ... | ,, | 76, | ,, | 5·0, | ,, | 105 |
| 78, W. H. (M.) | ,, | 63, Lumbago ... ... | ,, | 68, | ,, | 6·0, | ,, | 125 |
| 79, M. C. (F.) | ,, | 66, Chronic rheumatism | ,, | 80, | ,, | 8·0, | ,, | 125 |
| 80, A. B. (M.) | ,, | 81, Intestinal colic ... | ,, | 75, | ,, | 9·5, | ,, | 185 |
| 81, T. B. (M.) | ,, | 39, Rheumatism; morbus cordis | ,, | 72, | ,, | 7·5, | ,, | 150 |
| 82, L. B. (F.) | ,, | 48, Chronic rheumatism | ,, | 80, | ,, | 6·5, | ,, | 125 |
| 83, A. Mc. (F.) | ,, | 38, Chronic arthritis ... | ,, | 80, | ,, | 7·5, | ,, | 145 |
| 84, G. A. (F.) | ,, | 40, Chronic arthritis ... | ,, | 84, | ,, | 7·0, | ,, | 135 |
| 85, M. M. (F.) | ,, | 48, Sciatica ... ... | ,, | 72, | ,, | 7·5, | ,, | 135 |
| 86, T. C. (M.) | ,, | 68, Renal calculus ... | ,, | 68, | ,, | 6·0, | ,, | 145 |
| 87, F. G. (M.) | ,, | 37, Chronic arthritis ... | ,, | 108, | ,, | 8·5, | ,, | 160 |
| 88, M. B. (F.) | ,, | 43, Chronic arthritis ... | ,, | 108, | ,, | 9·0, | ,, | 155 |
| 89, M. M. (F.) | ,, | 53, Chronic arthritis ... | ,, | 68, | ,, | 6·5, | ,, | 125 |
| 90, M. C. (F.) | ,, | 68, Chronic arthritis ... | ,, | 92, | ,, | 6·5, | ,, | 135 |
| 91, M. N. (F.) | ,, | 59, Chronic arthritis ... | ,, | 92, | ,, | 7·5, | ,, | 135 |
| 92, C. L. (M.) | ,, | 74, Vertigo ... ... | ,, | 76, | ,, | 7·5, | ,, | 145 |
| 93, J. B. (M.) | ,, | 34, Neuralgia ... ... | ,, | 80, | ,, | 6·5, | ,, | 135 |
| 94, S. G. (M.) | ,, | 41, Rheumatic gout ... | ,, | 72, | ,, | 7·5, | ,, | 135 |
| 95, J. A. (M.) | ,, | 50, Chronic rheumatism | ,, | 80, | ,, | 8·0, | ,, | 135 |
| 96, W. S. (M.) | ,, | 61, Bilious headache ... | ,, | 85, | ,, | 6·5, | ,, | 170 |
| 97, D. L. (F.) | ,, | 35, Liver troubles ... | ,, | 84, | ,, | 7·5, | ,, | 145 |
| 98, M. J. (F.) | ,, | 54, Chronic arthritis ... | ,, | 90, | ,, | 8·0, | ,, | 140 |
| 99, A. L. (M.) | ,, | 38, Chronic arthritis ... | ,, | 82, | ,, | 8·5, | ,, | 165 |
| 100, H. J. (M.) | ,, | 63, Influenza ... ... | ,, | 75, | ,, | 7·0, | ,, | 130 |
| 101, R. J. (M.) | ,, | 37, Intestinal colic ... | ,, | 90, | ,, | 7·0, | ,, | 140 |
| 102, J. H. (M.) | ,, | 45, Lumbago ... ... | ,, | 80, | ,, | 6·5, | ,, | 125 |
| 103, M. L. (F.) | ,, | 37, Migraine ... ... | ,, | 80, | ,, | 7·0, | ,, | 135 |
| 104, E. A. (M.) | ,, | 35, Dyspepsia ... ... | ,, | 80, | ,, | 7·0, | ,, | 145 |
| 105, M. L. (F.) | ,, | 50, Oxaluria ... ... | ,, | 72, | ,, | 7·5, | ,, | 155 |

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|---|---|---|---|---|---|---|---|---|
| 106, M. L. (F.), aged | 46, | Dyspepsia ... | ... | P. | 72, | C.R. | 7·5, | B.P. 145 |
| 107, J. F. (M.) ,, | 60, | Dyspepsia ... | ... | ,, | 84, | ,, | 7·0, | ,, 120 |
| 108, M. F. (F.) ,, | 38, | Chronic arthritis | ... | ,, | 84, | ,, | 6·5, | ,, 140 |
| 109, J. E. (M.) ,, | 42, | Chronic arthritis | ... | ,, | 90, | ,, | 9·0, | ,, 175 |
| 110, P. G. (M.) ,, | 43, | Renal colic... | ... | ,, | 72, | ,, | 6·0. | ,, 120 |
| 111, J. E. (M.) ,, | 67, | Enlarged prostate | ... | ,, | 72, | ,, | 7·5, | ,, 145 |
| 112, M. D. (F.) ,, | 47, | Neuritis ... | ... | ,, | 65, | ,, | 7·5, | ,, 130 |
| 113, D. G. (M.) ,, | 36, | Bilious attacks | ... | ,, | 72, | ,, | 7·5, | ,, 135 |
| 114, M. H. (F.) ,, | 44, | Chronic arthritis | ... | ,, | 80, | ,, | 8·5, | ,, 155 |
| 115, M. B. (F.) ,, | 26, | Dyspepsia ... | ... | ,, | 64, | ,, | 7·5, | ,, 140 |
| 116, K. H. (F.) ,, | 36, | Dyspepsia ... | ... | ,, | 84, | ,, | 6·0, | ,, 125 |
| 117, W. G. (M.) ,, | 29, | Migraine ... | ... | ,, | 60, | ,, | 6·0, | ,, 130 |
| 118, T. H. (M.) ,, | 54, | Chronic eczema | ... | ,, | 72, | ,, | 5·0, | ,, 130 |
| 119, M. F. (F.) ,, | 49, | Chronic rheumatism | ,, | 96, | ,, | 6·5, | ,, 145 | |
| 120, M. K. (F.) ,, | 39, | Chronic arthritis | ... | ,, | 112, | ,, | 6·5, | ,, 135 |
| 121, H. M. (F.) ,, | 27, | Anæmia ... | ... | ,, | 76, | ,, | 7·0, | ,, 125 |
| 122, C. R. (M.) ,, | 20, | Constipation | ... | ,, | 72, | ,, | 7·0, | ,, 125 |
| 123, W. M. (M.) ,, | 37, | Debility ... | ... | ,, | 75, | ,, | 7·0, | ,, 125 |
| 124, M. C. (F.) ,, | 40, | Rheumatism, nerves | ,, | 84, | ,, | 8·5, | ,, 130 | |
| 125, F. A. (M.) ,, | 51, | Chronic arthritis | ... | ,, | 66, | ,, | 6·5, | ,, 135 |
| 126, J. B. (M.) ,, | 46, | Gout ... | ... | ,, | 80, | ,, | 7·5, | ,, 165 |
| 127, E. C. (M.) ,, | 35, | Epilepsy ... | ... | ,, | 76, | ,, | 7·5, | ,, 155 |
| 128, G. D. (F.) ,, | 52, | Migraine ... | ... | ,, | 84, | ,, | 7·0, | ,, 135 |
| 129, F. A. (F.) ,, | 40, | Chronic arthritis | ... | ,, | 92, | ,, | 6·5, | ,, 145 |

These circulation results were taken at random from my case notes, being cases from a certain date which I had seen only a few times, and about which therefore (with the exception of Case 65) I could make no remarks as to the results of treatment, so that they were not available for use in the other chapters of this book. The certain date was fixed by the time at which I had begun to measure regularly in every case all the required data of the circulation.

We see then that out of these 129 unselected cases 14 were above the physiological ratio of C.R. × 20 = B.P., and of these the average pulse rate was 76, while 53 were below that ratio, and of these the average pulse rate was 85, and 63 were on or within 5 mm. of the ratio, and of these the average pulse rate was 81; and one of those which was below average to begin with became average as the result of fifteen months treatment, and, being counted twice, raises the number of records to 130. We must remember that all these were samples of disease, not of physiology,

and this fact and the slight preponderance of females (67 females to 62 males) among these unselected cases probably accounts for the rather high pulse rates. Besides they were all first examinations, and patients are always more nervous at their first visit. We must bear in mind also that in physiological conditions, so far as my observations extend, the above-mentioned ratio is very constantly met with, and taking a normal capillary reflux as 5 to 6 the corresponding blood pressure is very constantly 100 to 120.

I am not here attempting to uphold this ratio, but merely to compare with it a series of cases taken at random from my notes. Nor have I attempted to give a full note of their disease.

When we thus regard these records from a purely circulation point of view, we see that in the cases that fell below the normal ratio there was, what I regard as a sign of weakness or debility of the cardiac muscle, a quickened pulse rate, namely 85; and we shall see in future chapters that in practically all cases of weak heart (with or without obvious valvular lesion) there was not only a failure to attain the correct ratio of capillary reflux to blood pressure, but also an increased rate of heart action, and that, generally speaking, the more the ratio falls short of that which is normal the quicker (other things equal) is the rate of the heart's action.

Thus the cases in Chapter I. confirm, so far as they go, the inferences from physiology, and form a stepping-stone to the circulation results in future chapters, where we shall see the same thing, only in more marked individual instances.

I do not suppose that the ratio I have been led to adopt is absolutely correct, but it is sufficiently accurate to be a useful guide to the strength or weakness of the heart muscle. Those who from a larger physiological experience can work out a more accurate ratio will obtain a more accurate guide; I am merely doing what I can with the results at hand.

There are some notable exceptions to the rule among cases of chronic arthritis, *e.g.*, cases number 76, 84, 90, 108, 109, 119, 120, 129, in which, though the capillary reflux to blood pressure ratio is on or above normal, the pulse is abnormally quick; this I think is probably due to the fact that the crippling of the joints and the consequent increased exertion and pain of movement quicken the heart's action unduly, even when it is not weak; but, as we shall see in other chapters, a weak heart is a common factor in chronic arthritis.

With regard to the case of Graves's disease, of which the circulation is again recorded after fifteen months on diet, it is interesting to note that the pulse had slowed, the capillary reflux had quickened to 7, and the blood pressure had come to bear an almost normal ratio in regard to it; the notes of this case also show that the circumference of the neck had fallen from 13½ in.. to 13 in.

I have seen diet produce a similar effect in several other cases of Graves's disease, but I have not had many cases of this disease among my patients; yet even this record may be useful if it serves to remind others of the possible utility of diet in these cases, in quickening capillary reflux, lowering blood pressure and giving a weak heart some chance of recovery by diminishing its work.

As we shall see in future chapters, diminution of fluids has a most important influence in diminishing the work of the heart, but in the case we are speaking of little or no attention was paid to this matter, so that such improvement as is recorded was entirely due to the uric-acid-free diet diminishing friction in the capillary circulation, by lessening the quantity of uric acid in the blood.

When slowing of capillary reflux is not due to morbus cordis or weakness of cardiac muscles, it is practically always due to an increase of uric acid in the blood: but if the heart is weak, strained or temporarily dilated, a capillary reflux of 6 may slow to 7 or 8 without any increase of uric acid in the blood, and then a quickened pulse and a more or less defective ratio between capillary reflux and blood pressure are the indices of the actual conditions present.

Thus capillary reflux, 11; pulse, 90—100; blood pressure, 190; flattened, 250, shows chronic collæmia, perhaps chronic Bright's disease, now becoming complicated by heart weakness as indicated by the defective ratio and the quick pulse. In confirmation of this we shall find probably that the heart area is 1½ or 2 in. too large, and that the liver, the stomach, and possibly the spleen have increased in size owing to chronic back pressure and congestion. Some months or years ago this heart was strong, it was enlarged and hypertrophied, but only slightly dilated; at that time the pulse rate was 50 to 60, in place of 90 to 100, and there was little or no congestion of liver, stomach or spleen. The mental symptoms of these two conditions of the heart would also vary greatly, but we shall see many instances of this in the following chapters.

Subnormal ratio of capillary reflux to blood pressure tells us that

the heart is weak, and we have to find out the cause of this from the other signs and from the history.

To save space I use U.A.F. for uric-acid-free, C.R. for capillary reflux, B.P. for blood pressure, B.D. for blood decimal and C.D. for diameter of cardiac area. The normal conditions of these things are probably C.R. 5 to 6; B.P. 100 to 120; B.D. 1·0 to 1·1, but these relations are not often met with in the chapters that follow.

## CHAPTER II.

### Collæmia, Simple.

In beginning this chapter, which is headed "Collæmia," one cannot but be struck by the fact that many of these "diseases" are inseparable; they run into each other in all directions; they are present in a given case in all varieties of admixture. Even in the separation of Chapter III., which I endeavour to make by selecting cases where collæmia is complicated by an organic factor, such as weak heart or morbus cordis, I am aware that there is no rigid line of separation. It is almost impossible to say where a temporary dilatation of the heart, or what appears to be such, passes into myocarditis with atrophy and incurable debility. I must be content if I can make the clinical distinction of these conditions moderately clear and easy in practice.

Among the chief "diseases" or effects of collæmia, which I attempt to group in Chapter II., are headache (migraine or uric acid headache), the real central trouble or axis of the whole group (see classification in Chapter I.), with epilepsy and some depression, accompanied by high blood pressure and a strong heart (at least at first); but if the heart yields, weakens, or suffers from defective nutrition (*e.g.*, as the result of deficient food, dyspepsia and anæmia, or from defective circulation as the result of pressure), the headache may be more or less replaced by syncope, hysteria, neurasthenia or pathological fatigue, with (of course) increasing dyspepsia and anæmia, a vicious circle passing from bad to worse.

In practice, as we shall often see, it is really impossible to separate these things; we can only take the most prominent symptom (*e.g.*, headache), and we shall find many of the other symptoms more or less represented in various stages, according as the heart is very strong, well nourished and gradually hypertrophies in proportion to the strain put upon it by the collæmia, or as it is either more or less weak to begin with (*e.g.*, in women and those of defec-

tive development from life in towns and sedentary conditions or confinement), or becomes weak later as the result of chronic dyspepsia, pressure from dilatation, and the malnutrition of anæmia in varying proportions.

These things again obviously depend on the possibilities of life, *e.g.*, those who have stored much uric acid during growth and development (first retentive stage, childhood and youth up to 14 or 16) will have the material for severe collæmia in the first collæmic stage (17 to 25) which follows it (see " Uric Acid," p. 236).

And these diseases accurately correspond to their origin; the retentive diseases in the retentive stages, and the collæmic diseases in the collæmic stages; except where accident or disease is sufficiently important to interfere with the stages and their natural evolution, *e.g.*, where the collæmia of the first collæmic stage (17 to 25) is so severe that the second retentive stage (26 to 55) is more or less delayed or even entirely prevented, as for instance in cases of incurable debility, neurasthenia the result of dyspepsia accompanied by weak heart or morbus cordis, or in phthisis and other wasting diseases.

These things are, in a word, not diseases but incidents of collæmia, and vary as this collæmia is severe and long continued, or slight and transient, and as it is associated with defective development, sedentary unhealthy life, muscular weakness, cardiac debility or any condition such as myo-, peri-, or endo-carditis, which will obviously increase the circulation effects of the collæmia.

It is necessary to warn my readers that under " Headache " will be found cases the leading symptoms of which may appear to them to be those of syncope, albuminuria, epilepsy or depression (all of them results of the defective circulation inseparable from collæmia, and all of them more or less complicated by other primary or secondary results of such circulation throughout the body), rather than those of headache. Such a case may be treated by one man for syncope, by a second for albuminuria, and by a third for epilepsy or migraine, while all the time there is no disease whatever present, for each is but a separate symptom of a cause, chronic food poisoning, common to all. And this confusion has arisen because we have been attempting to make the more prominent symptoms and results of collæmia and food poisoning into separate diseases, and to draw artificial distinctions where Nature has placed none, with the result that she constantly confounds our efforts and confuses our nomenclature.

As far as may be possible I shall arrange my cases to illustrate first of all etiology, pathology, and clinical records of symptoms, and later on, after we have got a grasp of the nature of the disease and its chief symptoms, I shall narrate cases that illustrate the results of treatment by drugs and diet.

In dealing with the records of a large number of cases it must be evident that there will be not a few of whom the subsequent history is unknown; patients get better and cease to attend, or disgusted and give up, or they are frightened by ignorant friends who regard change of diet as a dangerous experiment; and of those who are cured, only quite a small number take the trouble to write and say so; one hears perhaps of their cure only some years later from a relative or friend who comes wishing to do likewise.

As a prelude to the cases of migraine I will say a few words about my own family, the cases that originated my research.

My father died in his eightieth year from the effects of cerebral hæmorrhage, of which he had three attacks; he had granular kidneys and occasional severe headaches from high pressure. My mother died ten days after my birth with symptoms of acute fever (? puerperal). I have gathered from relatives that she was small, delicate, nervous, and suffered from headaches. I was the only child of this marriage, but my father married again, and had two daughters and a son, the latter dying as an infant of bronchitis.

I suffered from headaches from my seventh year, if not earlier, was always delicate, with a dry, rough skin (for which the late Sir James Simpson had me rubbed with olive oil) and some minor liver troubles (? intestinal colic).

At 19 I went to Oxford, and was there muscularly strong—as strong, in fact, as many men weighing two stone more than I did. I went in for gymnastics and rowing, and might have won some minor things at both if I had had better wind and staying power (? defects due to collæmia). While at Oxford I had regular headaches (1 in 7 to 10 days), and used to treat them by sp. ammon. aromat., or some extra meat and wine, if the stomach was not upset. Vomiting was not a constant feature of my attacks, and I rarely had any teichopsia (scotoma scintillans), though this became a more common symptom a few years later.

Up to 25 I was a great meat eater, taking it usually three times a day in considerable quantity, because I knew no better. After leaving Oxford, and becoming a student in London, where it was impossible to continue my active habits, my headaches became more

frequent and severe, and they had all along considerably interfered with my education. The rest of my case, and the way in which I steadily improved as the various sources of introduced uric acid were one after another found out and removed from my food lists, has already been told in "Uric Acid."

Both my children suffer from migraine, and my son's case will now be described. Both are better on a diminished consumption of uric acid-containing food.

I describe my son's case first, for, though it does not come next my own in point of time, it is necessarily the one which, next to my own, I know best and in most accurate detail.

His more important troubles began when he was in his sixteenth year at Rugby in 1894–5. He had had migraine for years, but had not up to this time been put on to a strict diet, though meat had been somewhat cut down. He had also been subject to attacks of intestinal dyspepsia with fever (often 102°), which were treated with a small dose of calomel, the temperature falling to normal in a few hours. He had occasional attacks of croup and bronchitis as a child, and whooping cough at 12 years, but no other infectious diseases till he went to school. In July, 1904, he fainted in morning chapel, and again in December, 1904, he did the same after "a run" with the other boys. After this second faint he was taken to the sanatorium, where Dr. Dukes examined the urine and found albumin; this, however, only lasted for twenty-four hours, and he was soon allowed to return to school work. This was the first time I had heard of his having albumin; I had examined his urine several times when he had headaches, but found none.

When at home for the Christmas holidays (January, 1895), he had a bad headache beginning about noon on January 13. In this his pulse was 70; hands and feet cold; face pale and puffy; second sound of heart loud and occasionally reduplicated. He looked, now and then, as if he might faint. He sat in front of the fire and took a little sp. ammon. aromat. Headache passed off about 4 p.m. Urine of night of 12th (before headache) contained no albumin. Urine passed during headache, milky with urates, sp. gr. 1030, acidity 7·2 cc. of decinormal soda solution, urea 3 per cent., uric acid ·18816 per cent. Relation uric acid to urea 1 to 16, a large excess. Albumin present (a distinct trace with acetic acid and boiling). Urine passed 8·45 p.m. of same day, 1024, acid, no albumin.

On January 16 I examined his blood and found hæmoglobin 79 per cent., cells 93 per cent., making the blood decimal 0·85.

At this time Dr. (now Sir) Lauder Brunton kindly saw him and suggested that he should be kept at home for observation during the Lent term (which was done), and agreed that he could not do better than try the U.A.F. diet. Sir Lauder was inclined to take a somewhat serious view of the matter, as he had seen other schoolboys presenting similar signs, whose cases had developed into severe dyspepsia with heart weakness and Bright's disease; such troubles being, as we shall see, in the direct line of progressive and uncured collæmia.

He was then put on the U.A.F. diet in so far as it had at that time evolved from my researches, but including some pulses, mushrooms, asparagus, &c., which were not known to be harmful till later on.

Weight before breakfast in clothes 8 st. 12 lb. 6 oz.

He went on well, steadily gaining weight, and in April, 1895, he weighed 9 st. 6 lb. 2 oz., and his blood showed hæmoglobin 84 per cent., cells 98 per cent., B.D. 0·85 (*i.e.*, the same as before; if he had been doing badly on diet it would have fallen off). He had only three headaches during February, March, and April, and further gained weight, being 9 st. 10 lb. 4 oz. on May 3. In the summer term at Rugby he unfortunately got scarlet fever, but at my request was kept to a diet of milk only; he did well, and had no albuminuria or other complications. The rest of the record is one of steady improvement. There was one slight headache in August, 1895; in September the weight was 9 st. 11 lb. 8 oz. Up to this time he had had occasional egg and fish, but now gave them up entirely.

In the autumn term he was allowed to play football and to go for runs if he felt inclined to do so, and he did both without any ill effects. He slept better on the new diet, and had no headache all this term.

Weight continued to increase steadily, and in September, 1896, was 10 st. 6 lb. 8 oz. Has practically no troubles now. There were two slight headaches during the holidays, due to (1) getting wet and cold, and (2) occasional mushrooms.

The rest of the history is one of further improvement with only occasional and quite slight headaches, never accompanied by albuminuria; and the improvement increased, especially as pulses, mushrooms, and asparagus were gradually found to be harmful and eliminated from his diet. The urine was examined in March, 1897, and was found to give sp. gr. 1022, and to be free from albumin.

The B.D. also steadily improved, rising gradually throughout the ensuing two or three years to 0·9, then to 1·0, and even to 1·1, which is rather above the normal standards, so that I had the colour of his gums copied by an artist and used it as the highest colour on my colour card, corresponding to the decimal 1·1. (See explanation of these figures in "Uric Acid," p. 538.)

Apart from the absence of headache, faintness, and albuminuria, the most marked improvement was that in endurance; for in a few years the boy who had fainted at school became a young man who could ride a heavy (35 lb.) bicycle with heavy luggage 185 miles in eighteen hours (*i.e.*, from North Wales to London), and often did greater distances (*e.g.*, 263 miles in thirty hours in 1903, half of which was against the wind).

Practically this condition of things has continued, and he has now (1910) been upwards of fifteen years on diet. At Oxford, and subsequently in the Army, he astonished many by the strength and endurance he displayed. At Oxford he won several college rowing prizes, and would, I believe, have been in one of the college boats, but that it was feared that his diet would demoralize that of the rest of the crew. No doubt it would have been a serious matter if they had attempted to make a change in the middle of their training, but I may perhaps be forgiven for holding the opinion that, if they had all lived on the U.A.F. diet, the boat would have been head of the river.

I will now give a few cases which will show in greater development some of the symptoms of migraine before mentioned, and one or two cases in which, as in my son's, the circulation was merely estimated by the old methods, *i.e.*, palpation, percussion and auscultation of the heart, and a finger on the pulse, but without the help of any of the instruments for measuring capillary circulation and B.P. as in more recent cases:—

*Headache.*

Case 1.—M. K., female, aged 25. Headache all life, worse of late, takes antipyrin to relieve it. Scarlet fever and diphtheria as a child. One sister, headaches; mother ditto. Father and father's father, gout and rheumatic gout. Headache often lasts forty-eight hours, generally worse at 4.30 p.m. Used to be energetic, less so of late. Catamenia regular, no pain; headache not worse then (*this is contrary to the rule*). Pulse 78, not hard now. Apex beat slightly to the left, second sound decidedly loud at base. Is losing weight; cannot lie down when headache is present (*rule*). Takes tea twice a day; no breakfast; meat twice a day; soup and fish once a day; some wine (claret) twice a day. (*This diet obviously contained considerable uric acid and some retentives.*)

Case 2.—J. W., male, aged 53. Headache for ten years, increasing in frequency. Has several sisters who are well; one sister died of diabetes.

Quinsy up to 13 years ago ; has had gout in the toes. Headache lasts twenty-four to forty-eight hours, generally worse at 3 a.m. to 4 a.m.

This is very characteristic of the uric acid headache. It is the "collæmic point" ("Uric Acid," p. 168) of the morning, the change from the acid tide of the night to the alkaline tide of the morning hours. B.P. is often higher at 4 a.m. than at 8 a.m., though there is often more uric acid in the blood at 8 a.m. ; but there is more collæmia, higher B.P. and slower C.R. at 4 a.m., because there is then less alkali to hold the uric acid in solution. Collæmia is generally proportional to the quantity of uric acid in the blood, but less uric acid will produce the same capillary obstruction if there is less alkali to hold it in solution.

Pulse 78, intermits 1 in 16; apex-beat outside the left nipple line, impulse forcible, first sound long or slightly reduplicated. Urine passed at time of first visit had specific gravity 1026, is free from albumin, but the uric acid urea relation is 1 to 22 (*normal being taken as* 1 *to* 35—"*Uric Acid*," *p.* 16). These headaches were relieved by sodii salicyl. gr. xv., sp. ammon. aromat ℥xv. ter p.c.

Case 3.—C. W., male, aged 29. Headache with vomiting, relieved by phenacetin. Also general debility and tiredness (*signs of cardiac weakness*). Headache comes the day after champagne. Rheumatic fever and morbus cordis at 16 (*end of first retention period*). Pulse 92, no increased tension (*probably C.R.* 8, *B.P.* 140 ; i.e., *weak heart*). Apex beat just outside left nipple line and rather low, first sound reduplicated (*result of acute rheumatism*). Urine 1020, no albumin, no sugar. (*Here we have migraine on the verge of neurasthenia from morbus cordis*).

Case 4.—M. M., female, aged 31. Headache once in two weeks since 14 years of age, lasts twenty-four to thirty-six hours, with vomiting. Has a certain amount of morbid self-consciousness and depression. Had scarlet fever as an infant. A "faint fit" (? *epilepsy*) at 5 years. Mother rheumatism and headaches. B.D. 0·6 (*this is by Colour Card; when blood is examined, hæmoglobin and cells will be given*). Wakes at 4 a.m., and then "worries" till time to get up. Pulse 80, first sound tends to reduplication, second sound loudish. Arteriometer of right radial 1·3 mm. sitting, ·9 mm. lying down.

There are here some signs of heart failure in the altered first sound and quickened pulse, and this accounts for the tendency to hysteria and neurasthenia. Probably we should have found C.R. 7 and B.P. 120; hence there was a considerable difference in size of artery in the vertical and horizontal positions.

Catamenia scanty, headache generally at that time (*rule*). Urine 1027 (*notice the high specific gravity accompanying collæmia, weak heart and anæmia ; probably excess of uric acid*). This patient was taking seven cups of tea per diem and meat twice in the day.

After five months on diet this patient was stronger and better, less headache. Still self-conscious and worse at periods. After seven months, headaches and bilious attacks much diminished. Still some depression (*? does not take enough food*). When she is worrying has no headaches (*i.e., heart is weaker, and so blood pressure is not kept up*). She now took more food, and then got a headache and bilious attack. Thirteen months after first visit:—health very much improved, but still some depression at times. B.D. ·85 to ·9. Radial now only 1·0 mm. sitting. Pulse rate normal. Has increased 10 lb. in weight (*this with improved blood condition is evidence of fair nutrition*).

Case 5.—M. M., female, aged 51. Subject to headache for some years, which is worse in the morning and better as the day goes on. Much depressed of late, and occasionally sleeps very badly. Had bad "fainting attacks" at the menopause. Her heart has been said to be weak by all doctors. Head better after food, and relieved by brandy and soda; head feels too full. Subject to quinsy. Is now very stout (*further evidence of collæmia and defective combustion*). Pulse 88. Apex beat to the left of mid-clavicular line, second sound very loud at aortic base. Heart dulness almost covered by emphysema (*here we have signs of a high B.P. heart* (*hypertrophied*), *beginning to fail and dilate*). There was considerable dyspepsia, flatulence and occasional diarrhœa.

I give these cases to show how helpless we were to estimate such conditions when we could not measure the C.R. and B.P. The headache was the result of the high B.P., and the depression the result of the defective cortical circulation due to combined high B.P. and heart failure, the treatment of which conditions we shall come to later. If the heart gets worse, the pulse gets quicker, and the first sound may be short, as we see it in the third or fourth week of enteric.

Case 6.—A. H., surgeon, aged 39. Migraine for years, but better of late, and now has some occasional palpitation and feelings of faintness when dressing in the morning. His son has had migraine since 6 years of age, and his father had it also. Believes that stammering is connected with migraine (*I know a family where the boys stammer and the girls have migraine; stammering is certainly increased at times of collæmia*). Often has "dead hand," also cold hands and feet. Is depressed and hypochondriacal (*signs of heart failure*). Pulse 80, no marked high tension; says it is slow at time of headache. Apex beat displaced to left. First sound long or slight late systolic murmur (*possibly the reduplicated first sound, so common in collæmia, is an early stage of this*); second sound is only moderately loud. He can cure his headache by getting warm walking or riding (*the rule. This is accompanied by a fall of B.P.*). One month later, going on well and in better spirits. Urea is kept about 3 gr. per pound of body weight. His headache, just like my own, is relieved by looking vertically upwards (*probably interferes with the direct impact of the blood* (*pulse wave*) *at the base of the skull*). Arteriometer of radial during headache 1·6 mm. Still occasional palpitation and irregularity of pulse. Ten months later: Better and on more complete diet. Urea 498 gr. per day, which is 4 gr. per pound on 120, so he is having quite enough food. (*This patient eventually improved considerably on the diet*).

Case 7.—M. H., female, aged 59. Gout in various parts for twenty years. "All gout medicines weaken her so." Has "nervous headaches," relieved by vomiting. Her neck swells (*thyroid enlargement; this is not uncommon*) when the pain is at its worst. Much gout in family, especially on her mother's side. Is very subject to general colds. Her mother has gout in her hands. Head pain is increased by stooping (*the rule*), and is accompanied by some indigestion. Pulse 120. Has occasional palpitation attacks on excitement. Apex beat decidedly displaced to the left. First sound reduplicated or late systolic murmur; second sound loud at base. Phenacetin caused syncopal attacks. She has been given tonics, but they did not make the head any better. This patient was unable to take diet, and I did not see her again.

I give the case for its points of interest in history and signs. The fingers were slightly nodular as a result of chronic arthritis. I believe that between such cases and actual Graves's disease we get all intermediate conditions; and some enlargement of the thyroid,

in attacks of migraine, especially if these come in females and at the monthly periods, is very common ; and not a few women who have suffered from migraine for years have some permanent enlargement of the thyroid.

Case 8.—M.D., female, aged 56. Suffers from right hemicrania, and at times feels as if the top of the head were going to fly off. There is free diuresis as the attack passes off. Had rheumatic fever when younger, otherwise no rheumatism in her family. Pulse 96. A sphygmographic tracing shows very high B.P., the first wave at times being higher than the upstroke, and the dicrotic wave scarcely visible. Pulse tracing takes 4 oz. to develop it. Apex beat difficult to localize, as patient is stout ; it is slightly displaced to the left, and the second sound is decidedly loud at the base. Urine 1022. No albumin, no sugar, some slight œdema of shins. Was given iodide and some nitroglycerine to lower the pressure. Two months later she was doing well and was advised to reduce and leave off the iodide. She was however less well without her medicine and had to begin it again. Seven months from first visit she was better ; the pulse had fallen to 84. Tracing showed less pressure, and the predicrotic notch was quite half way down the upstroke. Second sound not so loud. Tabloids have also done good and both drugs greatly relieve the head, but she has difficulty in leaving them off. Eleven months after first visit, much better but still unable to do without drugs. I advised, as I usually do in such cases, to take a little salicylate for a time to aid the giving up of the retentives.

Case 9.—M.B., female, aged 35. Sick-headache ever since 9 or 10 years old. Brought on by fatigue (*the rule*), relieved by phenacetin. Headaches now one in six weeks. If headache comes in the morning she may vomit in the afternoon and is ill all night and perhaps next day. One daughter, aged 15, has headaches ; one child, aged 2, is fed freely on beef-tea. Pulse 80, apex beat slightly displaced to the left. First sound long, second sound decidedly loud. Takes coffee or chocolate three times a day, wine twice a day, soup once a day, meat or fish three times a day. B.D. ·7 only. Was put on diet. Two months later, no headache since last seen, and the same two months after that. Twelve months from first visit, not so tired and able to do more ; still headaches when tired, but not so bad and not so sick with them. Pulse 72 ; C.R., 6 ; B.P., 140 (*i.e., pulse had slowed and probably B.P. was now lower than when the pulse was* 80).

When the pulse is quick with raised pressure it will generally slow and come towards normal as the pressure is reduced, and this comes about whether pressure is reduced by drugs (retentives), by diet (U.A.F.) or by diminution of fluids. Work is taken off the heart and its action becomes more normal. This patient was an early case and was allowed to take oatmeal and various kinds of brown bread, things which have since been eliminated from the diet.

Three months later, has had no headaches, but she is losing weight, and it seems to be doubtful whether she is taking enough food. Pulse 72 ; C.R. 5 ; B.P. 110.

Part of the fall of B.P. may be due to diminished food and fluid, but there is no sign of heart weakness, as the pulse rate is normal and the B.P. is still above the C.R. B.P. ratio, though not so much above it as at the previous observation. On the other hand her blood has not improved much and is still only ·8.

Again some months later, headaches much better (*both less frequent and less severe*), on diet, but still has difficulty in taking sufficient food, and B.D. therefore does not rise.

My rule in those cases is that those who cannot get enough albumin within the strict diet, including white of egg, which is U.A.F., must, if albumin is still deficient, add a little boiled fish or fowl once a day. I never allow deficient albumin with a low or falling blood decimal.

Case 10.—H. B., female, aged 25. Headache for years, generally one in two weeks; worse lately and at the periods very bad. It begins in the morning and may be better in the evening. Has been having injections of morphia for them lately. Patient never robust (*see remarks further on*), belongs to a great tea drinking, soup and beef-tea taking family. Father had bad headaches relieved by morphia, is now dead. Her home doctor says "Temperature subnormal. Pulse rapid and low. Heart intermits" (*see remarks later on*). Occasionally has vomiting with the headaches. When I saw her a bad headache was present. Pulse 95; C.R. 8·5; B.P. 170.

Her pulse was a very powerful one when you put on sufficient pressure to develop it; her doctor probably said it was "low" because he did not press hard enough. There was no serious heart failure here, for the C.R. B.P. ratio was normal, but the heart was beginning to be a little bothered by the high pressure, as shown by the quick rate and the occasional intermittency (it was regular when I saw her). If the heart had really failed much, the head pain would have been quickly reduced, as we shall see in other cases.

I gave salicylate of sodium and bromide of ammonium, and suggested that the morphine had better be kept for severe emergencies (*it was not needed in this attack*). Next morning she was much better, no headache, and appetite returning. Pulse 90 (*still too fast*); C.R. 6·5; and B.P. 130. Patient was advised to alter diet slowly by stages, and to keep the above mixture for use in the attacks. Like the previous patient, she had difficulty in taking the correct quantities of the U.A.F, diet, but improved while she kept to it. She was much about in society, and had social difficulties with the diet (*i.e., difficulties in getting the food when dining out or away from home*) as well.

Case 11.—W. A., male, aged 37. Headaches for many years. Now three in two weeks. Is increasing in weight (15 *st.* 7 *lb.*, *ought to be only* 11 *st.*) and has some dyspnœa on exertion. Pain is very severe. Eyes slightly prominent, but not beyond the orbital margins. B.D. only ·6. Has some depression, but sleeps fairly well. Pulse 85 to 100, easily increased by excitement; C.R. 7; B.P. 190; fluctuations of the column of fluid in the sphygmometer are large. Has palpitation on exertion and cannot go upstairs well. Has occasionally fainted. Apex beat near anterior axillary line, impulse diffused and heaving (cor bovinum), first sound indefinite and prolonged, second sound very loud. Bowels act twice a day, never constipated. Takes cocoa in early morning, and tea and coffee three times a day. Meat twice a day, eggs or fish twice.

This case was treated like the previous one, because, as in the last case, the heart had hypertrophied and was for a time fairly equal to its work, only giving trouble at times of stress and strain (as in my son's case). Probably C.R. was underestimated in this case owing to some skin erythema; in any case it would probably

not have revealed serious heart failure, though that is certain to come later if the high-pressure conditions are continued.

Case 12.—H. E., female, aged 36. Headaches since childhood, one every three weeks lasting fourteen hours, generally about period time. For some years had dysmenorrhœa and the headaches were better, then the dysmenorrhœa got better and the headaches were worse again (*some dysmenorrhœa is really rheumatism of pelvic fibrous tissues. Was this an alternation of rheumatism and collæmia, which we so often see in cases of mental depression?*) Becomes sick and faint in the attacks. Mother was gouty. Has had eczema of hands and feet (*another retention sign, like the dysmenorrhœa*). Sciatica eighteen months ago, also "typhlitis." Much teeth trouble, said to be due to gout or acidity; gums are receding. B.D. fair ·85. Is nervous and easily frightened, occasionally depressed. Pulse 76; C.R. 7; B.P. 130. No headache to-day. Temperature generally subnormal. Apex slightly to left, first sound long, second sound loudish. Some throat cough. Bronchitis every winter (*more retention*). Some flatulence and constipation, takes syrup of figs. Micturition once in the night, urine very thick about time of headache. Takes tea or coffee four times a day, meat three times, soup and fish once a day.

This case shows a good mixture of retentive and collæmic troubles, as one might expect in a fairly nourished patient in the second or great retentive stage of life. At other times B.P. is a little below the normal C.R. B.P. ratio, so she is nervous and easily frightened (*sign of a weak heart*), but the heart is not very bad and the symptoms are slight.

Case 13.—M. S., female, aged 26. Married, three children, no miscarriages. Had fits as a child. Often sick headache, and used to have bilious attacks. Was in St. Thomas's Hospital for "weak heart." Never had rheumatic fever. Has occasional bronchitis. Now has a "faint turn" (*? epilepsy*) every three weeks, generally at night, and they wake her up; when in the day they are generally in the middle of the morning. Bilious attacks less frequent since having "faint turns." Pulse 84, slight plus tension to feel (*before C.R.B.P. days*). First sound indistinct (*? late systolic murmur*); second sound loud at base. She improved on diet and had fewer "faint turns."

I give the case because here epilepsy appears to have alternated with bilious attacks or migraine. I do not think there was any real weakness of the heart, but it may have failed somewhat at times before the collæmia, and this (sudden heart failure) may be the real cause of the "faint turns" or epilepsy; it also explains the absence of bilious attacks, for if the heart failed there would be no headache.

Case 14.—M.B., female, aged 50. Headaches every month for years; were bad at the periods, which are now over. Arthritis in hands, feet, shoulders and arms for four years.

*i.e.*, towards the end of the great retention stage of middle life, at the time when retention had been increased, owing to the collæmia, plus excretion and headaches of the catamenial period coming to an end. No doubt the collæmia and excretion of the monthly period is woman's great safeguard from gout in the retention stage of middle life.

One brother has rheumatism in the eyes. One cousin has rheumatic gout. Father's father rheumatism and gout. Has occasional chills; influenza twice.

Arthritis has been worse in the last twelve months. Water where she lives is full of chalk (*a direct retentive, and also a cause of constipation, which is a further cause of retention, as it increases the absorption of acid from the large intestine*). Is occasionally depressed. B.D. ·75 to ·8; pulse 84 (*? quick on account of the arthritis*); C.R. 6·5; B.P. 140. Apex beat displaced to the left, almost in the anterior axillary line. First sound long or reduplicated, second sound loud (*this is the ordinary high-tension heart of chronic migraine, which is generally much the same thing as chronic Bright's disease*). Has generally taken meat twice a day, fish or egg twice a day, and tea three large cups a day. Has a medicine which relieves pain, but causes nausea (*i.e., acts as an alkali; everything that causes dyspepsia acts as an alkali by lowering urea and acidity*). Eade's gout pills acted on the bowels and upset her. I gave iodide and cinchona as a tonic and retentive to aid the circulation as well as the joints (*this was not acute arthritis, but chronic arthritis with collæmia*) and continued her present diet. Both headaches and joints improved for a time, and she gained 5 lb. in weight.

In these cases I only alter diet *after the patients have got strong :* if they stumble over the change of diet they are apt to become debilitated, and in the same way to debilitate them with colchicum and purges only makes them worse.

Case 15.—M.K., female, aged 42. Migraine in the form of bilious attacks at 7 years old, migraine with blindness at 17. Migraine went away when she married at 25, but has returned since husband's death.

The first collæmic stage came to an end at 25, and during the early part of the second retentive stage she was strong, well nourished, and retained steadily, but would only be so much the worse later when misfortune and defective nutrition brought back the collæmia.

Her mother and one sister have headaches. Has attacks of teichopsia (scotoma scintillans) before the headaches. Is hysterical and excited at times. B.D. ·75; pulse 108; C.R. 8·5; B.P. 145. Apex beat displaced to left, first sound long, second sound loud (*here, again, we have the collæmic heart, with hypertrophy and dilatation, and now some little failure, shown by the quick rate and the defective C.R. B.P. ratio. The tendency to excitement and hysteria is one result of this*). The periods are regular, but there is some excessive loss (*? result of congestion from high B.P. and slight heart failure*). Headache was not completely absent during her twelve years of child-bearing, but it was much less frequent (*it is the rule for migraine to be absent during normal pregnancy*). Has been put on imperfect U.A.F. diet by her home doctor, but is attempting to live too much on vegetables and fruit; is having lentils and oatmeal, and tea still twice a day. She is not thirsty, and promptly gets dyspepsia on a sloppy diet; she does not like milk

Collæmics as a rule are not thirsty, as there is retention of fluids in the blood owing to the capillaries of the kidneys, lungs and skin being blocked. Many collæmics also have a dilated and splashing stomach (as we shall see); any excess of fluids not being absorbed, as the circulation is slow and there is already too much water in the blood, remains in the stomach, dilutes the gastric juice, and increases the fermentative dyspepsia. The proper treatment of these cases is to cut down all fluid till they are thirsty, and then to keep them on a dry diet of curd cheese, white of egg with only a little bread-stuff and not more than 20 oz. or 30 oz. of milk.

This patient takes ammon. chlor. for her liver attacks and headaches (*i.e., a retentive, which clears the blood for a time, and stores uric acid in the body, but as she is now somewhat debilitated and anæmic, she will not store much*).

Case 16.—E. T., female, aged 20. This case is incomplete, I give it merely for the history. Has had severe headaches for some years. The attack comes on in the morning and gets worse as the day goes on, till she faints, and then the headache grows better (*here it seems that the pressure which caused the pain was removed by the failure of the heart*). The apex beat was displaced to the left, the first sound was long and the second sound loud, as in the previous cases. This patient was advised to try the U.A.F. diet, and especially to reduce fluids, and some months later she reported herself as better.

Case 17.—F. H., male, aged 55. Uric acid headache, one in three months, but very bad. Some chronic dyspepsia and constipation. B.D. ·75; pulse 84; C.R. 8·5; B.P. 160. Apex beat in left nipple line, first sound markedly altered, long or reduplicated; second sound loud at apex and base. Can go all day without drinking (*sign of collæmia*).

Here again is a case in which fluids may be kept down with advantage, for the pulse is just beginning to quicken and the heart to fail; so that, if not attended to, the C.R. B.P. ratio will become more abnormal. The patient's own feelings point to this treatment, and show that he has already excess of fluid in his circulation.

Case 18.—W. L., male, aged 46. Headaches for thirty years at least. The headache now lasts thirty-six hours or more. Bilious headache and vomiting when in his teens: rarely vomits now, but cannot take food. Headaches now average one in two to three weeks. Mother had headaches, two brothers slight headaches. Feels a tightening in the region of the heart at the time of headache, cannot lie down with the headache, but has to sit vertically upright (*characteristic of the high B.P. headache*). Head often aches in the morning till it is relieved by a cup of hot tea. (*This is simple, each fresh introduction of xanthin causes retention for a time.*) B.D. ·75 (*note the low B.D. in case after case*). Pulse 60; C.R. 6·5; B.P. 130. Apex beat to left of left nipple line, first sound long, second sound loud, and occasionally reduplicated. There is constipation, which he regulates with fruit and beer. Passes much water as the headache passes off (*rule*). Tea three times a day, meat twice. (*This man is still strong and well nourished, the heart has not begun to fail, the C.R. B.P. ratio is normal, and the pulse is slow. My own pulse was sometimes as slow as 47 in high B.P. attacks*). There was no headache when the circulation was measured in this case.

Case 19.—J. F., male, aged 43. Headache for four years, worse the last two years, and accompanied by vomiting. Pain in the occipital region. Vomits mucus only. Teeth very bad. Sleeps fairly, but has attacks of insomnia lasting from ten to twenty-one days. B.D. ·75; pulse 84; C.R. 9; B.P. 140. Apex beat in left nipple line, impulse distinctly heaving; first sound long, second sound loud. Bowels opened twice a day (*? a sign of liver congestion from slight weakness of heart; the latter is also shown by quick pulse and subnormal C.R. B.P. ratio*). Urine 1030, milky with urates, no albumin, no sugar, probably an excess of uric acid.

Here, again, both circulation and B.D. point to chronic excess of uric acid in the blood (collæmia). His home doctor thought his trouble was due to working in heated rooms with deficient oxygen. If his diet had been U.A.F., the heated rooms would not have done much harm.

Case 20.—J. E., surgeon, aged 46. Migraine all his life, and gets worse rather than better. Head worse at night (*probably he means the early a.m.*

*hours*), next worst at 2 to 3 p.m. (*time of change from lower to higher acidity passing through collæmic point; see "Uric Acid," fig.* 3). Asthma seventeen years ago. Renal calculi fifteen years ago and five years ago. B.D. ·8. Some mental obscurity at times, also depressed and melancholic now and then. Had six months of bad insomnia thirteen years ago; sleep is bad after 2.30 a.m. as a rule. Pulse 84; C.R. 10; B.P. 185. Apex beat displaced to the left, not well felt. First sound long, second sound very loud. (*Here we are just on the verge of some heart failure, as shown by the quickened pulse rate and the subnormal C.R. B.P. ratio. If the heart fails further, we shall get less migraine, but more marked mental troubles*). Salicylates, bromides, and lithia are the only things that do him any good. He has altered his diet somewhat, but is still taking meat once a day, egg or fish twice, and tea twice a day. Smokes ten cigarettes per diem, was a big pipe smoker (*as the heart weakens, the taste for tobacco, a muscle depressant, diminishes*). I advised diet and diminished fluids, and three months later his pulse was 94 (*after some exertion*). C.R. 8·5; B.P. 165; B.D. ·8. (*This was an improvement, as B.P. was now in the normal ratio to C.R., and the headaches had been less severe. He had unfortunately been taking some asparagus, or the results would have been still better.*)

Anyone with a circulation such as we have seen in case after case would be liable to have albuminuria at the time of a run, a rowing contest, a polo match or other severe exertion; and gradually such a condition of things, if untreated, passes into chronic albuminuria and Bright's disease. Any such patient would also be liable to faint from many slight causes, while a man with a natural C.R. of 6, a B.P. of 120, and a normal pulse rate would have no albumin, less fatigue at the time and no fear of fainting. The one with little fatigue has a more or less immediate rise of urea when he takes exercise; this is so with the majority of those on the U.A.F. diet if they have no organic disease. Those on the other hand who suffer greatly from fatigue have no immediate rise of urea, but may have an excretion of unmetabolized albumin in its place. A large part of their metabolic troubles is due to heart failure, which again is due to collæmia, and if the heart fails still further they may faint.

Case 21.—J. G., female, aged 45. Headaches for years and years, worse about the monthly periods. Has constant acidity and skin is dry. Headaches may last from one to three days. Has about sixteen attacks in a year. Mother very delicate, gout (?). Had nephropexy four years ago, headaches more frequent since and may faint with them. Has slight asthma occasionally. Skin dry and rather puffy. Never has any appetite. Delicate and easily affected by drains or paint. Is frightfully depressed after headaches. Wakes early in the morning and worries. Takes sulphonal and trional occasionally. B.D. ·75; pulse, 80; C.R., 9; B.P., 145. Apex beat not felt, first sound slightly lengthened, second sound loud. Fingers, slight nodules of chronic arthritis. Is troubled with flatulence, weight and distension. Bowels act only with pills. Period every three weeks, loss may be considerable at times. Always headache with her periods. If there is much menstrual pain she stays in bed. Menstrual pain has diminished since her kidney was fixed. Meat twice, fish twice, soup once, and tea three times a day. Beef-juice acts as a stimulant and makes her feel much better.

Here is a good all-round case, everything shown, including causation by wrong diet. We have the collæmic troubles: head-

ache, depression, insomnia, dyspepsia, catamenial pain and excessive loss, with some signs of chronic arthritis and dry skin to represent retentive troubles. The circulation shows some sign of heart failure, as the pulse is quick and the B.P. is low in relation to C.R.; hence the tendency to severe depression and fainting. Lastly, this case is almost hopeless as regards treatment by diet, as there is dyspepsia (we shall see later on that a dilated and splashing stomach is very common in such circulation conditions) and complete absence of appetite. In my experience such cases must be taught to lead more natural and healthy lives (see my paper, "Some Mistakes which may Prevent the best Results of the Uric-acid-free Diet," in the *Medical Record*, New York, October 3, 1908[1]) before anything can be done for them by altering the quality of their food. Here is a woman who takes no natural exercise, does no useful work in the world, and looks upon it as the function of the medical profession to keep her in what she imagines to be health, while she still takes improper food supplemented by drugs.

Case 22.—M. K., female, aged 37. Headaches all her life, has had from two to four in a month. One brother has had bad headaches. Some rheumatism as long as she can remember, increasing of late. Skin slightly puffy. Is nervous and has defective memory, is occasionally depressed. B.D. ·75; pulse 84; C.R. 10; B.P. 160. Apex beat outside left mid-clavicular line. First sound rather short; second sound loud. Often has dead hands. Some chronic dyspepsia. Stomach is down to the level of the umbilicus, but there is no splash. Bowels act once a day without drugs, takes brown bread to aid them. Menstruation accompanied by excessive pain; twice operated on, curetting, &c. Married, no children. Headache very bad at the menstrual periods. Has been on U.A.F. diet for six weeks, used to take tea three times a day. I put her back on meat once a day, as she was not taking enough food; this deficient proteid was an explanation of at least part of the heart weakness and the consequent nervousness. (*We must bear in mind that a starvation diet will cure headache by weakening the heart and lowering the B.P., but this is not the cure at which I aim*).

Case 23.—J. A., male, aged 52. Sick-headaches for years, but not recently, as he has grown out of them. Complains now of liver and constipation. Liver is a family complaint, all take drugs and grumble over it. One son has bilious attacks and migraine, and is a great meat eater. Patient had gall-stones eight years ago, still has one or two attacks in a year; in last attack had jaundice and lost 22 lbs. (*here we have the cause of the present debility and absence of headachcs*). Has suffered much from insomnia, occasionally no sleep for a week. B.D. ·6 only; pulse 88; C.R. 7; B.P. 115. Apex beat not made out, first sound rather short; second sound not marked. Suffers much from flatulence and distension; stomach is down to the umbilicus, but does not give a splash. Bowels act only with the glycerine syringe: used to have piles and was operated on. His diet includes meat three times a day, tea twice, and soup once a day.

Here we have a case of well-marked cardiac debility, B.P. being 20 below the proper ratio to C.R.; with this we find temporary improvement of the headaches, because the high B.P. which caused them is absent. We have here in front of us

(1) Copies obtainable from Bale and Danielsson, London.

the whole causation of the trouble; if the heart recovers (*i.e.*, if nutrition improves and anæmia diminishes) the pressure will rise to 140, and the headache will return; that is, of course, if the quantity of uric acid in the blood and the rate of the C.R. do not alter in the meanwhile. The proper treatment here again is to alter diet gradually without interference with nutrition, and to cut down fluids as soon as possible so as to relieve the heart and stomach.

Case 24.—W. G. H., male, aged 17. Some headaches from hard work last term and some debility now. One brother has high-tension heart and albuminuria. Patient has only had measles and whooping cough. Has been operated on for adenoids. Sleeps very well, seven to eight hours. B.D. ·75; pulse 96; C.R. 8; B.P. 130. Heart sounds not remarkable. No dyspepsia, and the bowels act naturally. Urine sp. gr. 1022, acid, no albumin, no sugar.

Here is a case of debility and anæmia at the beginning of the first collæmic stage (a more common condition in girls), made worse by a life resembling that of a girl, viz., sedentary, with hard brain work. The headaches are better now, possibly as the result of the debility and heart weakness, and it is interesting that a brother should have high tension and albuminuria. This patient might be expected to have albuminuria with a severe headache, or other cause of circulatory strain, *e.g.*, a rowing or a running race.

Case 25.—W. S., doctor, aged 36. Headaches, one in a week, began soon after enteric at age of 22 (*first collæmic stage intensified by a fever*). Headache always after exercise or fatigue (*this is the rule: fatigue produces collæmia in those who have stores of urate, an extra long walk always used to bring on an attack with me*). Antipyrin does good, and he has been taking it in increasing quantities. His father's brother and sister died of diabetes. Gets a headache after hunting and then takes champagne, which cures it. Got knocked up in the heat of London, with vomiting and collapse. Often considerable flatulence with distension. Pulse 80. Second sound loud at apex and base. (*I regarded this as a collæmic heart, but this case was before the time of instruments for C.R. and B.P., or I might have learnt much more from it.*) Has been a large meat eater. Had six headaches in twenty hunting days; this last winter has been taking antipyrin even to the extent of producing collapse.

This has caused cardiac debility, as shown by the quickened pulse; no doubt the C.R. B.P. ratio would have been subnormal if we could have got it, so that the headaches were relieved, as in some of the preceding cases, by a fall of B.P. I give this case merely for the history, as my observations are incomplete.

Case 26.—S. B., male, aged 19. Acne of face and occasional headaches, also lethargy and disinclination for work. No alcohol or tobacco now, used to go in for both with late hours. Headache is increased by stooping. Eats well and sleeps well. B.D. ·7; pulse 72; C.R. 7; B.P. 140. First sound slightly lengthened, second sound decidedly loud. Has abdominal distension on a fruit and vegetable diet. Lower border of stomach below umbilicus, some splashing. I advised him to starve for a few days to get the stomach into order, as he was especially anxious to get the acne cured quickly. He accordingly starved for nearly three days, and came to see me just after his first meal, when I found pulse 72; C.R. 7; B.P. 125.

The fall of blood pressure here shown was due to the diminished food and fluid, but there was no heart failure, as the pulse did not quicken. In those who starve for longer periods the pulse remains slow and steady. To starve for a few days till hunger is keen and then to go on with two meals a day is often the quickest way out of dyspepsia. The causation of gastric dilatation in these cases of collæmia is probably somewhat as follows: During a collæmic attack, or migraine, digestion is often brought to a standstill (I have often seen such patients vomit a meal quite undigested three or four hours after it was swallowed), and the stomach walls are relaxed, both these being results of defective capillary circulation (the same that makes urine and saliva scanty). Fermentation and putrefaction go on in the stomach, as there is no normal secretion to inhibit this. The pylorus remains closed, as gastric digestion is not completed, and, as the result of distension with gas and fluid and a flaccid ill-nourished condition of its walls, dilatation of the stomach ensues. As we shall see in some cases to be related later, the stomach sometimes dilates with each attack of migraine. The above considerations easily explain the vomiting of undigested food in its later stages; and, if these conditions are repeated week after week, we can easily understand that more or less permanent dilatation of the stomach, with derangement of its secretions and loss of digestive and muscular power, may result.

Case 27.—J. T., male, surgeon, age 56. Headaches for many years. Read one of my books two or three years ago and began to diminish meat. Now complains of debility (*we are here just at the beginning of the second collæmic stage*). Headaches were improved by diminishing meat but were not cured. Had renal colic on left side twenty-three years ago. Hæmaturia two years ago after a cold bath. Chilblains very bad in the spring of last year. Always takes cold baths, sometimes breaks the ice to get in. Head often feels full and uncomfortable when there is no headache. Appetite poor, has probably been underfeeding since he diminished meat. Sleep is fair. B.D. ·75; pulse 68; C.R. 7; B.P. 160. Apex beat in the left nipple line, first sound long, second sound loud. Bowels act once a day without drugs. The lower border of the stomach is slightly below the umbilicus and there is marked splashing. Both kidneys are palpable, and the right seems somewhat large and tender. There is also pain and tenderness over the left kidney in the back. Urine 1016, acid, some little muco-pus, a cloud of albumin, no sugar; microscope shows many plates and lozenges of uric acid and some muco-pus (calculous pyelitis worst on left). His present diet includes meat and beer, each once a day.

There is no heart failure, in spite of some underfeeding and anæmia; this heart has evidently been hypertrophied for years as the result of chronic migraine. Now with the onset of the second collæmic stage, which intensifies the collæmia that previously was chiefly periodic at times of headache, we get more or less permanent plus excretion of urate with calculous pyelitis as its result. No doubt

his altering his diet while failing to take sufficient albumin has rendered the collæmia more decided and brought the second collæmic stage somewhat sooner than it otherwise would have come. I advised correct diet but with sufficient albumin, to avoid cold baths and to clothe warmly. The best treatment here would be some iodide to diminish the collæmia and the excessive excretion of uric acid, while correct diet shuts off the supplies from outside.

Case 28.—M. M., female, age 44. Headaches since 14 (*early first collæmic stage, i.e., it came on early for some reason in this case; probably brought on by illness, fever, or the congestion of the lungs mentioned later*). Rheumatism of late years with pains in the arms and back, shoulders, &c. (*i.e., in late second retentive stage*). Father and mother gout and rheumatism. Laryngitis as a girl (*in first retentive stage*), congestion of lungs at 34. Head always feels full; has much singing in the ears with the headache. Teeth bad and covered with tartar (*tartar is a result of collæmia, which renders saliva scanty and liable to deposit*). Sleeps well unless kept awake by pains. B.D. ·75; pulse 96; C.R. 9; B.P. 120. Apex beat in left mid-clavicular line, first sound long (? late systolic murmur), second sound somewhat loud. No headache to-day, but considerable rheumatism. Hands are very cold when she has headache (*rule*). Has considerable flatulence and occasional bilious attacks, a feeling of weight after food and occasional nausea. The stomach is below the umbilicus and there is some splash. Bowels act irregularly, generally require cascara. Menstruation every three to four weeks, occasional excess of pain; headache just before the period (*the rule is during and after*; fig. 31 *in "Uric Acid" shows the large excretion of uric acid early in the period*). Her present diet contains meat once a day, fish once, gravy or soup twice and tea twice a day; it used to contain more of these poisons and has been modified lately; is not fond of bread or puddings and has no real appetite for anything, hence the U.A.F. diet will be difficult.

The first thing to do here is to get the stomach towards normal size and function; its troubles are partly due to the heart weakness and collæmia. The indications here are for acid phosp. c. strych., diminished fluids, a dry solid diet and few meals (a treatment we shall mention later on in Chapter IV.); and only after heart and stomach have been got into better order can the U.A.F. diet be thought of. Many such patients expect to be cured in a week of the results of many years of folly, and naturally this is impossible; they come expecting to be put on diet, when, as in this case, they are quite unfit for it, and may go to someone else who will do what they want, and so the chance of helping them is lost.

Case 29.—E. M. M., male, aged 41. Sick headaches up to 35, since then burning pain about the navel; has attacks of this about every three months for eight months out of the twelve. During the trouble the pain is followed by flatulence and rumbling, and is accompanied by loss of weight. After three months of this he takes a turn and gains weight and all goes well till the next bout (*this is probably gout of the stomach alternating with collæmia, and during the gout and subsequent debility he is more or less free from headache because the B.P. is lowered*). Bicarbonate of soda relieves the stomach, ʒss several times a day acts like a charm. Used to have sick headaches regularly one or two in a month. One brother has sick headache, one brother cured of dyspepsia by Salisbury treatment (*thus a collæmic dyspepsia was cured by a diet that initiated a retentive stage,*

*though this would no doubt be followed, at some future time, by a corresponding collæmic stage*). This patient tried the Salisbury diet for his stomach, but got worse and lost weight on it. Appetite almost gone and is afraid of food. Sleeps well except during stomach attacks. B.D. ·75; pulse 96; C.R. 8·5; B.P. 155 (*i.e., some cardiac debility*). First sound rather short, second sound loud. Temperature is always subnormal. Pain feels as if wind would not pass; is best (least pain) in the morning and worse as the day goes on. Stomach pump no use; occasionally vomits two pints of acid fluid. Stomach extends at least two fingers' breadth below the umbilicus and there is plenty of splashing.

The pain may, at times, be due to gouty gastritis (gout of stomach walls), but, if he has collæmia and subnormal temperature, it is more probably due to the acid fermentation products from a dilated stomach passing into the intestine and setting up colic; the flatulence is partly fermentative and partly the result of excessive acidity; sodii bicarb. would relieve either process, at least for a time.

Has lost 14 lb. in five weeks and is taking sodii bicarb. all day long. His present diet is nearly as bad as it can be, and includes: breakfast, three cups of tea with egg, bacon, &c.; lunch, meat, pint of milk or beef-tea; afternoon tea, two large cups of tea with bread and cake; dinner, meat, 1 pint of light port or three glasses of beer; 1 pint of milk at bedtime. (*What can be expected of a dilated stomach and collæmic heart on so much fluid? Nothing will keep them from getting worse.*)

Here the first indication is to cut down fluids, a dry diet with only two meals per diem to give the stomach a little time to rest and contract, and the heart a chance of getting up to its work; then the case would become an ordinary one for the treatment of collæmia by the U.A.F. diet.

Case 30.—A. B., male, doctor, age 64. Periodic headaches for years, more recently vertigo and depression. Headaches now tend to get less severe but more frequent.

He is now well into the second collæmic stage, and collæmia is chronic rather than periodic. During the second retention stage there is only collæmia when the stomach is upset; at other times there is some retention; now the balance is tending the other way towards constant collæmia.

Says headaches began eleven years ago when stationed at Malta and much run down by fever. Now has forty to fifty a year, worse in the morning with nausea. One brother had woolliness and confusion of head, and died of cerebral hæmorrhage; another had bad bilious headaches and died at 72 of aortic aneurysm; he lived in Australia and was a great taker of meat and tea. Had remittent ague twenty-five years ago in China, eleven years ago acute congestion of the bowels (not enteric) in Malta. Appetite fair, sleeps well but often wakes in the night with headache (*rule*). Had recurrent iritis, operated on ten years ago. B.D. ·45 to ·5; pulse 64; C.R. 8; B.P. 140. Apex beat not felt, first sound distant, covered by emphysema, second sound relatively loud. Temperature generally subnormal, especially last five years (*i.e., second collæmic stage*). Takes tea or coffee three times a day and some wine, meat and fish twice a day each. Often headache in morning after wine. He was advised to go slowly on to diet and to diminish his fluids. Six weeks later he reported that headaches were less frequent and severe, and did not make him so stupid (? *œdema of the*

*cerebral cortex diminished)*; his head generally feels better and clearer. His pulse now was 68; C.R. 6; B.P. 120 (*i.e. the ratio was now normal, the B.P. normal, and the pulse had quickened, i.e., moved towards normal*).

Case 31.—L. M., female, aged 48. Subject to headaches and occasional vomiting all her life. Nerves and pain in calves and thighs in summer when at seaside (*? neuritis a result of collæmia*). A purge cures the head (*a small dose of mercury or salts will generally cure migraine, i.e., by retention*). One son has had appendicitis. Head pain is occipital when bad, never perspires, but eyes get puffy. Tongue often coated and dry. Larynx and fauces relaxed. Is apt to forget things, sleeps well. B.D., ·65 to ·7; pulse 100; C.R. 7·5; B.P. 155. First sound long or (?) presystolic murmur, second sound reduplicated (*? morbus cordis*). Joints of fingers slightly nodular. Has excessive flatulence, worst in the evening; stomach is below the umbilicus and gives a slight splash. Has had thirteen children; menstruation still continues, always excessive quantity, always headache about that time (*headache and the excess are results of collæmia and congestion; this heart is probably on the verge of failure, as shown by the quick pulse, hence her nervousness. Collæmia always means congestion of the liver and abdominal circulation*). Has diminished her meat lately, but is still taking tea or coffee four times a day; may have seven cups of tea and ten cups of coffee on a headache day. Is never thirsty, and does not know what it is (*the rule in collæmia*). Takes liver pills and occasional phenacetin.

Case 32.—R.M., male, aged 42. Bilious headaches and general pains all his life. Mother had similar headaches and aching in her bones. Patient had a chill every other day at the age of 20, bilious and violent headaches then. Diarrhœa for one year eight years ago; nerves weak and bad since. Now throbbing and palpitation in chest and fermentation in bowels. Headaches less of late, thinks he is too weak to have them. Eyelids slightly puffy. Tongue pale, coated; always is so. Sleeps badly, wakes 1 a.m., only sleeps after food. B.D., ·7 or less; C.R. 7·5; B.P. 135. Pulsation in the epigastrium. First sound reduplicated, or slight late systolic murmur; second sound fairly loud. Has occasional cough. Tried to reduce food, but this appeared to increase pain. Bowels kept regular by fruit and wholemeal bread; motions contain mucus. The lower border of the stomach is below the umbilicus, and there is a splash. He indicates the cæcum as the seat of his flatulent fermentation. He has been altering his diet and taking deficient food and some indigestible substances. Cannot take bread in any form, as it increases fermentation (*bread is incompatible with the fruit he takes to keep his bowels regular, also with the acid fermentation which he probably has in his stomach*; see *Dietetic and Hygienic Gazette*, New York, September, 1908). Tonics, *e.g.*, strychnia, increase the nervousness.

The heart here is obviously weak, if not diseased; hence his general neurasthenic condition. In these cases strychnia (as he himself remarks) does make the "nerves" worse, because it is allowed to raise the intracranial pressure, which makes the cortical circulation worse instead of better. But if the fluids are cut down the pressure is lowered, and then strychnia and other heart tonics, for which there is here an indication, can be given with good effect and without harm. The diminished fluid, as already explained, also helps both heart and stomach to do better work, and, when they are better, diet can be used to diminish collæmia. The 20 or 30 mm. by which B.P. can be lowered by cutting down fluids just makes all the difference to the circulation of the brain cortex, and greatly diminishes the chances of œdema of the membranes as well as of œdema of the ankles. On the other hand, to

give such a patient excess of fluids, or even to encourage him in taking them (for they do need encouragement, as most collæmic patients have a distaste for fluid, with the exception of stimulants such as alcohol and tea), is about the worst possible treatment.

Case 33.—H. A., male, aged 41. Bilious attacks all life, with severe headache lasting two or three days; has one a month. Is a desperate tea-drinker and a desperate smoker, getting very irritable if he tries to leave them off. Mother had migraine, and her sister the same. Bilious since boyhood, and had much vomiting with it at first. Diphtheria seven to eight years ago. Eyes are somewhat prominent (*sign of high B.P. if there are no eye defects to account for it*). Appetite good. Is very irritable. Sleeps well, except after an attack. B.D., ·75; pulse 90; C.R. 7·5; B.P. 135. Apex beat slightly to left of left nipple line, first sound long, second sound loud. Occasional flatulence and dyspepsia, but stomach is below umbilicus and a splash can be obtained. He has put himself on the U.A.F. diet, but is taking 400 gr. too much albumin, also too much fluid (3 pints of milk) for his stomach and circulation. I put these things right, and ten months later he was doing well. Headache attacks gone, but has occasional neuralgia. Appetite good; weight has increased 6 lb. Stomach is now above umbilicus, though a splash can still be obtained. Pulse 92; C.R. 6·5.; B.P. 125. B.D. has improved to ·85 or ·9. I went carefully through his foods and further diminished his fluids; since then he has done well, the B.D. improving to ·95 and above. Still has occasional headaches when he does foolish things, such as eating too much fruit or taking morning cold bath, both of which cause retention.

Case 34.—R. P., female, aged 37. Headache for years, relieved by coffee; now complains chiefly of insomnia, once went three months without sleep. Has been on a special diet at Buxton, which made her better for a time, but she has relapsed. Father gouty eczema, jaundice, and liver disease. Mother gouty. Appetite fair. Is depressed when not sleeping, wakes after two or three hours and never goes to sleep again. B.D. ·75; pulse 84; C.R. 5·5; B.P. 125. Apex beat slightly to left of left mid-clavicular line, first sound long or reduplicated, second sound loud. Breath is short on walking uphill. Bowels only act with pills. Menstruation regular; sleeplessness always worse then (*the exact parallel of the collæmic headache*). Takes coffee three times a day; more when head is bad. Meat three times a day, soup once a day. Quinine causes attacks of asthma, which are relieved by black coffee. Antipyrin caused a succession of fainting fits. She is nervous and hysterical and very sensitive to drugs. I advised a gradual change of diet and diminution of coffee.

One month later, pulse 96; C.R. 6·5; B.P. 125 (*there is evidently some heart failure here, shown by the quick pulse, the nervousness and hysteria being results*). Feels stronger, has lost the perpetual noise in the ears, and head is rather better. I advised a further reduction of liquids and less vegetables, fruit, and sloppy food.

A month later, pulse 72; C.R. 6; B.P. 115. (*This is a distinct improvement, and shows that the heart is getting less work to do, which is the chief object of treatment.*) She has difficulty in taking the right foods, and the dry food is causing some constipation (*but this is a matter of small consequence compared with the circulation trouble*).

Case 35.—J. R., male, aged 46. Suffers from chronic head trouble and depression. Had neurasthenia two years ago and was ordered rest; went to Pau, but was worse there, better after coming back. No excesses, lives a reasonable life. Suffers from vertigo and occasional uncertainty of walking. Headache is chiefly occipital. Tongue pale, coated. Is easily excited; at times morbid and depressed. Sleeps badly, has nightmare and starts. B.D. ·8; pulse 88; C.R. 7·5; B.P. 140. Apex beat not made out, first sound long, second sound decidedly loud. Has much wind and frequent abdominal pain; stomach down to umbilicus and there is a slight splash. Bowels very irregular. His present diet includes four large cups of tea, meat and fish twice a day each. (*Here we have migraine and collæmia merging into neurasthenia, and with this change*

*we have marked signs of cardiac debility in the subnormal C.R. B.P. ratio and the quick pulse*). Has been taking bromides in considerable quantities. I advised a slow and careful alteration of diet and a diminution of fluids.

A month later he was better as to spirits, but there was no decided change in the circulation ; pulse 88. I advised further reduction of liquids and slops.

Three months later he said the depression was much better. Takes his food well and has not lost weight. Pulse is now 80; C.R. 6 ; B.P. 135. (*A considerable improvement, and a ratio which is now above normal*). A little later the pulse fell to 76. He was given nux. vom. as a tonic and some phosphate of soda, and gradually improved still further, and got on to a completely U.A.F. diet.

The key to the treatment of these cases is to reduce the heart's work and increase its strength, and so bring the pulse rate to normal; when this has been done diet will gradually clear up the collæmia; and with normal circulation we get normal mental condition.

Case 36.—M. F., female, aged 46. Migraine for years, generally left parietal. Chronic arthritis for last two or three years. Mother and mother's mother died of fatty heart. For three or four years has had nervous terrors and cannot go by train. Tongue large with pale coat; appetite poor. Very much depressed of late, sleep rather better, used to wake in terrors. B.D. ·65; pulse 100; C.R. 9 (*this was in pre-instrumental days*). Apex beat not felt, first sound short, second sound loud at right base. Is very stout, 14 st. nearly ; was only 8 st. 7 lb. eleven years ago. Breath short. Has bronchitis, sometimes in bed with it for three weeks. Fingers nodular, knee-joints tender, ankles puffy. Menstruation regular every three weeks ; has migraine before and after the period. Has had terrible confinements. Was on the Yorke Davies diet and weight fell to 11 st. 7 lb.—the nervousness came on after this. Is fond of piano and hands are getting worse, so that she cannot play. Her present diet includes tea twice a day, soup, bovril, or beef tea twice a day, meat once and fish twice a day. Has had antipyrin for headache.

Here we have migraine and collæmia, passing on after years into anæmia, polysarcia, and cardiac weakness ; and with this we have the onset of nervousness and depression. Here, again, the arthritis is a collæmic disease ; for its cure you must clear up the collæmia by getting the patient strong and free from urates, and the first thing to do is to look after the heart, circulation and blood. Œdema of the brain membranes is the cause of the nerves ; and its causation is very similar to that of the œdema of the ankles ; if you relieve the one you will relieve the other. Such cases left untreated must go on towards progressive cardiac failure and its results ; and the arthritis will continue till the general debility and anasarca dissolve the urates out of the tissues (see case in "Uric Acid," pp. 744-748).

Case 37.—M. F., female, aged 34. Headache since 19 ; one in two weeks and often at the catamenial period. Has been diminishing meat and the headaches have been less frequent and severe. Also has aches and pains in knees and back. Mother had bad headaches, now has gout (*collæmia replaced by arthritis*) ; father had gout. Not strong as a child ; had influenza eight or nine times. B.D. ·75 or ·8 ; pulse 104 ; C.R. 7 ; B.P. 125. Apex beat displaced to left, second sound relatively loud. Often suffers with cold hands and feet. Has to be

careful as to food or she gets pain in the chest. Bowels act with cascara. Menstruation regular, rather excessive. Was fed up on extra meat with stout and port wine, and was worse with and after it. Present diet includes tea twice, meat once, fish or egg twice a day, and hot water in the morning, though not thirsty. Advised to go on U.A.F. diet gradually, and to diminish fluid until she has some natural thirst, which she never has now. Six weeks later pulse had fallen to 84, and the B.D. was holding its own at ·8 (*which is all we could expect; but the most important thing was the slowing of the pulse on diminished fluid*), and the B.P. was slightly down, *i.e.*, 120.

Case 38.—E. E., female, aged 59. Headaches with vomiting for twenty years or more. Also more or less constant neuralgia, which has been worse the last three years. Always feels cold. Appetite good. Fauces relaxed (i.e., chronic pharyngitis). Sleep very uncertain; generally cannot get to sleep, or wakes early. B.D. ·7; pulse 76; C.R. 6·5; B.P. 125. No headache now. Has put herself on the U.A.F. diet and headache is less severe. Apex beat in left mid-clavicular line. First sound long, second sound loud. Occasional flatulent dyspepsia. Bowels act with Eade's gout pills and hot water in the morning. Menstruation ceased at 53; headaches were very bad indeed at the periods. Neuralgia and all troubles vanished in the warm climate of South Africa (*i.e., the heat helped to dissolve the collæmia and lowered blood-pressure by freeing the capillary circulation*). She has four meals a day, and, if "exhausted," takes a biscuit or apple between them.

She thus suffers from what is called in Scotland "piecy disease" (*i.e.*, the want of a small *piece* of food very frequently). The "exhaustion" of which she speaks is not due to want of albumins in the body, but to arrest of gastric digestion, which stops the passage of albumins into the blood. This is a symptom of dyspepsia, and should be treated by rest and a carminative; but to give fresh food makes matters worse by adding to the stomach's work, for it has already "struck" over the food previously given. As I have already shown in "Diet and Food," strength is dependent on a supply of albumin to produce force and urea; and urea is the ash of the albumin, which shows that the force has been produced. When the stomach strikes work, the blood is not supplied with albumins, urea ceases to rise, or falls, and the patient feels exhausted, and thinks, quite wrongly, that she wants more food; what she really wants is a stomach that is rested, free from irritating and fermenting contents, and with a good circulation in its walls. What she can do at once is to rest the stomach by spacing the meals and refusing all food between them; the good circulation will come later as the effect of the U.A.F. diet.

Case 39.—M. G., female, aged 59. Case seen with the late Dr. Savill. Headaches since 9 years of age. Has been to many doctors and taken endless drugs; many said she was incurable. One aunt had headaches all her life up to 94.

This shows that migraine, in spite of its many dangers, is not altogether incompatible with what is called a long life; but I believe this woman would have lived thirty years longer if she had been on a diet which saved her heart from the effects of friction.

Patient never had real ague, but her headache attacks often resemble ague (i.e, are accompanied by shivering and cold extremities). Goes to bed well, and at 1 or 2 a.m. wakes with headache. Appetite variable. Generally a bad sleeper, and must have the head high to get to sleep (*symptom of high blood-pressure*). B.D. ·75; pulse 75; C.R. 6·5; B.P. 125 (*not a headache day*). Apex beat displaced to left, first sound long or late systolic murmur, second sound reduplicated (*this is a heart which has long been under the influence of periodic high pressure*). Headache was always at the monthly period. Is never thirsty, wants very little fluid. Urine 1018, minute trace of albumin, no casts. Her present diet includes fish twice or three times, meat once, soup once, and tea twice a day. Has three to four attacks of headache a month. This patient attempted the U.A.F. diet, but soon got no appetite for anything. I presently found out that she had not cut down her fluids, and was still taking morning hot water when not thirsty (*such patients, as we have seen, get a splashing stomach and fermentative dyspepsia on excess of fluid*). Is still taking several drugs which are not exactly tonics for the heart and stomach. She was put on a dry diet of biscuit and a little fruit for her headaches, and this completely prevented them; but she kept it on longer than was necessary, and her pulse quickened to 88, and B.P. fell to 90, in spite of a C.R. of 6 or 7 (*i.e., the lowered B.P. was due to diminished food and fluid: it is quite easy to keep headaches in check by this means without carrying it so far as this patient did. My orders are to continue the dry diet till the headache moderates, and then add some fluid*). She was better as to the headaches, and had fewer of them, but she had some "rheumatism" in her joints (not severe), and was still taking drugs, which I should have left off if I could. Pulse 92; B.P. 110; C.R. 6; (*there was here some heart failure*), and the blood decimal was ·7 (*i.e. no better: probably she was under-feeding by frequent resort to the biscuit and fruit diet, and by not taking care to get sufficient albumins between her headaches*). Later she had to resort to two pints of milk in order to get sufficient albumins, as her appetite for other things was poor. (*The best way out of this difficulty is to turn part of the milk into curd cheese; the utmost amount of milk in these cases should be* 1½ *pints, and no other fluid unless there is decided thirst*). She had now to be given a tonic, and with this the B.P. rose to 135. In the next six months she had eighteen headaches, of which seven were severe. She had no home, and was living in boarding houses, where she had difficulty in getting correct food and in carrying out directions, so she had to continue to take excess of fluids. Hence in four months of the following year headaches still remained about three a month, but the B.D. had slightly improved to ·8. She still craves for a cup of tea. She then tried heat baths for her joints, which made them better, but her head worse, as one would expect. Later on she got appendicitis with abscess, which was operated on. The wound healed "wonderfully well," and she had no headaches for three months after the operation (*no doubt B.P. was lowered by the operation and its treatment*). When I saw her next her pulse was 80; C.R. 6; B.P. 100; and B.D. ·8 to ·85. I made a further attempt to reduce her milk, and she went on fairly well, but always in more or less difficulty as to food.

Such a case shows us the whole causation of the trouble and the exact conditions with which we have to deal, and it is easy to see that much better results would be obtained if the treatment were properly carried out.

Case 40.—M. M., female, aged 51. Headache for years, pain in head seems to alternate with pain in the epigastrium; has occasional vomiting along with the epigastric pain. Is nervous and has palpitation on exertion. Mother had rheumatism and died of carcinoma. Much worry of late with brother who is alcoholic and has a fatty heart. Headache is frontal and occipital. Appetite not very good. Always sleeps well. B.D. ·75; pulse 68; C.R. 7; and B.P. 130. Pain in the epigastrium is increased by food. Lower border of stomach is below the umbilicus and there is a splash. Head pain is increased on lying down. Present diet contains meat once, fish twice, and tea twice a day. Tonics make the head worse. (*Here again is a case for diminished fluids,*

*for, though there was no heart failure at the time of examination, there was a dilated stomach and palpitation on exertion, and there was anæmia, a further factor in cardiac debility.*)

Case 41.—R. B., female, aged 49. Headaches for three years, wakes with it; is easily tired and head gets worse then. Pain and stiffness in right arm and knee, so bad that she cannot take much exercise. Often liverish in spite of no meat (*she means butcher's meat, for there are plenty of other poisons in her food*). Twelve years ago knocked up and heart was queer. Sleeps well. B.D. ·75; pulse 78; C.R. 6·5; B.P. 135. Apex beat in the left mid-clavicular line, slight late systolic murmur; second sound loud. Arthritic pains worst on waking in morning. Fingers show rheumatoid changes. Menstruation slightly irregular for last six months, headache worse at the periods. Home doctor says she has rheumatic gout and advised her to eat no meat; since doing so has been worse rather than better. A relaxing climate also makes the joints worse (*this is collæmic arthritis, and is made worse by things which increase collæmia, as does change of diet at first, and better by a bracing climate or retentive drugs*). Her present diet contains fowl or game twice, fish once, soup once, and tea twice a day (*as I said, plenty of poisons still*). I gave her a tonic and tried to insist on sufficient nourishment, even if she took meat (*tea and soup are absolute poisons, but it is better to take meat than to be short of albumins in such cases*). She was taking other drugs and mixing my treatment with her previous ones, hence seven or eight months later there was not much improvement. Pulse 84; C.R. 6·5; B.P. 125 (*showing some heart debility; it is impossible to cure nerves or chronic collæmic arthritis while this source of debility remains untouched*). It was difficult, however, to make her take sufficient nourishment, or to cut down her fluids as much as was necessary. In place of curd cheese she would substitute some indigestible dried milk powders, which only increased debility and dyspepsia (*some milk powders are easily digested, but these were not*).

Case 42.—M. F., female, aged 44. Always suffered from bilious headaches; last year they came every three weeks. Five months ago bad cough and some congestion of the lungs. Bad bilious attack last year after a holiday (*rule; there is retention during the bracing up of the holiday, followed by a corresponding extra collæmia when the holiday is over; this is the explanation of so many illnesses*). Her sister saw me some months ago and has done well on the U.A.F. diet, in spite of her friends trying to frighten her. Some eczema occasionally: much trouble with teeth. Appetite good. Depressed only when she has headache. Sleeps well. B.D. ·8.; pulse 80; C.R. 7·5; B.P. 155. Apex beat slightly to left: first sound long; second sound loud. Does not complain of dyspepsia; abdomen not examined. She thinks she has been on the U.A.F. diet for some months, but she is still taking egg and fish and tea, and is not getting enough albumin, even with the fish and egg. Her headaches are better, but this is evidently due to underfeeding.

Case 43.—J. C., male, aged 22. Complains of thumping in head, increased by exercise or walking fast uphill. Has had occasional albuminuria for five and half years. Skin was bad, covered with pimples and boils, before the albumin appeared. Has gone in for football and athletics, but now gets thumping in head. Father has gout, and grandfather the same. One brother has gout already at 24. Suffers much from coldness of extremities, and is always chilly. Influenza five years ago. Has had headaches as long as he can remember, generally one or two a month. Never perspires (*this is very common in those who have collæmia and slow C.R., from which follows defective nutrition of the skin and eventually atrophy; see "Uric Acid," p. 607*). Sleeps badly, may not get to sleep till 2 a.m. B.D. ·9 (*not very anæmic now, as he is young and althetic, but this will come later*). Pulse 72; C.R. 7; B.P. 140. Temperature generally subnormal (*the rule*). Apex beat almost in left nipple line; first sound long; second sound loud (*the ordinary high-tension heart*). Fingers may die at any time. Has slight dyspepsia at times. Stomach lower border on a level with umbilicus, and there was marked splashing (*one must conclude that this young man did not pay much attention to his sensations*). Micturition once in the night for years. Albumin is intermittent, being increased by some meals (*most after breakfast is the rule*), and by exercise, hence football has been for-

bidden. Urine passed here 1018, slightly acid; cloud of albumin; no sugar. Has put himself on what he thinks is the U.A.F. diet, but is still taking some fish, meat and tea. Six weeks later, has been on correct diet for about four weeks. Has had a bad cold and been pulled down by it. No headaches since last here. Pulse 84; C.R. 8; B.P. 130 (*there is here some heart failure and debility, probably from deficient food*). Urine passed here contains a mere trace of albumin. Heart sounds as before. I laid down strict rules as to quantity, and insisted that he must learn to take enough of the new foods before giving up the old (*many errors are made here*).

Here, again, we have periodic collæmia (migraine) becoming chronic and passing on through occasional albuminuria to chronic morbus Brightii. Here, also, we have dilated stomach and dyspepsia; we are on the verge of heart failure, and the functional troubles gradually pass into organic. It may still be possible to put them right, but how much better if the diet had been natural from infancy.

Case 44.—J. B., male, aged 36 (medical). Read "Uric Acid," and gradually diminished "animal" food, giving it up entirely two months ago. Has long suffered from occasional headaches and bilious attacks. Had severe influenza ten years ago. Has irritability and fulness of head in the morning, which passes off about 12 or 1 p.m. (*obvious collæmia*). Always constipated, occasional rheumatic pains, still smokes and takes one cup of tea in the afternoon (*hence the heavy head next morning*). B.D. ·8 or ·85; pulse 80; C.R. 7·5; B.P. 145.

(*Here we have the ordinary collæmic circulation and the ordinary collæmic troubles; heart failure is almost in sight here, a shock or another ten years of life unaltered would probably bring it out.*)

Case 45.—I. F., male, aged 48. Headaches since 7 or 8 years old, which last from twelve to twenty-four hours at most; cannot lie down with them; has taken much phenacetin, which makes them bearable. One brother suffered from depression, and has been cured by the U.A.F. diet. One sister the same, mother used to have it also. Malaria several times, influenza also. Some dyspepsia, for which he starves. Some slight depression, sleeps well, but is never fresh in the morning. Appetite generally fair. Skin puffy. B.D. ·7; pulse 68; C.R. 8; B.P. 110 (*that this is not heart failure is shown by the slow pulse; he has had no food for two days on account of dyspepsia and so B.P. is low and pulse slow. If fed up the B.P. would have been* 160). First sound long near sternum, second sound loud. Suffers from cold hands and feet; fingers die in the morning after his bath. Always constipated, and takes pills and cascara. Stomach small, no splashing (*absence of food*). Is not thirsty. Urine often thick. Present diet contains meat two or three times, egg or fish once, and tea or coffee three times a day; tea is weak, taken Russian fashion. Smokes considerably. Seven months later, has been following diet strictly; no headaches, or only very slight. Is taking little fluid, as he had to give up milk on account of constipation. Has had some cough and cold. B.D. ·7 (*no improvement, possibly food rather deficient*); pulse 68; C.R. 7; B.P. 120 (*this also points to diminished food and fluid; this is the cause of the absence of headache; he is not yet free from uric acid*). I advised him to continue the diminished fluids, but to make food (albumin) quantities correct.

Case 46.—E. E. H., male, 33. Sick headaches as a boy; asthma about two years. Father has slight gout, migraine in family. Depression very great, especially before rain. (*He probably gets increased collæmia with a warm S.W. wind*). Sleeps well as a rule. B.D. ·85; pulse 68; C.R. 7·5; B.P. 155. Artery easily felt. Apex beat in left nipple line, first sound long, second sound loud. Always more or less cough, but expectoration is small. Occasional feeling of weight in the epigastrium, and flatulence. Stomach border is rather below umbilicus, but there is no splash. Veins in left calf are enlarged. Potassium

iodide relieves the asthma; has also taken mercury for it (*hence perhaps his relatively good B.D., as he is on retentives. All retentives improve the blood, all solvents make it worse*). Here again we have a chronic collæmic circulation leading on to asthma, a collæmic disease.

Case 47.—W. H., male, aged 44 (medical). Complains of heavy head, vertigo, and paralysis of brain (*neurasthenia*). The first symptom was headache, five to six years ago. Mother gout in fingers; father died of apoplexy. Had a bad dose of influenza, followed by headache and worry. He had headaches as a student, but they got better with country life and fresh air (*i.e., better nutrition, exercise and appetite, and so retention. It will be remembered that my headaches got worse when I became a student in London, due to the opposite change*). Appetite fair. Can always go to sleep. B.D. ·8; pulse 80; C.R., 8·5; B.P. 140. Apex beat slightly to the left, first sound long, second sound loud.

Here, again, we have a collæmic heart on the verge of failure, which is no doubt more marked at certain times, hence the "paralysis of brain" and the worry. This is the result of many years of periodic collæmia with headache. If the heart does not fail, one gets in such cases periodic headache and periodic depression; if it does fail, the defective cortical circulation becomes more chronic and continuous, complicated with more or less œdema of membranes, and we get "paralysis of brain," constant worry and neurasthenia.

Case 48.—C. B., male, aged 65. Often bilious, has a chill, followed by vomiting. This was cured by a vegetarian diet, but since that he has had some rheumatism in shoulders, neck, knees and hands. Was a large meat-eater before he became a vegetarian. His father and mother had rheumatism, two sons and one daughter have rheumatism. Appetite good. Bad sleeper for last ten years, wakes early a.m. hours. B.D. fair, say ·85; pulse 76; C.R. 7; B.P. 135. Apex beat slightly to left, first sound long, reduplicated in epigastrium, second sound loud. Joints of fingers slightly nodular. Still some flatulence, but no bilious vomiting now. Bowels act once a day without drugs; had diarrhœa for years before altering diet. Is taking a good deal of fruit, even when there is none in season in this country (*this is the probable cause of his rheumatic pains*). I gave iodide, nux, and cinchona as a tonic, and increased his food, as he seemed to be underfeeding. Six weeks later his rheumatism was better, hence his writing was better and he had a firmer grip.

Case 49.—W. C., male, aged 29. (*I give this case because in it the common eye symptoms of migraine were increased to the extent of temporary complete loss of vision, and I was fortunate enough to get a record of the circulation conditions at the time.*) Always had occasional headaches; he woke this morning with a frontal headache, which gradually got worse. Just before I saw him he became quite blind and had to be led about. He had very severe pain in the head, which was better on standing up (*rule in high B.P. headache*). Pulse 80; C.R. 9; B.P. 160 (*there was here a certain amount of heart failure, and this with the collæmia, shown by the slow C.R., would quite account for the defective circulation (stasis or thrombosis) in the eye centres*). Owing to the history of previous headaches I regarded the trouble as functional, and said he would soon be all right. His hands and feet were cold; there were some signs of flatulent dyspepsia, and the bowels had not been open for some days. I gave a few small doses of calomel, gr. $\frac{1}{10}$, to be repeated four or five times (*non-purgative dose*), and put hands and feet in hot water. Soon after this his sight began to return, so that he could distinguish people. (*An injection of morphia would have done as well, but I prefer calomel in these cases if it will act; but if the circulation in the stomach is very defective it might not be absorbed.*)

Case 50.—G. W., male, aged 25. Complains of headache and irregular action of the heart since he was 15. (*I have explained this age relation before.*)

Headaches average ten to fifteen a year; have been more than last year One sister had headaches, mother's family gouty, father has rheumatoid arthritis. Had diphtheria badly as a child, also measles and whooping-cough. Often goes blind before the headache, and the headache comes on as the blindness goes off. Gums pale; B.D. ·65; pulse 84. First sound long, second sound loud (*collæmic heart*). Apex beat just inside left nipple line. He has been fed up and given arsenic by other doctors, but his headaches got worse. Weight 11 st. 2 lb. 8 oz., say, 144 lb. net. He put himself on U.A.F. diet both before and after the feeding up, at first with slight success and lately with almost complete success as regards headache, but the heart has been giving more trouble. Present diet includes fish or fowl once, two eggs, cheese, porridge, milk, and breadstuff, coffee as a flavouring. I here again got a sample of twenty hours' urine before beginning treatment. It was 56 oz., sp. gr. 1020, no albumin, urea 2·2 per cent. = 526 gr. and $\frac{526}{144}$ = nearly 3·7 gr. per lb. He was taking about three pints of milk, so I cut some of this off, which reduced both the fluid and the excess of nitrogen. (*No wonder his heart intermitted on three pints of fluid a day.*)

Three months later another sample of urine was received, part of 49 oz. Urea 1·6 per cent. = 333 gr. or 2·3 gr. per lb. on 144 lb. He was now underdoing it, just as before he had overdone it, and was told to increase his cheese, and fourteen days later urea came out as 3·4 gr. per lb. He has now been three months without a headache.

No doubt some part of the difference between the above results was due to daily fluctuations, such as one is quite accustomed to in making continuous observations, but I give them to illustrate the importance of estimating urea in patients beginning the diet.

Case 51.—J. M., male, aged 37. Headache on and off since a boy. Dyspepsia for 14 to 15 years, worse of late, pain in epigastrium and much flatulence. Rheumatic fever three times as a boy, also one year ago. Subject to chronic catarrh of the nose. Has sore throat, which is worse when the dyspepsia is worse. (*The sore throat is undoubtedly rheumatic; this looks as if the dyspepsia was also rheumatic, at least in part.*) Appetite fair, but is irregular. Sleeps badly, wakes often and is restless. B.D. ·85 to ·9; pulse 76; C.R. 7·5; B.P. 135 (*taken at 6 p.m.; C.R. would have been slower in the morning*); first sound long, second sound reduplicated at base. (*Was this a collæmic heart of chronic migraine, or the ordinary high B.P. of chronic morbus cordis (? rheumatic)? The natural pulse-rate is, I think, in favour of the former.*) The stomach comes well below the umbilicus, but there is no splash (*probably a collæmic stomach*). This patient was taking four meals a day and some excess of fluids, and I attended to these points first before attempting to get him onto the U.A.F. diet.

Case 52.—B. C., male, aged 38 (medical man). Consulted me by letter. Has migraine, which is often relieved by acids. It begins in the early morning hours and lasts till 2 p.m. Of late has seldom been quite free from headache, even between attacks. Mother has migraine, gout in families of both father and mother. Had influenza three years ago, followed by neurasthenia for eighteen months; had no headaches during this time. (*The cause of the neurasthenia was heart failure after influenza, and this prevented sufficient rise of B.P. to produce migraine.*) Last year had slight influenza again followed by some neurasthenia, but this was slighter than before and there was some migraine, which was accompanied by violent and prolonged vomiting. Had gout or rheumatism one or two years ago after taking port wine for debility after influenza (*collæmia cleared up by the arthritis produced by the acid wine*). Appetite very good, eats three hearty meals a day (*here we have the cause of it all*). The U.A.F. diet was advised.

Two months later. Diet does good for headaches, but he has excessive flatulent dyspepsia. It was found that his diet contained some excess of fluids, milk, soups, slops; he was also drinking water in excess of thirst with the idea (*not got from me*) of washing out his stores of uric acid. When this matter was

put right the flatulent dyspepsia greatly diminished; but while it lasted his friends, who did not understand its cause (*in fact, it was caused by their bad advice to take excess of fluid*), very nearly persuaded him to give up the diet. Hay fever, from which he suffers, has also been relatively better.

Three months later. "Am steadily advancing." "No flatulent dyspepsia since I dropped the excess of fluid." Only one headache in three months, very satisfactory. It yielded easily to treatment, very different to what used to happen. He is sleeping better. Urea fluctuates a good deal, but still its average comes out about right (*being a medical man he was estimating urea to see that he had enough food; this is a wise thing to do if there is any doubt on the point*). He is a good deal depressed at times and is probably clearing out a good deal of uric acid from his old stores of that substance. A urine of twenty-four hours about this time gave urea per hour 14·6 gr., uric acid per hour ·55 gr., water per hour 118 c.c. A urine (seven and a half hours) of a night when there was dyspepsia, palpitation and but little sleep, gave urea 9·8 gr. per hour, uric acid ·54 gr. per hour, relation 1 to 18, water 53 c.c. per hour. This was the onset of a headache, falling urea, rising uric acid, obstructed capillaries and retained water. With the next specimen (six and a half hours) there was severe headache and vomiting, and we get urea 8·5 gr., uric acid ·56 gr. per hour, relation 1 to 14·9, water 30 c.c., a further retention of water. Later, five hours during the latter part of which the headache began to pass off, the urine gave urea 9 gr., uric acid ·74 gr. per hour, relation 1 to 12, and water 28 c.c.

Note how the water steadily diminished as the uric acid increased; note how the greatest hourly excretion of uric acid came towards the end of the headache. Here, just as in epilepsy, the largest excretion comes at the end of, or after, the attack, for the urine passed at any given moment represents the condition of the blood from thirty to fifty minutes earlier.

A twenty-four hours' specimen a few days later gave a uric acid urea relation of 1 to 23 (*evidently then he was constantly excreting some excess of uric acid, which rose to great excess at the time of the headache, and the dyspepsia with falling urea and falling acidity would increase this excess*). He has occasional bad colds, and urate deposits are, as one would expect under the above conditions, frequent in the urine. He now took some short courses of salicylate; on these the urea fell somewhat, and he got a uric acid urea relation of 1 to 22, and his previous slight joint pains disappeared. About this time he exposed himself to over-fatigue which precipitated a headache, but it was not severe, and his wife considers that he is wonderfully better. A month later he reports, "I still progress." He is still taking occasional salicylate, and urea is still rather low, uric acid to urea relation 1 to 26. A month later—headache now only one in two months. Urea still rather low, so a little nitro-hydrochloric acid was given after meals to help digestion and moderate the outflow of uric acid. Still later, says he feels better at the end of the work of the winter session than ever before. He went to see a medical friend, who was "surprised and delighted at my condition." He has gained 10½ lb. in three months. Urea runs from 465 to 580 gr. per diem, which is from 19 to 24 gr. per hour, and from 3 to 3·8 gr. per lb. on an original body weight of 150 lb. (*the increase of weight, being probably fat from the milk, need not be taken into account*). A little later he says, "Of course the diet is rather wearisome, but this is nothing when weighed in the balance with the relief which I have obtained." A year later the improvement continues and headaches are hardly thought of. He now looks strong and robust with a full face and a clear skin. Before his alteration of diet he was a miserable, anxious, and delicate-looking man. He can now ride 75 miles on a bicycle without fatigue, which is practically unknown, as are also rheumatism and stiffness afterwards, even after exposure to cold and wet.

Case 53.—T. C., male, aged 50 (medical man). Migraine since 7 years of age, has had much headache lately, not regular migraine. Father's father had gout, mother died of cerebral hæmorrhage. Has had scarlet fever and enteric fever

badly, also left pleural effusion. Asthma for about seven years. Much bronchitis of late. Loss of sight in left eye twelve months ago, due to hæmorrhage in the retina; this came on at 10 a.m. Appetite poor; sleeps fairly well except for urticaria and asthma. B.D. ·75; pulse 88, was 44 ten years ago (*this increasing rate points to increasing cardiac debility under chronic collæmia*). Apex beat to left, outside nipple line; first sound long or late systolic murmur; second sound very loud at base. Has an asthmatic cough, and some pale bronchial expectoration. Has had to pass water several times during the night for some years; urine pale amber, acid, sp. gr. 1014, considerable cloud of albumin, no sugar. (*Here migraine has passed into Bright's disease and is complicated by asthma and urticaria.*) Was well up to 44; most of the trouble has come on since then (*the second collæmic stage is setting in early owing to chronic migraine and an unhealthy sedentary life*). I advised a gradual diminution of fish and flesh, and their replacement by milk and cheese. I gave some phosphate of sodium and nux vomica for the mental depression and cardiac debility. One month later he reported that the asthma and urticaria had been alternating, and that he had had some slight arthritic pain. There has been a good deal of headache and some buzzing in the head. He requires 1,200 gr. of albumin per diem, and has been taking only 1,000 gr. He was cautioned not to underfeed, better take meat than do that. His wife thinks he is rather better. A month later his wife reports that he is decidedly better in several ways. Asthma and urticaria are better, but appetite is poor, and he wants a tonic. Has sneezing attacks which exhaust him.

A little later appetite was still poor, but the pulse had slowed to 80. I left off the phosphate, as it appeared to hinder appetite, and gave the nux vomica alone. He is taking 2 pints of milk a day besides other fluid. Urine again examined, sp. gr. 1014, acid, a considerable cloud of albumin. (*For such a case I should to-day cut down fluids more decidedly, substituting white of egg and curd cheese for the milk.*)

A month later is better, asthma and urticaria now very slight. The heart sounds remained as before; the pulse-rate varied from 84 to 90. He had some pains in his limbs (*probably neuritis from defective circulation*), which were relieved to some extent by the local use of oil of wintergreen. I gave him nux vomica, cinchona and iodide for the circulation, but he found it easier to drink milk than to eat cheese, and so continued to take excess of fluid. B.D. still only ·75 (*is evidently full of urates, and is still passing much through his blood*).

Two months later massage relieved the pains in the limbs. C.R. on chest 6 to 7; pulse 80; heart, first sound as before, impulse diffused and heaving; second sound very loud. Is still taking too much fluid, as appetite is poor.

This patient should have been put on two meals a day till his appetite improved, and then have dry foods and diminished fluids. I did try to do this, but his people were afraid of his being starved, and did not carry it out properly. A perfectly groundless fear; putting a little less fuel on the fire, and applying it less frequently, gives it a chance of burning up, while a somewhat dry diet would have greatly helped his heart and circulation.

About eight months after I first saw him he had a severe hæmorrhage from the intestine which proved fatal (*this was probably a complication of his Bright's disease*).

This case illustrates one of the terminations of migraine. Thirty years earlier the prevention of all these troubles would have been easy; when I saw him things were obviously pretty bad; there was no time to do much with diet, and I could not get all my suggestions carried out.

Case 54.—M. C., female, aged 33. Headaches since the age of 15 (*beginning of the first collæmic stage*). Had it occasionally before that, and bilious attacks (*the same thing*) as a child. Headache is now increasing, and is sometimes ill two days with it. Has once had three headaches in twelve days. Father has rheumatism, and also similar headaches, father's father rheumatism, father's sister rheumatic gout. Headache is worst at the back of the head and over one eye. Face somewhat puffy, and becomes more so when there is headache. Eyes normal, but prominent. Tongue pale coat, appetite good, except when there is headache. Has low spirits and depression at time of headache. B.D. ·65 only; pulse 84; C.R. 8·5; B.P. 145 (*there is some slight cardiac failure here, accounting for the depression, and, perhaps, for the fact that the eyes are not prominent*). Apex beat outside mid-clavicular line, first sound reduplicated (*? late systolic murmur*), second sound loud. Lungs nil, subject to occasional colds. The thyroid is slightly enlarged, most on the right side; the neck measures 13 inches. Bowels act only with salts or pills. Menstruation regular, generally a headache at that time. Urine very thick at time of headache, otherwise normal. Hands and feet are often cold (*collæmia with cardiac debility, see above*). Present diet includes meat once a day, fish and egg once a day each, tea twice, occasionally three times a day. Is not thirsty, but wants the tea for its stimulation. Has been diminishing meat for some time.

Four months later, headaches no better; now has three in two weeks; fainted in one five or six weeks ago. Pulse 88; C.R. 8; B.P. 135; B.D. ·7.

Has probably been underfeeding, thus increasing the rate at which her stored uric acid passes through the blood, and her heart has been getting weaker rather than stronger, as shown by the circulation record. Such cases require careful dieting and watching to see that they take sufficient nourishment, and not too much fluid; a little phosphoric acid and strychnia may help digestion and the heart. It is in cases like this that diet should be changed in a home under supervision; such patients left to themselves for months are almost sure to starve themselves and go wrong.

Case 55.—A. M., female, aged 50. Headaches for many years, worse the last ten and twelve (*early second collæmic stage*). Had headaches one and two in a month as a schoolgirl; were called "bilious headaches." Was threatened with phthisis as a young woman; one brother died of phthisis. Health otherwise good (*collæmia and catarrh are favourable conditions for tubercle*). Last headache lasted two days; often begins in the middle of the night; has occasional nausea, not often vomiting during the attack. Skin is pale and puffy. Pulse 96. First sound long or reduplicated, second sound loud. Menstruation normal, headaches always worse then. Micturition once or twice in the night. Urine, sp. gr. 1025, acid, no albumin, no sugar. Slight œdema of the shins. (*This and the quick pulse and the puffy skin point to some slight cardiac debility as the result of anæmia and long exposure to collæmia.*) Lives in South Africa, and her food there comprises fish once, meat twice, soup once, and tea two or three times a day. I gave small doses of calomel followed by salicylate and bromide for the headaches, and advised a gradual change of diet. She brought a letter from her doctor, which said that she had "hitherto derived no benefit from treatment."

Eight months later I heard from him that she was better, though still having an occasional severe headache; she has had much worry and fatigue from illness in the house. (*No doubt the above diet would not conduce to health in anyone, and, after fifty years of it, it was far too much to expect a complete cure on any treatment in eight months.*)

Case 56.—J. C., male, aged 36. Complains of bilious attacks and some severe headaches. Bilious as a boy before he began work; is foreman in a brass foundry, sent to me by his employer. He vomits much with the headache. Has often noticed that he is very hungry a week or so before the attack

(? "*piecy disease*," *a sign of dyspepsia previously referred to*). Father suffers from depression and bilious attacks. Headache lasts a whole day, he lies down and can eat nothing. Pain is occipital. Has occasional depression. Pulse 84. Apex beat (? normal place), second sound somewhat loud. Has meat or fish three times a day, total about 12 oz., much tea, occasionally cocoa. Here I gave no drugs, merely altered his diet. A letter from his employer four months later says, "He is much better, and swears by you."

Case 57.—A. S., female, aged 31. Professional nurse. Is frequently ill, and unable to continue her cases. Has been treated on phenacetin and tonics. First headaches about 16 years old or before then, headaches from two to five in a month, may last twenty-eight to thirty hours. Mother suffers from headaches and rheumatism, father died of gout and its complications, one sister has neuralgia. Had influenza four years ago, and again very severely a year ago. Headache worse since last influenza, also considerable depression since then. Appetite fair as a rule. Sleeps badly, often with dreams and nightmare. B.D. ·75; pulse 96; C.R. 7·5; B.P. 125. Hands cold. Apex beat in left mid-clavicular line, first sound long, second sound loud (*this shows some cardiac debility, of which the depression is a result*). Bowels require occasional cascara. Menstruation regular, generally has bad headache at end of period (*the rule*). A trace of albumin has occasionally been found in the urine; none when last examined. Diet includes meat twice, tea three or five times a day, and cocoa once (*nurses notoriously take excess of tea*). Was advised to get slowly on to the U.A.F. diet, and, being a light weight, she only requires 900 gr. of albumin per diem. Was given salicylate and bromide for attacks, as in previous cases. A month later the head was rather worse, as she unwisely rushed on to diet all at once. Pulse 96; C.R. 7·5; B.P. 130. Still some cardiac debility, also nightmare and dyspepsia. Has gained 2 lb. in weight, but is taking too much fluid. Was advised to take her food as dry as possible. Three months later was decidedly better; headaches now never last into the second day. Feels stronger in herself, and more able for work. B.D. ·8, a slight improvement. Pulse is still quick. C.R. 6·5; B.P. 115.

Eleven months after first visit she had to confess that she had been breaking rules (*i.e., taking fish and meat, and to some extent probably deficient quantities of albumin*), and been worse. Is now much run down with poor appetite. Pulse 96; C.R. 7·5; B.P. 105 (*i.e., increasing cardiac debility*).

This shows how foolish it is to go chopping and changing diet, especially in cases of cardiac debility. The first thing is sufficient albumin, whether U.A.F. or not U.A.F., but U.A.F. if possible, as this gradually diminishes the strain on the heart.

Case 58.—E. A., female, age 25. Headaches for many years. Worse since she returned from a holiday, none during the holiday (*the rule. Retention in the holiday followed by collæmia and increase of headache later*). Father headaches, mother nervous headaches, two brothers headaches. Skin rather puffy. Some distension after food. Sleep worse of late, wakes early and unrefreshed. B.D. ·65; pulse 72; C.R. 7·5; B.P. 135. Apex beat slightly to the left, second sound loud at base. Menstruation irregular of late and slightly excessive, headache occasionally at period, not always. Is never thirsty (*the rule in collæmia*). Urine, sp. gr. 1023, acid, no albumin, no sugar. Diet includes tea or coffee three times, meat three times, fish once and soup once a day. Advised diet as usual, she requires 1,100 to 1,200 gr. per diem, ordered to keep down fluids, milk not to be more than 1 pint.

Two months later, headaches less in number and severity. Cannot take milk alone, but can take it in puddings. Is fond of nuts, and they agree with her. Pulse 84; C.R. 7·5; B.P. 140. Has gained 2 lb. in weight.

Nuts are a very good food for those who can take them; their nourishment is in small bulk and there is no starch to cause dyspepsia; they also help to keep the bowels regular. I never give

them to those who are not accustomed to them, or to those who are delicate, with bad teeth and a poor digestion.

Case 59.—A. W., male, age 50. A case of ordinary migraine, but my original notes were lost. He writes after being on diet for three years to say that it has done him a world of good. Headaches few and slight, no sciatica now. Better spirits and health generally. Has recently had some irritation in the urinary passages; the urine seems to be unduly acid. I found that he was eating a good deal of fruit, although it was the cold season of the year (January) and there was no fruit in season in this country. I advised him to diminish fruit, and especially to avoid it at breakfast; to increase potatoes and to take them at breakfast; to avoid cold baths and keep warm.

His next report says, "You have no doubt hit the cause, for I have been exposed to cold—and have sponged with cold water—exposure to cold is inevitable and always very fatal to me. I am usually upset by cold, though less so than two years ago."

Twelve months later he again reports, "The diet you recommended has done me a world of good."

Case 60.—E. M., female, age 37. Complains of headaches for years, also some rheumatic or gouty pains (*this is common. I myself had considerable and frequent arthritic pains more or less alternating with migraine in the early thirties*). Head pain generally occipital and left hemi-cranial. Mother invalid, has chronic Bright's disease, father asthma, one brother asthma, gout both sides of the family. Headaches are periodical and increasing of late. Had anæmia and œdema of legs when 22 (*first collæmic stage*). Was nearly asphyxiated a year ago; more nervous since (*effect of heart strain at time of asphyxia*). Head very bad about once a month now, worse in hot weather (*first hot weather of the year is the rule*). Appetite fair. Thyroid slightly enlarged. Sleeps very heavily and often wakes with headache. Breath short on exertion, especially when anæmic. B.D. ·75; C.R. 9; B.P. 145. Pulse 80. First sound long (? presystolic murmur), second sound loud, continuous hæmic bruit in the neck (*we have here some signs of heart weakness or morbus cordis, which no doubt explains the nervousness*). Menstruation irregular and uncertain; bad headache at the period, generally on the second day. Stomach extends to umbilicus, but there is no splash. There is some tenderness in the left iliac region, and she has pain there during menstruation (? *rheumatism of the ovary or other pelvic fibrous tissues*). Was a vegetarian for two years but broke down from deficient food (*this also will help to explain the cardiac debility*). Her present diet includes meat once and tea or coffee four times a day in considerable quantity. (*Here was obviously a case for cutting down fluids to ease the heart. I only gave* 1 *pint of milk and advised that a small quantity of fish or meat be continued for the present.*) She did not come back for four months, and then had some dyspepsia and biliousness, due, she thinks, to the milk, which she can only take, she says, mixed with hot water (*she has thus been transgressing my rules as to diminution of fluids*). Pulse 80; C.R. 7·5; B.P. 145. The heart is perhaps a little better, but not much change (*there would have been more if she had obeyed orders*).

Six months later, reports that she has been much better, headaches almost gone except at the monthly periods. Recently had influenza, which diminished her appetite and brought back her dyspepsia. B.D. ·8, or better (*a slight improvement, all one could expect in the time*). Pulse 80; C.R. 7·5; B.P. 140. Urine sp. gr. 1015, acid, no albumin, no sugar. Has occasional red sand, but this is better when she eats extra potato. Had an inflammation of the gums, apparently from eating acid fruit; this was at once relieved by aspirin (*gouty. The acid fruit probably accounted for the red sand also*).

Case 61.—G. F., female, aged 30. Headaches as long as she can remember; sick headaches, but has not been sick lately; headaches less severe the last few months, but more frequent (*rule: The longer the uric acid accumulates the worse are, or may be, the individual attacks*). Mother had sick headaches, one brother and sister the same. Passed a renal calculus fourteen years ago. Had influenza two years ago, and two months after this slight albuminuria was discovered; less well ever since (*influenza caused debility and increased collæmia;*

*the albuminuria and more frequent headaches were results of this*). Appetite only moderate, used to be large. Has brother who lives on U.A.F. diet, and has adopted it herself for three months. Sleeps better since she has altered her diet. B.D. only ·6; pulse 72; C.R. 7·5; B.P. 135 (*here the B.P. should be high if the heart were quite strong; it is probably to some extent affected by the anæmia*). She was put on bread and milk diet for the above-mentioned albuminuria, and this did her good in every way. (*It would have done still more good if the fluids had been kept down.*) She has some discomfort in the epigastrium after food, followed by flatulence. I gave her from 1,100 to 1,200 gr. of albumin per diem and cut down the fluids as much as possible. She has learnt to moderate her headaches by missing out a meal or two when they come on. I did not see this patient again for two years, and then she only came to bring a friend to me for advice. She says she is *very much better*, but B.D. is only ·8 or ·85 at best. I told her that her B.D. should be better than this after two years on diet, if she were taking correct quantities.

Case 62.—W. E., female, aged 24. Headaches for years, first remembers one when she was five years old. Headaches average one in eight days, say fifty a year for seven years, before that about twelve in a year (*this is most interesting, as it shows how a collæmic disease became worse with the beginning of the first collæmic stage, while in the first retentive stage headache had been less frequent*). Two years ago a London doctor cured her for three months, but she got very weak and anæmic; then he fed her up again, but the headaches returned as bad as ever (*this was a mere cure by weakness which produced a fall of blood-pressure; for similar cases see "Uric Acid," p.* 139). Her father read one of my books, and she has now been on the U.A.F. diet for six months. It had no effect at first, but headaches have been less severe of late (*probably sufficient albumin was not taken, and so the change of diet increased the collæmia*). Appetite very good, and she sleeps well. B.D. ·85; pulse 62; C.R. 6·5; B.P. 130; first sound normal; second sound loud both at apex and base (*there is no sign of cardiac debility here, the C.R. B.P. ratio is normal, and the pulse is slow*). She vomited twenty-one times with her last headache; after a certain amount of vomiting she goes to sleep and wakes free from headache. Headache is worse at the time of menstruation. Urine alkaline (*probably from the lithia she is taking*), sp. gr. 1027, no albumin, no sugar. Her diet is U.A.F. except for tea or coffee four times a day. I advised her to get rid of these poisons, and to make sure of taking enough food.

Three months later the headaches were not nearly so severe and did not last as long. Unfortunately she does not like milk, and it is difficult to get her to take enough albumin without it. Pulse 75; C.R. 6; B.P. 115; B.D. ·8 (*i.e., no improvement. This record shows some loss of strength from underfeeding.*) Has occasional abdominal distension from flatulence. Is still taking lithia at times. Here was a case for careful supervision, but she was going back to Ceylon, and I did not see her again.

Case 63.—S. B., female, aged 32. Suffered from chronic and recurrent headache for years. I found the following in the urine passed during a headache, between 2 and 4 p.m. Urine 140 c.c., amber, turbid, pale deposit, sp. gr. 1025, acid, no albumin. Yielded total urea 38·8 gr., acidity 5·4 gr., uric acid 1·6 gr. Relation of uric acid to urea 1 to 24. Relation of acid to urea 1 to 7·1. (*Here we have a plus excretion of uric acid at an hour when in normal conditions the relation of uric acid to urea would be about* 1 *to* 40.)

Case 64.—M. W., female, aged 27. Has suffered both from headaches and epileptic fits for some years. Urine passed between 9 and 11 a.m. on a day of headache, which got better about 12 noon, yielded 15 gr. of acid, 3·3 gr. of uric acid, and 63 gr. of urea. Relation of uric acid to urea 1 to 19. The urine seven days later at the same hours, when there was no headache, yielded a uric acid urea relation of 1 to 25 (*there is always a considerable quantity of uric acid in the morning hours, but there was distinctly more than usual on the day of headache*). A month later her headaches were better as the result of altered diet, but she was still taking bromide, as nothing else kept her fits in check.

Such a rise of uric acid as this excretion shows, accompanied no doubt by an increase of the granules in the blood, slows the

capillary circulation and raises the B.P. If this rise of pressure is slow and moderate, it merely causes headache, as on the day when the first urine was collected; if the pressure rises quickly, the heart gets slower and slower, and at length drops one or more beats, and down goes the patient in a faint or anæmic convulsion. A similar fluttering and faltering of the heart is seen during the rising B.P. which follows, as the effect of a nitrite or of a small dose of salicylate is passing off. Again, if the rise of B.P. is considerable, and there is also some relative cardiac weakness, one may get not only stasis and hyperæmia of certain parts of the brain, but also more or less œdema of the membranes (a minor condition of that met with in uræmic coma), and then the patient may fall in a fit, followed by more or less prolonged coma, till the circulation rights itself, the B.P. falls (as we know it does at the time of a fit, when a cut has been seen to cease bleeding) and the œdema is reabsorbed. This is probably the sequence of events in cases such as the above, where headaches and fits are more or less mingled as the results of changes of B.P. and altered circulation in the brain due to varying quantities of uric acid in the blood.

Case 65.—S. McC., female, aged 26. Sick headaches for years; is bad for twelve to fourteen hours, occasionally has vomiting and then faints. There is headache in her mother's family. Menstruation regular, has headache then and at other times as well. Pulse 84, high tension (*pre-instrumental days. But the quickened rate points to some slight heart failure, as does also her fainting in the attacks*). Has some faint sinking feelings before food for one or two days before an attack.

This is just what I have so often had myself; probably some collæmic dypepsia, which, by producing falling urea and acidity, intensified the collæmia, leading on to headache, vomiting, and fainting. Every collæmic stomach digests slowly, and an increase of collæmia may mean more or less complete suspension of digestion for a time.

Patient is married, and has two children, no miscarriages. Her present diet includes small quantities of meat and cheese, some bread and butter, no milk, but much tea (*her albumins are probably deficient*). She suffers from constipation. I gave her nitrohydrochloric acid and nux vomica, some confection of senna to regulate the bowels, and advised the use of the U.A.F. diet.

A month later she had had one rather bad headache; the acid had done no good in the attack. She had had vomiting with it, and probably the stomach was not in condition to absorb any drugs (*drugs by mouth often fail to be absorbed during the attack. For similar results during attacks of epilepsy, see "Uric Acid," seventh edition, p.* 287). She feels very well before the attacks. I now put her on mist. acid phosph. c. strych., and gave salicylate of soda, to be taken for a day or two when she was feeling very well, my object being to prevent the retention which precedes the attack.

Five weeks later she reported that the headaches had been less severe; the salicylate did good and prevented them. She is going to try it again.

Three weeks later she was still doing well, and there was little or no headache (*part of this improvement was due to the diet, but the salicylate seemed to act well as a preventive*).

Case 66.—F. T. G., male, aged 33 (medical man). Has always been rather subject to headache; they have been worse the last four years, and have been sometimes as often as one a week. Once had a headache on fourteen successive Saturdays. He wakes in the morning with pain, and it remains the whole day. Works hard, lives plainly; has a fair amount of riding and occasional hunting. If he takes wine when dining out he always has a headache next day. Has tried many drugs; salicylate of quinine did best. Father has slight attacks of gout, mother suffers from chronic rheumatism, and two years ago had peliosis rheumatica. He himself had subacute rheumatism nine years ago and occasional joint pain since (*this, I think, is the rule*). Four and a half years ago had rigors and dyspnœa, ill three months (? pneumonia); headache has been worse since (*anything causing debility would naturally increase collæmia*). I advised him to try diet, and to take some acids with the headache, to try and drive it off by retentives.

Three months later he reported that he had had six headaches, but not so severe, as the acids had helped to drive off three of them. He has some difficulty about taking the diet, and has lost weight. He suffers from depression and irritability, and has no doubt but that these are due to uric acid in the blood. Pulse 72, a tracing shows only quite moderate tension, as there is no headache. His assistant has noticed that his tension is very high at the time of headache (*patients who have quite low tension between the attacks are probably retaining*). Occasionally, when he gets cold, he has a temperature of 102° F. with a rigor, and then the urine next passed is smoky. He sent me a sample of such a urine passed after the first day's hunting of the season; it was acid, sp. gr. 1022, a little blood, much urate, a few oxalates, and gave a relation of uric acid to urea of 1 to 23.

This was obviously a collæmic attack, precipitated by fatigue. Sufferers from migraine commonly have their attacks precipitated in this way; those who get free from uric acid have neither fatigue, headache, nor paroxysmal hæmaturia.

This patient, unfortunately for himself, was very particular about his food, and was practically unable to alter diet without more or less underfeeding and loss of appetite. I saw him many times, but was never able to get over all his difficulties, so his headaches and other troubles continued. Five years later he got influenzal pneumonia, of which he died.

Nowadays, my first care would have been to improve appetite and digestion before altering diet, and had I succeeded I think he would have escaped the influenza and have been still alive. These troubles are both more dangerous and more likely to attack the rheumatic, gouty and urate-laden collæmics.

Case 67.—R. R., female, aged 26. Has had headache as long as she can remember, generally one every week or so. She was given nitrohydrochloric acid, ℥xx, one or two doses to be taken when a headache threatens.

A month later she reports that the acid was distinctly useful; the headache soon went away after taking the acid, and she was not sick with it. Her headaches generally last from twelve to thirty hours.

This practically proved that the headaches were due to uric acid; the acid cured by producing a retention which cleared the blood: but there is no harm in retention if at the same time you alter diet and stop the introduction of urates. This was for many years my

treatment of my own attacks; but if the headache is not unbearable it is better to bear it and allow the uric acid to pass out, for, if you retain it, it may serve you in the same way another time. In a word, there is no way out by retention, but still some retention may be good treatment for a time during the early stages of diet; when diet has reduced the urate stores the retention treatment may be given up.

Case 68.—M. L., female, aged 37. Headaches since childhood, also some giddiness at times. Her father had rheumatic fever, and is very rheumatic at times; one aunt had rheumatic fever. Her headaches are generally left hemicranial. She is a doctor's wife and has been trying the U.A.F. diet for two or three years, but she apparently does not take the correct quantities, and breaks out (*i.e.*, goes back to meat) occasionally because she is underfed. Tongue has a slight pale coat. Appetite is said to be good, but she has some acidity after food. B.D. ·75 (*should have been* ·9 *or* ·95 *after two or three years on correct diet and quantities*). Pulse 72; C.R. 7; B.P. 110. She often has palpitation.

There the pulse is not quick, though the C.R. B.P. ratio is abnormal; perhaps part of the abnormality is due to the immediate deficiency of food (*i.e.*, deficiency on the day of examination), but it is easy to understand her having some palpitation.

Bowels are constipated; she is subject to some colicky pain about umbilicus, and some flatulent distension. Her headaches were much better on the diet while she kept to it. Has had some tea and some pulses. Menstruation is regular, and headache is worse at that time. Heart-sounds not abnormal, first sound perhaps slightly short (*debility*).

I mention this case chiefly as an instance of what not to do. She obtained relief from diet because she lowered her B.P. by debility and underfeeding, and never got really free from uric acid. The correct cure is to get free from introduction, with good nourishment and a rising B.D.

Case 69.—A. C., male, aged 56. Headache for years, worse of late. It lasts twenty-four hours, generally beginning at 2 a.m. Has no other troubles; is completely knocked over by the headaches and cannot move. Is big, and has been a very strong man. Vomiting relieves the head. Mother had similar headaches, and used to relieve them by coffee. Cannot drink champagne or sherry, they make him worse. General health good (*this is what I used to say of myself till I learned better*). Often has some eczema of the legs. Headache is chiefly frontal; cannot go out and dine or into any crowded rooms, as these bring on attacks. Appetite fair, not a large eater. Sleeps well except when there is headache. Pulse 84; C.R. 4 to 5 (*probably there was some erythema of the skin when this was measured, see p.* 5); B.P. 160 to 170. Apex beat to left, first sound well heard in the anterior axillary line, second sound loud everywhere. There is considerable emphysema. Bowels act with the help of Kutnow's salts. Has done cures at Royat and Karlsbad. Urine, sp. gr. 1014, acid, turbid, no albumin, no sugar. Weighs 13 st. in clothes. Present diet, which has been modified in U.A.F. direction, includes fish, eggs or meat three times a day, coffee once, wine or whiskey twice a day; smokes in moderation. As the headaches were obviously very severe, and the patient was in considerable danger of hæmorrhage, I advised that fluids should be cut down, and that, especially at the time of a headache, food should be as dry as possible (*biscuits or toast with a little fruit in place of drink*). About a month later there was a further danger

signal, as the right eye became misty and could not distinguish colours. He saw Mr. Lang, who found that there was effusion in the choroid and retina in the region of the right macula. About this time he had three bad headaches in two or three days; his pulse was found to be 70; C.R. 8; and B.P. 190. He was therefore further advised to keep down fluids and to take food as dry as possible. After about a week of this treatment his B.P. had fallen to 155, and his headaches were less severe. A week later was still on small quantities of food, and on headache days none at all (*this was not my order, but he found relief from pain in this way and so went on starving*). Pulse 58; C.R. 8·5; P.B. 150. A week later he reported four days clear of headache, which was an improvement. His pulse at this time was 64 and B.P. 145. I now advised him to increase his albumins, but still to keep fluids down as much as possible.

A week later, pulse 56; C.R. 7; B.P. 140. Has some skin irritation on legs and thighs, but no rash visible. I now advised more food and even a little more fluid, so as to get more nourishment in the form of milk. Mr. Lang, six weeks after his first visit, found distinct improvement in the condition of the eye. A week later pulse was 72; C.R. 7·5; B.P. 140. I now advised full diet, but was disgusted to find a week later that my order had not been obeyed. The head had been a little bit worse, and he found most relief by keeping down food and fluids. He had now developed a carbuncle on the right shoulder, which, in his under-fed condition, increased somewhat rapidly. It became necessary to feed him up at all costs, and as his B.P. had now fallen to 130 the danger of hæmorrhage was much diminished. The carbuncle gave considerable pain and confined him to bed for some weeks; at the end of this time his friends, who, of course, had never understood the danger from hæmorrhage, had persuaded him that the U.A.F. diet would kill him by starvation, so he went back to some meat. I have heard of this patient several times since, and he gets more relief from headaches on a partial U.A.F. diet than from any other treatment.

It is obvious that those who have suffered from uric acid headaches for thirty-five years are in much danger, and unless they obey orders promptly and faithfully it may not be possible to get them out unharmed. This case, like the last, is given as an instance of what not to do. If the patient had obeyed orders, nutrition would have been better and the carbuncle absent or less severe; given collæmia, anæmia and deficient albumins, a carbuncle would naturally have everything in its favour.

Case 70.—F. L., male, aged 81 (surgeon). Has had migraine all his life, worst between 40 and 60 (*i.e., when the heart and other muscles were at their strongest, and B.P. therefore highest*); since then gradually less frequent and severe; now some years since a severe headache. Two years ago had influenza with bronchitis and some pleurisy, and was much pulled down; a cough with a more or less profuse purulent expectoration have continued ever since. Is now becoming old and infirm, especially during the last eighteen months; was strong for his age before that. Has learned by experience that his head does best when he takes but little "animal food." The headaches last ten to twenty hours with vomiting, and cause great prostration. During the last six weeks has had attacks of palpitation with a sensation of constriction about the lower part of the throat and the upper part of the chest; urine is abundant and colourless at the time of these attacks (*this looks like palpitation from lowered pressure, i.e., the natural quickening of the heart exaggerated*). Tongue somewhat patchy, appetite fair. Has had attacks of urate gravel for three months, pain lasting ten to twenty hours, with vomiting, causing great prostration. Pulse 80, occasionally irregular; pulse tracing shows low pressure from cardiac weakness, the "virtual tension" of Sir William Broadbent.

If you could have strengthened the heart-muscle it would have shown high pressure. This was in the old days before C.R. and

B.P. were taken. The heart is entered as "natural," but I have no doubt that careful investigation would have shown dilatation of both sides.

There was much emphysema. Urine, sp. gr. 1015, high colour, acid, no albumin except in the gravel attacks (*I should have little doubt but that the kidneys were granular*). Was a big man; weight had been nearly 12 st., now only 9 st.

Here we have a very complete picture of the last days of a life-long sufferer from migraine. He was knocked over by influenza and chronic bronchitis; then followed bladder troubles, debility, collæmia, gravel, and serious heart failure. It was the gradual heart failure, resulting from the collæmic high pressure, the granular kidneys, the influenza and bronchitis that led to the diminished severity and final cessation of his headaches, the attacks being sometimes replaced by palpitation. I did what I could for him (attempting to put him on diet being quite out of the question), but he was in trouble all round, and he died in about a month from debility and heart failure, aggravated by recurrent attacks of gravel. He was above the average in mental ability, and like many migrainers has left us a most interesting account of his own trouble (*St. Thomas's Hospital Reports*, vol. xiv., p. 15). Had he come to me sooner he could probably have been kept alive for some years, but when structure has been distorted and function so far wrecked by urates acting over eight decades, life is not of much value.

Case 71.—W. C., male, age 14. Always had headaches since quite little; worst the last three months since he has been errand boy at a butcher's shop and has been getting more meat than before. Has about one headache every week; it is generally frontal. Appetite is good; tongue slight pale coat, bowels open regularly.

A week later he reported that he had had no meat since his last visit and no headache, only a slight threatening of one two days ago.

Ten months later he returned saying that he took no meat, but still had some headaches, which however were less severe, and had never been so bad as when he was taking the extra meat at the butcher's. He is now apparently taking deficient food, not having replaced his meat by sufficient milk and cheese. He has now left the butcher's service and was instructed as to the food he was to take in place of meat.

Case 72.—E. D., male, age 22. Headache for years, often one a week. His mother suffered from similar headache and died of phthisis. He was put on a tonic of quassia and iron, but it made him worse (*this is the rule; retentives never cure, they sometimes do temporary good*). He was then given U.A.F. diet.

Two months later reported his headaches to be both less frequent and less severe. He only came to report and (*wisely*) refused drugs.

A month later, rather more trouble; diet not quite so correct. I told him he was sure to have ups and downs, and gave a little salicylate (*it is better to clear out than to retain*). Another month later much better, little or no headache of late; thinks the salicylate wards off attacks (*as we have seen in other cases*).

A month later, has had several "faint fits"; had been previously treated for these with bromides (*here again epilepsy and migraine in the same individual*).

A year after his first visit, he reported that he had been on diet since last note; has had several headaches, but none during the last six months. Pulse

seemed of lower tension (*pre-instrumental days*). This seems to show a progressive improvement as regards the headaches. Has gained 2 lb. in weight.

Eight months later, has had a few headaches but no fits. Has had a good deal of trouble from bad teeth (*this would make collæmia worse*).

Six weeks later he reported that his headaches were very few compared to what they used to be. Still takes salicylate occasionally between attacks, and acid at the time of headache (*a little nitrohydrochloric acid quickly puts an end to the headache* (*i.e., by retention*), *and then the salicylate carries off the uric acid, so that there is no accumulation*). He says the acid has also cured headaches in a sister and other members of his family. His sister suffers from rheumatic pains in the hands, but refuses to alter her diet. This patient was now so well that it was unnecessary for him to come any more.

Case 73.—J. T., male, age 39. Bilious headaches all life; has been a vegetarian for twelve months, and they are now decidedly better. Now suffers from lumbago and some rheumatic pains in both feet. Has four sisters and three of them have migraine. Had severe rheumatism (? fever) seven years ago; lumbago two months ago. Has difficulty of digestion on a vegetarian diet, especially if he takes much fluid or starch. Appetite poor, never was good. Is considerably depressed and neurasthenic; sleeps badly, has not two good nights in a week. B.D. only ·8; pulse 84; C.R. 6; B.P. 115. Apex beat in left nipple line, first sound markedly reduplicated. Generally constipated. Urine, sp. gr. 1012, alkaline, clear, no albumin, no sugar. Weight 7 st. 10 lb. net, not losing now. Is not taking enough food; wants 1,080 gr. a day of proteid, and is only taking 950. Takes Turkish baths for his rheumatism; these also are debilitating (*hence the neurasthenia, depression and insomnia; and the low B.P. and quick pulse also show debility and underfeeding*). I tried to put the diet right, and cautioned him against indigestible foods and excess of fluids.

His circulation measured about three months later gave: Pulse 72; C.R. 8; B.P. 120. Four months later B.P. was only 110. He was apparently still underfeeding and running into danger from this cause. His dyspepsia made him very particular about his foods and I could not get him to take more. I then heard no more of him for four years, when he was 43. He then told me that he had been a vegetarian till two years ago; then he got ill and went back to meat three times a day. Now his headaches and depression were worse than ever, and he was taking alcohol rather freely. Had inflammation of the kidneys three or four months ago, and some pain in the right kidney. Digestion very bad. Weight diminished to 8 st., used to be 10 st. 3 lb. Has some anginal pains with the headaches. Eyelids slightly puffy. Appetite irregular to bad: sleep restless and very deficient. B.D. ·6 to ·65 (*i.e., worse than when a vegetarian*); pulse 68; C.R. 8·5; B.P. 165. The apex beat is outside the left nipple line, the first sound is long and the second sound loud (*no doubt part of his previous low B.P. and absence of headache was due to underfeeding; but the "feeding up" he has done recently has not improved either his blood quality or his circulation*). He has a good deal of flatulent distension and heartburn; his stomach has its lower border considerably below the umbilicus (*collæmic stomach*), but I got no splash in it. The bowels act only with pills. The right kidney is easily palpable and slightly tender. Urine passed here has sp. gr. 1008 and is free from albumin and sugar (*probably the kidneys are granular*).

It is a great pity he did not learn to take sufficient albumin on the U.A.F. diet. This relapse on to meat has done much harm and obliges him to take drugs constantly for headache and insomnia, and alcohol for his other troubles. Thus a case which might have been cured is becoming hopeless.

Case 74.—C. W., female, age 34. Headaches for many years; has seen many doctors. Headache is chiefly on the right side and vertex. Is often sick with it, but is quite well between the attacks. Pain is increased on stooping (*the rule*). Appetite good, tongue clean, bowels regular. She was told to avoid meat, substituting milk and cheese for it as far as possible.

A month later she was better, one or two attacks threatened but passed off, "a thing they had never done before."

Two years later this patient returned to say that she was practically well, and had received more benefit from diet than anything else that had been done for her.

Case 75.—C. F., male, age 29. Headache since childhood; had eight to ten in a year as a child, one a week for last five years, and they may continue for two or three days. Lately has had much depression. Used to take meat four times a day as a child. Mother's family gout, mother gout of stomach, mother's sister "gastric neuralgia," one brother rheumatic gout after exposure to wet, one sister "rheumatoid arthritis." His general health otherwise good; had an attack of influenza eighteen months ago. More depressed in the morning, better in the evening (*rule*). Sleeps heavily in early morning and then may wake with a headache. Is always hungry (*? morbid dyspeptic hunger*). B.D. ·8; pulse 72; some plus tension to finger, first sound long or reduplicated, second sound loud everywhere. Bowels act irregularly, takes pills and enemata. Micturition once during the night; his doctor reports that his urine is free from albumin and sugar; has frequent seminal emissions (*a sign of high tension and dyspepsia*).

A year later his doctor reports that he has been faithful to the diet since I saw him, and is very pleased with the result.

Six months later he came to me complaining of a relapse, especially as regards the depression. Is afraid of getting stout and has not been taking physiological quantities. Headaches are less severe and very much less frequent (*instruments would now no doubt have shown some lowered B.P. from debility and deficient food*). He was also taking excess of fluid with the idea of washing out.

I heard no more of him and conclude that he got into difficulties and gave up the diet. In such cases it is absolutely essential: (1) to take sufficient albumins to keep nutrition at its proper level, and (2) to keep down fluids to relieve the heart and improve the circulation in the cortex of the brain. His doctor complained that he could not get him to obey rules, and he soon got discouraged; this, of course, was part of his mental condition.

Case 76.—J. H., male, aged 28 (medical). Headache all his life, worse of late, now once a week; it comes on on awaking and is increased by stooping (*rule*). His father has similar headaches, also depression. Has nausea with the headache, but no vomiting. Bromides do some good. Pulse slow and high tension during the attacks. Urine is copious after the headache (*rule*). Bicarbonate of potash will sometimes keep the headache off (*solvent, acting like the salicylate I more often use*). Pulse 78. Apex beat just outside left nipple line, first sound reduplicated, second sound loud. Has produced some irregularity of the pulse, he thinks, by taking antipyrin for the headaches. Urine, sp. gr. 1020, no albumin, no sugar. Present diet includes meat two to three times a day. Headache is worse after excitement and worry. I advised a gradual change of diet. I heard from him occasionally, and a letter from his wife some years later says: "He has suffered much less since he discontinued a meat diet."

Case 77.—H. B., male, aged 35 (medical). Complains of attacks of vertigo which increases as the weather gets cold in the autumn. Suffers also from irritability, which is worse in the morning. Has migraine once in three weeks, and suffered since he was a youth; it left off for eleven years at the age of 22, when he was living very simply. Four sisters have migraine, one sister, epilepsy, one brother slight epilepsy; mother epilepsy all her life. Has dim vision and teichopsia before the headaches. Has done much mental work and been dizzy after it. Is naturally cheerful, but is quarrelsome before the headaches. Appetite very good, at times too good. Is not thirsty (*rule*). B.D. ·8 to ·85; pulse 60 to 65; C.R. 6·5; B.P. 120 (*no doubt he has high blood-pressure in the mornings and at the time of his attacks*). Apex beat appeared to be in normal position. Has to take occasional pills for the bowels. Urine is free from albumin

and sugar. His present diet includes meat three times a day, tea twice (three large cups in all) and whiskey once a day.

Three months later he reported that he had reduced meat to one-half its usual quantity; the head was worse at first, but has been better since that (*some temporary increase in the attacks is very common both in migraine and epilepsy on altering diet, and is by no means a bad sign; it proves that the trouble is connected with uric acid*). The vertigo has completely gone. One bad headache two months ago was preceded by hemianopia, first on the right side and then on the left. Pulse 84; C.R. 7; B.P. 115 (*this looks like some debility or underfeeding*). Is not nearly so irritable or fidgety; was previously unable to sit and read a book. I advised a further reduction of meat, taking especial care to get enough proteid.

I next heard of him some sixteen months later. Has diminished meat almost to nil, and has been much better. Has been in South Africa, where he could not get correct diet and had to increase meat for a time; headaches were one a week while there. He is now on correct diet and better again. Pulse 72; C.R. 6; B.P. 115; B.D. ·75 (*this falling off of the last is probably due to the South African experiences.*)

Case 78.—A. M., female, aged 33. Headaches since 17 years of age (*the first, collæmic stage of life. Those whose headaches begin before this time become worse then*); are now every fortnight or so and last for three days with much vomiting. Carter's pills relieved for a time. They are worse in the morning and better in the evening. Father has chronic rheumatism (*probably gout*). Influenza twice badly, had congestion of lungs in second attack. Often has heavy colds. Eyelids and face generally somewhat puffy. Appetite good, sleeps well. Pulse 85 (*no instruments*); nothing special about the heart. Menstruation regular, headache at first only came at this time. Present diet includes tea or coffee four times a day (*five cups in all*), meat once or twice a day. (*The tea and coffee were here obviously the worst things in her diet; she would probably not have suffered much from the meat alone.*) Four months later the effect was said to be marvellous; she has scarcely had a headache at all since altering diet.

A year later she has been having a few headaches again, but this is not extraordinary, as she has been taking a little tea. She also takes some oatmeal and occasionally some pulses. These things were put right, and she went on for many years having only slight and occasional headaches.

Case 79.—W. M., male, age 49 (medical). Subject to headaches up to 21 years of age (*? migraine—first collæmic stage*), since then only at irregular intervals, but very severe. Mother a great sufferer from migraine, one brother died of angina at 60, one brother acute rheumatism (*an interesting family history of rheumatism and collæmic high tension*). Patient has had some gouty pains in his joints of late (*probably this is one reason why the headaches have been irregular and less frequent*). Has taken large quantities of meat for years, and this has probably been the cause of the gout and the comparative absence of migraine from retention. Pulse 72, some high tension to finger.

I advised diet slowly and in stages when he has time to think about it; is at present in for some professional examinations. In order to keep free from headache during these I advised him to try some nitrohydrochloric acid followed by salicylate.

Six weeks later he reported that he had had another awful attack lasting twenty-six hours and accompanied by violent retching and vomiting: this was seven to eight weeks after the previous attack. Eight months later he reported, "You may perhaps be interested to hear that my attacks tailed off in intensity since I saw you, and now appear to have ceased." He has reduced meat, but not left it off entirely: "Took sod. salicyl. in 20 gr. doses three times a day for a week; this I did three times with intervals of about a fortnight between each ounce of salicylate."

Here a clearing out by salicylate diminished both the gouty attacks and the headaches, being accompanied by a diminished

intake of uric acid in his food. He was quite right not to give up his meat entirely till he had done with the salicylates, as meat keeps up acidity and aids their action (see "Uric Acid," p. 758). If he now goes on to correct diet he will probably require no more drugs.

Case 80.—D. K., male, aged 40 (medical). Complains of headache, which comes early in the morning and disappears in the evening; has averaged one a week for the last four weeks; is irritable before the attacks. Headaches began fifteen years ago, but had bilious attacks (*same thing*) as a boy. Had gout in knee six months ago, his first and only attack. Eyelids slightly puffy. First sound of heart long; second sound loud. Pulse 84; urine sp. gr. 1020, no albumin, no sugar. Dr. Murray Leslie advised U.A.F. diet, and he has been on it for six weeks, but still takes tea and citrate of caffein for the headaches (*it is quite useless to go on diet and do this; tea and caffein mean not only cure by retention, but also increase of stores by introduction*). I advised that this should be put right, and that calomel with salicylate and a little bromide be used for the headaches.

Fourteen days later he has had several attacks, but gets on well with diet and feels better in himself.

Six weeks later, almost no headaches, only one severe enough to lie up for. Gets on very well with diet. Inhalation of ammonia relieves the attacks. With slight attacks he has had no nausea or vomiting, which used to be very troublesome. Pulse 84; B.D. ·65 to ·7. (*This will not improve much till the stores of uric acid have been got rid of.*)

A month later, Dr. Murray Leslie, who advised this patient to see me, reports that he has been much better on the diet.

## *Epilepsy.*

Case 1.—M. H., female, aged 13. Fits since 10 years old, generally come on as she gets out of bed in the morning; is insensible twenty to thirty minutes, often passes water during the fit. Eldest sister, aged 30, has had fits since 7 years old. Has been injured in the falls, and the tongue has been bitten and shows one or two scars; often sleeps for two hours after an attack. Ill for four months with "kidney disease" when 11 years old; has had scarlet fever; no rheumatic fever. Father alive, suffers from rheumatism; both grandfathers had rheumatism, maternal grandmother had rheumatic fever; mother well except for slight rheumatism; mother's brother, ? insane; one sister has similar fits, one sister migraine headaches, two sisters had fits in infancy, of whom one died in a fit at 3½ years. (*This is the patient whose excretion of uric acid in a series of fits I have recorded in the "Neurologisches Centralblatt," of March*, 1888; *the excretions here given were obtained on other occasions.*) Is taking bromides and tr. belladonna. She brought a specimen of urine passed at 9 a.m., having had a fit lasting half an hour at 8 a.m. It had sp. gr. 1012, turbid and faint trace of albumin; it gave uric acid urea relation of 1 to 19. Urine passed at the same hour on a morning when there was no fit gave sp. gr. 1009, no albumin, and a uric acid urea relation of 1 to 18 (*she evidently passed a large amount of uric acid every morning. She was on bromides and might not have a fit with every large excretion*). I then obtained urine of twenty-four hours, 36 oz., sp. gr. 1028; it contained a trace of albumin, but the microscope showed only mucus and epithelium, no casts (*? leucorrhœa*). This urine showed rather high acidity and a uric acid urea relation of 1 to 37. The ophthalmoscope showed that her discs were normal. She is well nourished and eats heartily of all her food. (The urines of a series of fits, of which the records were published in the *Neurologisches Centralblatt*, were obtained at the time when she was in the Royal Waterloo Hospital.) She was then put on salicylate of sodium 10 gr. bis vel ter. (*these small doses might possibly have acted as retentives; see paper "The Salicylates as Retentives," in The*

*Proceedings of the Royal Society of Medicine, February*, 1909.) She had a fit nine days after this drug was put on, and then remained without one for more than a month; was eating well and putting on weight. The urine only occasionally contained a trace of albumin, but there is no evidence of nephritis; the specific gravity is good, and urea excretion averages 4·3 gr. per lb.

A month later she had a fit in the morning, having been noticed to be rather dull the previous evening. The urine passed before this fit showed a dark purple with perchloride of iron; that during and after the fit gave no salicine reaction. I ordered her to have more salicylate in the morning, increasing the dose to 40 gr. in the day (*this would probably be sufficient to act as a solvent*). Eight or nine days later she was complaining of nausea, and she had a series of fits in the night from 10.40 p.m. to 10.3 a.m., eleven in all. At 11.40 a.m. when I saw her she was drowsy, twitching and but slightly sensible. Each fit lasted about twenty minutes, and she passed her water in a fit at 3.40 a.m. Urine of 11 p.m. (*after first fit of series*) gave no salicine reaction; that at 6 a.m. gave a dark purple; yet the 11 p.m. urine was only two and a half hours after a dose, and 30 gr. had been given during the previous twelve hours. There were no fits after 10.30 a.m., and the urine passed later gave a marked salicine reaction (*the absence of the reaction at the beginning of the attacks was probably due to failure of absorption*). She is very fond of meat and eats heartily. I decided to try what alteration of diet would do. She now got scarlet fever (said to be her second attack) and went to the fever hospital, so that I lost sight of her for two months. She then reported that she had had no fits for six weeks during the fever, but had had eight since then (*retention of the fever followed by the rebound, probably the previous series were due to retention by salicylate* (*as I did not then know of the retentive effects of small doses*) *followed by a rebound*). A fortnight later she had had one fit in the last week. I now tried to put her on to the U.A.F. diet (*I should have cut down her fluids as well, but I did not then know the full effects of this measure on the B.P. and circulation*). Six weeks later the report was that she was eating no meat but plenty of cheese, which she likes. Fits average 7 to 12 per month; they are generally in the morning; she is dull and heavy every morning. Urine only contains albumin occasionally; it is more often present when there are fits; on one occasion hyaline casts were found. I gave small doses of pil. saponis co. in the morning to see if it would make her brighter and ward off the fits, and for a time it appeared to do both these things (*but I now know there is no way out by retention, as the stored uric acid gives trouble later*). She feels more lively after the pill. A pulse tracing taken about this time did not show high tension, being quickened to 110 by recent exertion, but even with this rate the first wave was well marked; her pulse at other times showed markedly increased pressure to the finger (*pre-instrumental days*).

Two months later she had been doing fairly well on opium retention; last night had ten fits (*rebound*). Urine corresponding to the fits had sp. gr. 1009 and gave a uric acid urea relation 1 to 12, a very high ratio even for her. She now gets into an hysterical, childish and weeping condition after a series of attacks (*signs of some heart failure, and the pulse is often quick*). She was given acid and nux vomica, in addition to the other drugs, and diet as before. She had another interval of freedom and again a series of attacks (*retention and rebound*). Urine again examined at this time had sp. gr. 1007 and was free from albumin. Dr. Gee now kindly took her into Mary Ward, St. Bartholomew's Hospital (April 3rd, 1890) for observation. She was found to be well nourished, but had a vacant inexpressive countenance; a scar was noted on the right side of the tongue; no organic disease was found anywhere; discs normal. Urine contained a trace of albumin, but she had had an attack just before admission. She was hysterical and cried at times. She had some sleep-walking on several occasions and was afterwards kept in bed by a bandage. She had a fit in which the conjunctivæ were found to be insensitive for ten minutes, and the pupils were dilated. The eyes deviated to the left in one attack. Attack followed by sleep, no enuresis, no vomiting. Urine between two fits gave a uric acid urea relation 1 to 28; the urine of a fit 1 to 19. Temperature generally subnormal. She was given salicylates in small doses during the first part of her time in hospital; the fits came later on when these were replaced by acids and strychnia. She had milk

diet and fish. In 1888 she had 57 fits; in 1889, 103; in 1890, 144; and in 1891, 118; after that the record became irregular.

It is quite possible that the increased frequency in 1889 and 1890 was due to change of diet. The attacks often become more frequent when the diet is changed, as the uric acid in the blood is increased by the solution of the old deposits; later on, when these have been passed out of the body they again diminish, and eventually, if the diet is persisted in, become less frequent than ever. The increase is therefore not a bad sign, and is only one more proof of their dependence on uric acid. I heard of her in 1892, when she was still on diet more or less correctly, but since then have lost sight of her.

Case 2.—E. S., female, aged 20. Suffering from epilepsy and admitted for a short time into the Royal Waterloo Hospital, where the specimens were collected. Urine before a fit, 2.15 p.m., pale straw, sp. gr. 1009, uric acid urea relation 1 to 20. Specimen drawn during the fit at 4.45 p.m., amber, slightly turbid, sp. gr. 1012, relation of uric acid to urea 1 to 13. Specimen after 5.45 p.m., amber, turbid, sp. gr. 1020, uric acid urea relation, 1 to 5·5.

Notice that diminishing excretion of water, as shown by the rising specific gravity, accompanies the rising uric acid, thus proving once more the rule that the more uric acid there is in the circulation the less water is able to pass through the renal capillaries into the urine. This case also illustrates the rule that the greatest excretion of uric acid does not come till after the fit, because we know, from the estimation of the uric acid in the blood, that the presence of a large quantity in the blood does not make itself visible in the urine till some forty-five minutes later.

The other notes of this case seem to have been mislaid; but she was just an ordinary case of epilepsy taken in for observation, like the next case.

Case 3.—L. A. W., female, aged 20. Complains of fits, which began when an infant, then stopped from the time she was 5 till she was 19, and then began again (*note that* 19 *is in the first collæmic stage, when such troubles as headaches, fits, and anæmia are likely to show themselves*). Her fits are preceded by an eye aura, *i.e.*, a flickering in the eyes (scotoma scintillans), such as is often seen before migraine. Her mother has migraine, and her father's sister has epilepsy. Menstruation irregular and scanty; generally has her attacks at this time (*rule for migraine and epilepsy*). She was put on bromide and told about the U.A.F. diet. Had been on beef-tea and fish lately, as appetite was poor. Generally a good appetite. Bowels constipated and act irregularly. (*Nothing could be worse than her present diet.*) She attended regularly for about six months, and her attacks diminished both in frequency and severity on the above treatment.

She returned twelve months later, having been better for a time and then worse again (*owing probably to a relapse in the diet, which was due to poor appetite*). I advised her to go without food till it returned (*i.e., a day or two*), and then to go on to and keep on as strict a diet as possible.

It is a common superstition among mothers that, if appetite is poor, beef-tea and stimulants are required. In a case like this one, no more fatal treatment could be imagined. A saline purge to clear the bowels, and a little wholesome temporary starvation, and a diet of hot water (if thirsty) for a day or two till appetite returns would soon put things right and do no harm.

A year later I again heard of this patient; she had been continuing the diet and only a little bromide occasionally (*my rule is to discontinue bromides as soon as the diet begins to produce results*). She appeared to be steadily improving, attacks getting progressively less frequent and severe.

Case 4.—M. P., female, aged 24. Epileptiform attacks since 16 years of age, preceded by pains in the back and liver region. Mother has rheumatic gout; father strong and well. Her attacks ceased during her first pregnancy, but returned after it was over. Has bitten her tongue in severe attacks. Has petechiæ round her eyes after severe attacks; has had dazzling in the eyes a good deal of late. Used to have billious headaches as a child before the attacks began. Always subject to "blues," and recently has suffered severely from depression. Sleeps badly of late; is sleepy, heavy and tired in the mornings (*? sign of slight œdema of the brain, which is always worse in the morning*). B.D. ·7 to ·75; pulse 96, generally fast, and some plus tension (*no instruments*). Has had frequent palpitation attacks of late. Apex beat in the left mid-clavicular line; first sound reduplicated at apex; second sound loud both at apex and base (*we have here a high-tension heart just beginning to fail, as shown by the increasing pulse-rate, the palpitation, and the increasing depression*). Menstruation regular and excessive (*the result of high B.P.*); married seven years, two children, aged 6 and 2 years respectively. Urine, sp. gr. 1006, acid, no albumin, no sugar (*the urine of retention between attacks*). The left lobe of the thyroid is somewhat enlarged (*another sign of chronic high B.P.*). Has been on bromides and borax, and is on bromides and belladonna now (*the belladonna probably acts as an alkali, and alkalies increase the good effects of bromides in epilepsy*). She has been trying the U.A.F. diet for a few weeks; her old diet contained tea twice a day and meat, fish, soup and egg each once a day. Has some dyspepsia and a poor appetite, but constipation is diminishing on the new diet. She is taking 3 pints of milk, a quantity of fluid I should never allow in such circulation conditions. I advised that both bromides and belladonna be reduced, for, if they have not caused the cardiac debility, they are making it worse (*such a case is one in which to lower pressure by reducing fluids, and then to give heart tonics and a dry form of U.A.F. diet*).

Two months later she reports that she has kept to the diet, and that the horrid feeling in the head and the depression are much better, Has unfortunately been over-tired nursing an invalid mother. I advised that the meals be reduced in number to try and improve the appetite.

A month later she said that she had quite lost "the cloudy head" and depression, also "the sparks and whirligigs in the eyes." Belladonna completely left off, and only a little bromide continued. Attacks are about one a week, but not so bad as before. She still loses excessively at the period, and feels bad then. Fluids have not been cut down enough. Has, unfortunately, still much nursing to do.

Case 5.—S. F. P., female, aged 45. Fits since 15 years old (*again the early first collæmic stage*); longest interval free from fits is one year; shortest time two in one day. Worse last spring after influenza, when she was burnt in a fit by an upset lamp; this was followed by erysipelas. Attacks average four to five a month now. Has some headache, which gets worse and better with the fits. Has a scar on the face from a fall into the fire; was a long time without a fit after this burn (*was probably laid up and debilitated by it*). Has had measles but no other fever. The apex beat of the heart is quite a finger's breadth outside the left mid-clavicular line; there is a systolic murmur over the cardiac area. Pulse only 72. Menstruation rather irregular of late; generally has an attack

before and after the period. Is constipated (*this makes her more liable to attacks, as it tends to produce retention*). Urine, sp. gr. 1017, acid, slight pale deposit, which microscope showed to be leucorrhœa, trace of albumin, no sugar. Cold water douches to spine kept attacks off for six months (*they probably acted as retentives and made the attacks worse later*). Has bromide occasionally, not regularly. I saw her with Dr. Payne, of Ilfracombe and, advised that beef-tea and soup should be cut out of the diet, and the tea and coffee be diminished (*what chance is there of getting free from epilepsy while so many poisons are taken?*). I also suggested the use of a little salicylate with the bromide to prevent retention.

Four months later she had had some rheumatic pains after an attack of influenza, and was looking thin and ill. Milk appears to cause some dyspepsia; headache and giddiness have been rather worse on the altered diet (*has probably been underfeeding*), but the fits have been less severe. I advised that the U.A.F. diet be done completely with weighed and regulated quantities under a nurse.

Two months later, weight has increased 3 lb., but fits have also slightly increased.

Their diminution before was due to diminished food and debility, not to lessened uric acid. Both headaches and fits may be diminished by the fall of B.P., which slight starvation and debility produce. I try to cure by getting a fall of blood pressure from diminished uric acid and diminished fluids, and both these things can be done without harm.

Seven months later, her nurse reported that cereal foods gave trouble in digestion, and, therefore, the U.A.F. diet had never been completely attained; but she has been on a light diet and her general health is better. A month ago had a bad fall in a fit, and has been in bad health since. Her doctor gave her an iron mixture, and this was followed by a great increase in the frequency and severity of her attacks; and she is now unable to think clearly. From this condition she slowly recovered during the following month, perhaps aided somewhat by a mixture containing bromide and salicylate. Appetite is not good, and she feels the cold much. I now advised that she should try a diet of milk, cheese, fruit, and vegetables, leaving out the starchy cereals.

Two months later she had again had influenza, which had left a slight cough. The first sound of the heart is altered, though there is not a distinct murmur (*is this only a collæmic heart, with occasional dilatation and some regurgitation, or endocarditis? There was no fever except measles that might cause endocarditis*). Fits less severe of late, but still passes her urine in them. I gave her 3 oz. of cheese and 2 pints of milk (*less fluid would have been better*), the rest fruit and potatoes. She likes this diet, and it seems to suit her better than the cereal starches. She is now doing without bromide entirely. She often has a headache some hours before a fit.

A month later, had only had one slight attack when over-tired by going to a theatre. She likes the vegetable and fruit diet, and is sure that it suits her much better than bread, which makes her "stuffy and bad tempered." (*starches not only cause flatulent distension, which interferes with the work of the diaphragm and the circulation, but cereals are acid and tend to retention, while potatoes are alkaline and act as solvents*).

Four months later, I heard that her friends had persuaded her to take some fish, and I strongly advised that she should be kept on the milk, cheese, and fruit diet; but this was the last I heard of her. She markedly improved on the above modification of the U.A.F. diet while she did it correctly; *but she would have done better still if she could have increased the cheese, or taken more curd cheese, and thus have been able to diminish the milk and fluids in order to relieve the heart and lower B.P.*

Case 6.—R. J. G., male, aged 7 (schoolboy). Had urticaria at 6, and fits came on soon after that. Fits are now one in two to three months; he falls with them, they last two to three minutes, and he is all right again in thirty

minutes. Only child, mother no miscarriage. Mother's brother has epilepsy (? due to a fall); all her brothers and sisters had "teething fits." Maternal grandmother had migraine. Child had "enteritis" one year ago, and varicella recently. Mother's cousin had fits, and died at 40 of fits and mental alteration. Child subject to night frights and screaming for years. B.D. ·7 to ·75; pulse, 80; C.R. 7 to 8; B.P. 90 to 100 (*C.R. is always* 1 *slower in a child, therefore* 7 *to* 8 *in a child equals* 6 *to* 7 *in the adult, and the normal C.R. B.P. ratio would be* 130, *but here, again, for a small child ratios do not hold exactly*). Heart first sound ? normal, second sound reduplicated (*this last is common in children, especially in those who suffer from collæmia*). Bowels are constipated; is given syrup of figs. No thread-worms. Urine is said to be all right; foreskin is a little tight. The attacks are always in the morning from 7 a.m. to 12 noon (*i.e., the collæmic hours*). Weight 3 st. 7 lb. 12 oz. I advised that the meat and bacon, which the child has once a day each, be given up in favour of milk and cheese.

Six months later, his weight had increased to 3 st. 11 lb. 4 oz. The urine passed after a slight attack was forwarded; it had sp, gr. 1026 and gave a uric acid urea ratio of 1 to 20, no albumin (*this was a markedly collæmic urine*). He has only had this one attack in seven months. I advised them not to give dripping or suet, but to use oil or butter. He is said to be very much better generally.

A letter to this boy's father while I was writing out the case (1909) brought the following: "My son kept to the diet you prescribed for eighteen months, during which time he gained weight and the attacks were less frequent. After being twelve months without an attack he returned to his ordinary diet. For five years he has been free from attacks. I am fully convinced that your treatment has been the cause of his recovery, and I have often spoken to friends about it."

This patient is now 17 and has had no attacks since he was 12. I do not think he was wise to give up the diet, as it affects many things besides the tendency to epilepsy; but this is all that can be done with people who are ignorant and creatures of habit, custom and fashion.

Case 7.—D. W. F., male, aged 17. Fits for three or four years. Is small, young-looking and backward for his age. Attacks are increasing in frequency and were very numerous last year; most ten to twelve in a day; least one in a month; an attack lasts two to four minutes. There is phthisis in the family, one sister had rheumatic fever six times; one sister has slight headaches; mother has bilious attacks (*headaches, epilepsy, collæmia and rheumatism! A truly suggestive family history!*). Sleeps badly, lies awake before fits come on. Appetite good. Glands of neck enlarged; has had suppuration and has a scar in the posterior triangle. B.D. ·8; pulse 112. Apex beat almost under left nipple or slightly to the left of it, first sound long, but second sound loud, action always quick (*a collæmic heart beginning to fail*). Urine often contains albumin; specimen received gave sp. gr. 1010, acid, cloud of albumin, contains pus (? *pyelitis*), no casts seen. Lives on fish and eggs with occasional meat, tea twice a day, soup or bovril once (*such is his list of poisons!*). Fits were worse last year, and it was said to be due to milk, so milk was diminished and beef-tea increased (*error can go no further*). I suggested a diet of milk, cheese, potatoes and fruit. Is taking bromide, which is to be reduced as he improves on correct diet.

Two years later, age 20, no alteration in the number of fits; they average ten per month all through, but the general mental condition between the attacks had been better. I ordered 1½ lb. of potato a day; he has only been taking 1 lb. and substituted bread for the rest (*this was a mistake. Bread causes dyspepsia and high acidity, which favours retention; potato favours alkalinity and so solution and elimination of uric acid*). I now found his B.P. to be 160 mm., and was not surprised to hear that he had occasionally had considerable epistaxis. He gets tired of cheese, but likes milk and is always thirsty. Pulse is still quick,

108. Apex beat is displaced to left, and first sound long (*clearly a collæmic heart beginning to fail*). He is sleeping better. I increased the potato to 3 lb. or any quantity he could eat.

The milk should have been reduced to 1½ pints and replaced by curd cheese, so as to diminish fluids and relieve the heart, but he was fond of fluid. I think his thirst was only dry mouth and dyspepsia, and should not have been encouraged; or fruit should have been given in place of fluid.

Three months later, fits still about the same in number and he was losing weight; apparently he had a fancy for other food and did not eat enough. Some of the attacks have been slighter, but he has been rather depressed.

In so far as he was better, this was a cure by debility. I prefer to lower B.P. by other means: absence of collæmia and diminished fluid. The kidney trouble seems to have cleared up; probably it was only gravel. I give the case chiefly for its history and symptoms.

Case 8.—E. O. D., male, age 28. Epileptic fits followed by much nervousness; fits are not unilateral and last ten to twenty minutes. Had first fit four years ago, seven months after a blow on the head which fractured the skull and injured the brain; was in hospital six months, and the wound was operated on several times. The fits were only slight in the hospital, but have increased in severity and duration since. General health is good, but he sleeps badly. Pulse 88, weak. Heart said to be normal, but acts quickly in the nervous spells (*are these attacks of heart failure following the exertion of an attack of epilepsy?* This was a case of traumatic epilepsy, but, as no operation was advised, and the patient asked for my help, I told him to try a diet which might lower B.P. and so diminish intracranial pressure and irritation. His present diet is quite wrong, containing egg, fish and meat two or three times a day, tea or coffee three times a day. He was also told to keep down fluids as much as possible.

Two months later, he reported that he had been on strict diet for six weeks; the attacks were rather more frequent, but did not leave so much nervousness behind (*i.e., the heart was better on diminished fluids and diminishing collæmia*). Has been back to hospital, and a further operation is now proposed. I told him to bear diet in mind in case the cure was not complete, as even this short trial seemed to show that diet and B.P. affected the attacks and their sequelæ.

Case 9.—H. E., male, aged 31. Epileptic fits for three years, generally at night, *i.e.*, 2 a.m. to 3 a.m. Mother alive and well, no brothers or sisters suffer. Used to suffer from headaches as a boy, but they ceased about 16 years old. He had rheumatic fever four years ago and was ill for three months. He is depressed after the attack (*heart failure*). Sleeps well except for the attacks. Pulse 84; C.R. 7 to 8; B.P. 140. Apex beat is displaced to the left, first sound long (*? late systolic murmur*); second sound loud everywhere (*a high tension heart, or morbus cordis from rheumatism, which the fits followed*). Urine normal. Married seven years; two children, who are well. Longest interval between attacks is nine weeks. Is on bromides. Occasionally bites his tongue and passes water in the fit. His present diet contains tea or cocoa four times a day, meat once, eggs once a day. I advised U.A.F. diet and diminished fluids with bromide and salicylate if attacks increased at first.

I never saw him again and give the case merely for its interesting history. Here again we have heart failure, due to collæmia or

morbus cordis, with depression following the attacks; and the fits alternated with acute rheumatism, a retentive disease.

Case 10.—M. F. D., female, aged 21. Has suffered from bilious attacks and headaches all her life; epileptic fits for nine months (*migraine complicated by epilepsy*). Headache comes on in the morning, but is worse in the afternoon and evening. Catamenia regular, scanty, no relation to headache or fits (*this is an exception to the rule*). There is gout in mother's family, father had rheumatic fever three times.

Two months on modified U.A.F. diet with fish added. Is quite certain she has improved on this diet, no fits at all of late. A month later was still going on well. She is taking some bromide. Three months later has only had one fit (used to have one or two in a week) and one bilious headache after the fit. I told her to stop fish and live on complete U.A.F. diet. She does not like meat, and thinks she could live well on bread and butter (*probably she could not take enough*). Two weeks later: she had four fits last week, none this. A week later she brought the urine passed after two fits at 3 a.m. and 8 a.m. Bladder was emptied in the fits and this was what was next passed. It had sp. gr. 1022 and gave uric acid urea relation 1 to 16, which is a large quantity of uric acid even for a morning hour.

A month later, had no more fits; some headache on two days.

A year later I heard that after the last note the attacks got more frequent, as they naturally would owing to clearing out of stores in the first spring and summer on U.A.F. diet. Her parents got worried, and not understanding this apparent relapse, sent her to another hospital, where bromides and other drugs were given, but diet was left off, or at least some fish and meat were resumed. Three years later I heard that she was continuing the drugs and considered herself quite well, though she still had occasionally "giddiness like a rush of blood to the head," and was doubtful whether she would keep well if she left off the drugs.

I believe the essential factor in such "giddiness" is collæmia plus temporary cardiac failure and deficient blood supply in the brain, which when more severe produces a fit. It is obvious that the drugs merely acted as retentives and palliatives. When diet cures and drugs can be left off, you at least know where you are. I believe diet would have cured this case, and the increase of attacks was a sign that uric acid influenced them.

Case 11.—F. E. C., male, aged 11. Jacksonian epilepsy, in the Metropolitan Hospital under Mr. Waring. Four years ago fell and struck his head on the curbstone, fits since that. His father says that two years ago he was in St. Bartholomew's Hospital (Luke Ward), when a bean was removed from his ear and the fits ceased. They began again two months ago and have continued since. Had measles when three months old. Healthy-looking boy; cheerful, good tempered, good memory. Fits are frequent, last about thirty seconds, movement always begins in right arm, which is elevated and carried to the left. Towards the end of the fit left arm moves back and forward like a pendulum. Convulsions then cease and patient comes out of it smiling. Pupils are dilated, eyes deviate to the right. Conjunctiva not insensible, Scar on the head about 1½ inches above the pinna is 2 inches long, and a smaller one just beneath the left parietal eminence. While under observation he had ten, sixteen, and five fits on three successive days. He was then trephined over left Rolandic area. Brain natural, no pus found. He had a fit in the evening after the operation, and several more, one of them severe, in which he was quite unconscious for two or three minutes before he left the hospital. He was then rather better for some time, but next year he was again admitted under Mr. Waring, suffering from fits three to five or more in a day. These

now affected chiefly the opposite (left) side of the body, and as Mr. Waring did not feel inclined to operate again, he handed over the case to me. I took him off all drugs and put him at once on a strict U.A.F. diet, and the fits ran from three to five a day for some time. They then became rather more numerous and severe, and, as the house physician was rather concerned about him, a little bromide was given for a few days. When the fits moderated slightly, it was left off again, but the diet was continued. After a few weeks there was a decided diminution both in number and severity of the attacks, which fell gradually to two in a day, then to one in a day, and eventually there were several days without any attacks at all. Soon after this, however, he unfortunately got scarlet fever, and so had to leave the hospital and was lost sight of.

Here again I believe that diet alone without the aid of drugs would in a little time have produced a great improvement owing to its effects on the circulation; this was in pre-instrumental days, so that I have no actual records of the condition of the circulation.

Case 12.—A. N., male, aged 19. Epilepsy. He was only seen as an out-patient, but there seemed to be no doubt about the history of fits for some years. The apex beat was a finger's breadth outside the left nipple line; there was no murmur, a pulse tracing gave its best development with 2½-oz. pressure, and was nearly obliterated with 4 oz. pressure. The tracing showed a marked fall with little indication of a predicrotic wave and the dicrotic wave was fairly marked; the rate was 120 and the heart area was somewhat enlarged both to the right and left. (*We had here to deal with low tension from heart failure with some dilation. Whether this had been preceded by high B.P. there was no evidence to show.*) Urine had sp. gr. 1020 and contained no albumin and no sugar. (*I mention this case from old pre-instrumental days because, as we shall see in other cases further on, heart failure has a marked influence in epilepsy.*)

Case 13.—S. B., male, aged 13. Suffers from epilepsy. Sent to me by Dr. Walker, of Mevagissey, who had been treating him on U.A.F. diet. When first seen by him he had very violent fits in hot weather of July for two days, being unconscious most of the time. He was then put on diet and went from August to following March with only one slight fit at night. After March the fits were again frequent, several in the day. They were again very frequent and severe for about three weeks in May. I saw him in the following July and got his history. His father had rheumatism. His mother, varices and ulceration of legs. One sister at 19 had migraine, but has been cured by U.A.F. diet. Two sisters and one brother are healthy. Patient had eczema at 18 months old. Just over 2 years of age had a worm lozenge and was unconscious for three days, with loss of power in legs. At 8 years was well, bright, and proficient at school. At 8½ fits began and have since continued. At 10 years old was in South Devon Hospital, Plymouth, where he was given glasses for his eyes, bromides, belladonna and arsenic. In the same month he was admitted into the Metropolitan Hospital for observation. The ophthalmoscope showed nothing abnormal. B.D. ·8 to ·85; C.R. 7; pulse 120; B.P. 116 just after a fit. Four days later his C.R. was 8 and B.P. 135. The urine gave sp. gr. 1026 and contained neither sugar nor albumin. (*The fall of B.P. after a fit is interesting, as it seems as if there were a fall of B.P. from heart failure at the time of the fit, followed by recovery of heart and rise of B.P., the quick rate also pointing to heart failure.*) Between the attacks he is said by Dr. Walker to be stupid and purposeless in his actions (*this also is a sign of heart weakness and defective intracranial circulation from collæmia*). He was sent out and advised to continue diet. (*I think his being worse in the spring and summer points to a seasonal collæmia, but if he keeps to diet he should eventually get free from collæmia, and cease to suffer.*)

Case 14.—H. C., female, aged 36. Epileptic attacks first at 27. Came several at a time and was very bad with them. Bromide restrains them, salicylate was tried, but had no effect. Feels ill with the attacks and thinks they are

affecting her mind. A urine passed after a fit at 7 a.m. to-day gives a uric acid urea relation of 1 to 19. There is no specific history. Married, one child, no miscarriages. Father and mother old and have rheumatics. Attacks at first chiefly at the monthly periods, now more irregular as to time, they vary as to severity, may bite tongue or pass water in attacks. Four months later (April 30) she had a severe attack in the out-patient room. Some convulsions, pupils dilated, conjunctivæ insensitive. Urine passed about half an hour after the fit threw down numerous pale lozenge crystals of uric acid, as it was cooling. It had sp. gr. 1020 and gave a uric acid urea relation of 1 to 17. She passed water before she came into the waiting-room, and had been there about two hours before the fit occurred.

Here we had a severe attack following many slighter ones, just as the warm season was coming on, and a very large excretion of uric acid at an hour (4 p.m.) when the excretion is not generally very high in physiological conditions. This case was seen in pre-circulation measurement days, or it would probably have been most interesting. The dilated pupils in the attack and the enfeeblement of mind between them both point to heart failure as a result of chronic collæmia, aud the urine shows that collæmia is at times very severe.

Case 15.—A. S., aged 16, female. Fits for some two years (*? hysterical*). She also suffers from headaches, which are relieved by mist. acid phosph. c. strych. She woke up with a headache this morning and had a fit while sitting in out-patient room. Urine passed after the fit (3 p.m.) had sp. gr. 1028, no albumin. Uric acid urea relation 1 to 16. A month later said that acid medicine had relieved her headache decidedly. She is excited and nervous, and refused to allow me to put the sphygmograph (*which she had seen before*) on her wrist. I sent her into another room to wait a little, and in fifteen minutes she had a fit (*hysterical*), screaming and struggling, and conjunctivæ sensitive. When she came round she declared she knew nothing of what had happened, or that cold water had been thrown over her. After the attack she was quiet and sensible and allowed me to take a pulse tracing which shows some high tension and took 5 oz. to develop it. After this she unfortunately went into service in the country and ceased to attend.

We now know that hysteria is due to heart failure, and hers was evidently a temporary heart failure with more or less hysteria and loss of sensibility in a collæmic storm, coming about the same hour as her previous attack, which gave a marked uric acid reaction.

Case 16.—R. E. M., female, aged 6. Fits all her life, said to have been born in one. Mother said to have received a kick and a fright when seven months pregnant with this child ; her fits are ascribed to this. Father had gout and collæmia. His sister has fits. Two sisters of patient have fits. Patient had one fit at one month old, and was unconscious for nine days. Then none for six months and then they began again. Is occasionally free from two to six weeks, generally has two to three in a week, may be two to three in a day. Is very excitable before a fit. Mother died of puerperal mania after the next child. Mother's father a little gone in the head. Two of her sisters are very excitable. Mother had nineteen children, five dead, no miscarriages. Eldest sister of patient had fits when 12 months old, none since. Father's father gout. Father had rheumatic fever twenty years ago. I watched this child to try and get some urine reactions, but I could not get it separated with sufficient accuracy in relation to her fits to be worth examining, and I put her on diet, and told parents how to keep it on.

I give this case only for its history of gout, rheumatism, fits and mental disease, and excessive excitability. It looked as if the whole family inherited some tendency to weak heart (*hence excitability*) along with their gout and rheumatism.

Case 17.—C. A., female, aged 40. Subject to fits since 18 years of age (*i.e., beginning of first collæmic period*). Used to suffer from headache as a child, also as a child had momentary attacks of giddiness. Now gets very bad colds and chills and is rheumatic and gouty, has had some chronic rheumatism for years. (*Plenty of evidence of uric acid excess here.*) Moderately well nourished. Appetite fair, but no real dry bread hunger. Feels always tired and is much depressed by bromides, which she has taken for twenty years. Can go to sleep easily, but is restless, dreaming and talking much. B.D. ·85, well nourished; pulse 96; C.R. 8; B.P. 140; flattened 180. First sound short at the apex, longer near the sternum. Second sound moderately loud. The heart area is enlarged, especially at the left side, and the apex beat is in the left mid-clavicular line. (*Here again chronic collæmia with some heart failure, B.P. should be* 160 *if the muscle were strong, and the rate should also be nearer* 60 *than* 90.) There is some lipping of the finger-joints (*showing chronic irritation by urates*). Much troubled by flatulence, bowels constipated, only act with drugs. The stomach extends to the umbilicus, but does not give a splash. Menstruation is regular, but has great pain on first day. The aura of the attacks is a pain in one foot and she feels it most at the period time. Weight 9 st. 8 lb. 6 oz. Is living on ordinary diet. Attacks at night only. She was advised to change slowly to U.A.F. diet, fluids not to exceed 30 oz. a day. Four months later, as she had a good deal of dyspepsia and deficient appetite, she was to try two meals a day and some further diminution of fluids.

Six months later she had had no attacks, which is an improvement. Has had some depression, also some headache, relieved by caffein (*which of course is all wrong*). Often suffers from fidgets (*sign of defective circulation, collæmia*). Has not been able to keep to two meals. She often has to take tonics (*e.g., iron*) for her debility.

These, of course, do harm by causing retention, followed by a temporary increase of collæmia, and thus fluctuations and more severe attacks are produced. As to caffein, of course no one can hope to get free from uric acid troubles while taking it; and she is not free, as she has constant colds, beginning as sore throat and spreading upwards to head, and downwards to the bronchi.

I advised her to give up caffein, and to avoid tonics as far as possible, also to diminish the bromides gradually. Also to rest and avoid fatigue as much as possible, especially in the morning hours, when the circulation is at its worst.

Case 18.— M. W., female, aged 24, unmarried, general servant. Subject to epilepsy from childhood. Has had bilious attacks since 13 years old. Had "faint turns" from childhood up to 21, and more severe fits since that. Has had three or four in the last year. Longest free interval ten months, never more than one in a day. Shortest interval fourteen days. Generally gets her attacks when over-tired. [*This is interesting in relation to the well-known effect of fatigue on the kindred trouble hysteria, and in relation also to the presence of more or less weakness of the heart muscle in all these cases.*] One sister, aged 33, has asthma; mother has had two strokes; father suffers from asthma and bronchitis. (*Here, again, plenty of uric acid in the family.*) She has headaches as she comes out of the fits, but not otherwise. Often has influenza and very bad cold. She is insensible from thirty to ninety minutes in the attacks. Long sight, but wears glasses. Teeth very bad, especially the upper ones, and numerous gumboils. Appetite good, not depressed. Sleeps well, and does not walk. Pulse 88; C.R. 8; B.P. 140; flattened 190. Often has palpitation on

exertion or going up stairs. C.D. measures 6¼ inches, normal about 5 inches. First sound long; second sound reduplicated at left base. (*Here, again, all the signs of chronic collæmia and heart failure. Palpitation, quick pulse, and B.P., which should be* 160, *is only* 140.) There is some lipping of the finger-joints (*showing chronic uratic irritation*). She does not complain of dyspepsia, but the stomach extends to the umbilicus and gives a slight splash. The bowels act only with pills. Menstruation is regular, but there is considerable pain. Attacks do not come at the period, but when she is overworked. Weight 9 st. 11 lb., is tending to increase. Her present diet includes meat once a day, bacon once a day, tea twice a day. She is not thirsty at all (*another sign of collæmia, which, by causing retention of fluid, diminishes thirst*).

I give this merely as another instance of the conditions so commonly met with in epilepsy. Weak heart muscle, dilated heart, chronic collæmia straining the heart, interfering with its nutrition, and so quickening the pulse and putting out the normal C.R. B.P. ratio, and accounting for palpitation. This case is also interesting because of the marked relation between fatigue and the onset of the attacks; and fatigue, as we know, both precipitates collæmia and tires the heart muscle.

Case 19.—P. R., female, aged 25, unmarried. Has had fits in the night for three or four months, perhaps longer; bit her tongue badly in one of them. Has fallen on stairs or steps and hurt herself considerably. Is the youngest but two in a family of nine, One sister had chorea; father died of bronchitis. Patient is nervous and twitches at times; had chorea four years ago, never rheumatic fever; talks much in her sleep but does not walk; has occasional vertigo; fairly well nourished; appetite not too good; memory poor these last few months; sleeps long enough but is restless. B.D. ·75; pulse 80; C.R. 8; B.P. 135; flattened 180. Apex beat in left mid-clavicular line. First sound long; second sound rather loud.

Here we have a patient who had chorea and no doubt a weak heart four years ago, and now she has, as signs of the same condition, a quick pulse and a defective C.R. B.P. ratio. Here is, perhaps, a case of epilepsy that might get benefit from digitalis.

There is some slight lipping of the finger-joints (*pointing to chronic arthritis.*) She often has some pain in the chest after food, and her bowels are constipated, unless she takes cascara. Menstruation is regular, but she has a good deal of pain, and her fits often come at this time. Urine, sp. gr. 1027, full amber, very acid, no sugar, no albumin. Weight 8 st. 4 lb., diminishing. The liver is somewhat large, and the stomach extends down to the umbilicus and gives a splash. (*Here we have a relatively weak heart. B.P. should be* 160, *it is only* 135; *as a result of this there is some congestion of liver and stomach, and digestion is often painful as well as slow.*) Her present diet includes meat twice; tea or coffee three times; stout once a day. I advised her to go on to two meals a day, to help the slow digestive processes, and to diminish fluids so as to relieve the heart, to diminish and give up tea and coffee. Five months later she was still taking one cup of tea a day. Had only had one fit in this time. B.D. ·65 (*i.e., it has fallen off*). Still suffers from constipation unless she takes aperients. Pulse 88; C.R. 6·5; B.P. 125. (*She is probably not taking enough proteid*) and was advised as to this and about giving up tea.

Six months later, including the spring and the early summer, she had had four attacks, making five in the last twelve months. (*This is very characteristic of collæmic troubles, to be worse in the collæmic season.*) Had a bilious attack

after the last fit, and has been less well since that. Can take Brazil nuts well and dyspepsia has diminished. Weight has increased to 8 st. 9 lb. B.D. ·75, (*an improvement*). Has had no vertigo of late. Pulse 84; B.P. 125; C.R. 6. Pain at the periods is less.

Five months later, has had three attacks since last here, and has not felt so well. B.D. about ·7 (*not quite so good*); pulse 88; C.R. 7·5; B.P. 140, flattened 180. (*The pressure is higher, but there are still signs of weak heart muscle in the quick pulse and slightly defective ratio. B.P. should be* 150.) Weight 8 st. 9 lb. 8 oz.

Has now been ten months on U.A.F. diet, but has been making the mistake of taking jam at breakfast and fruit at lunch in cold weather, and not enough potato: and these mistakes, which would make migraine worse by causing retention, have done the same here. The meat-eater cannot at once get out of his stimulant habits, and he finds jam and fruit help him a little in this way; but the help, as we see here, is purchased at the price of a break in uric acid freedom.

She was advised to correct these mistakes and keep down her fluids.

Six months later she was feeling well and had had no attacks; she was taking some bicarbonate of soda, but this would not be necessary if she would take enough potato. B.D. ·65 to ·7 (*a little down, no doubt owing to the increase of alkali*); pulse 84; C.R. 7; B.P. 135, flattened 170. Has a small rheumatic nodule near the right sterno-clavicular joint. She was advised to continue, but to take less soda and more potato.

Four months later, in the spring, she had been better up to last week, and then had two attacks and felt very bad with them. (*What she retained in the winter has been coming out as the weather got warmer.*) B.D. ·7; C.R. 7; pulse 104; B.P. 130, flattened 175. Has lost several pounds in weight owing to the vomiting and dyspepsia that accompanied the recent attacks. There is still constipation, unless she takes drugs (*this also is a cause of raised acidity and retention*).

Three months later, had an attack last week with the usual vomiting and dyspepsia. Has been taking some fruit and it does not agree. Now uses an enema to keep the bowels open, has been better in herself generally and much better as to digestion. This last attack came at a monthly period (*she does not cut her fluids down enough or the severity of the attacks would be diminished*). B.D. ·7; C.R. 7; pulse 96; B.P. 130, flattened 190 (*practically the same as before; still collæmia worse in attacks, still some heart failure; when the heart is overpowered by the collæmia of the period she gets her attacks*).

This patient is passing through the troubled times of the collæmia of clearing out old accumulations which everyone, migrainer or epileptic, has to go through. When all has been cleared out there will be much less collæmia at the periods, the vomiting and dyspepsia will greatly diminish or leave off, the heart will be less taxed and may recover some of its muscle tone, and the fits will cease. If the heart does not recover sufficiently, tonics will be necessary; it is a doubtful point whether they might not be given now. My rule is to diminish collæmia and cut down fluids—that is, to take work off the heart, and only to give tonics after these other things have produced their effects. This patient did not do nearly as much as she might in the way of cutting down fluids.

Case 20.—S. A., female, aged 10, the second child of a family of eight. Has "turns of unconsciousness" with twitchings of mouth, arms, and legs, which began when she was 7 years old. She may have as many of these "turns" as two or three in twelve hours, or may go as long as two months without any. The fits are generally in her sleep, about 9.30 p.m. or 4 a.m., and she goes to sleep again after them. She is taking bromides, which do good. She is active, lively and clever; no fits in the family history. She is occasionally irritable, when she suffers some pain from indigestion. She is getting rounder and increasing in weight, though face is thin. She sleeps well, but does not go to sleep easily. Bowels act once a day regularly. Occasional irritation of vulva relieved by a warm sitz bath (*? due to acidity of urine*), no threadworms seen. Weight 4 st. 13 lb., has gained about 12 lb. in seven months. Mother nervous, and had nervous collapse, also subject to gouty pains and nasal catarrh. Has recently been put on a diet of porridge and milk, puddings, toast, bread and milk, eggs, and some chocolate. I objected to the eggs, the chocolate and the porridge, and it was modified accordingly. On this she had less indigestion pain, and went to sleep more easily, while her weight kept steady.

Three months later she was said to be better in every way and was still gaining weight, and her colour was watched and found to be improving.

Two months later she had had no attack for over eighteen weeks. Is just recovering from an attack of influenza, and has a slight cough.

Three months later she was said to be decidedly better, has no flatulent dyspepsia now, and temper is also decidedly better. Weight 5 st. 2 lb. 8 oz. Has had no real attack for eighteen months. I now advised a gradual reduction of the bromide she was taking.

Five months later she had had two attacks with only a month between them, but the last was a very slight one. Is very well in herself, all her friends remark on her healthy appearance. I advised a continuance of the same diet, except that she was allowed to take small quantities of nuts in season, well ground up.

Ten months later she was still doing well and I advised them to make no change in her food.

Again, ten months later, and rather over three years from the date of her alteration of diet, she had had no real attacks since those noted above, and there is now no sign of anything of the kind. Six months before she had had some threatening of appendicitis and her local doctor put her on soup and broth for a time, but she has had no meat, fish, or fowl. The pain soon went and she is now growing tall and stout. Latterly she has been rather more irritable, especially at the monthly period, which has now established itself.

Twelve months later still no attack, which makes none now for about four years. She is 5 ft. 7 in. in height, healthy, plump and strong, menstruates regularly and is busy with her studies. No bromides for some time now. I advised that the diet be steadily continued, for even if she has no more fits she may get other troubles if she again takes uric acid. Besides she is growing and developing so well on her present diet that nothing more is wanted.

Two years later, when she was over 17½, she was able to come to London and I saw her. She had had no attacks for over five years. She is still a little nervous, especially at night. Six years ago she had bad dreams and was a sleep-walker as well as being epileptic. B.D. ·9 to ·95 (*i.e., very good*); pulse 58; C.R. 6·5; B.P. 120. First sound long, second sound slightly loud. Has occasional headaches at school. (*A B.D. of ·9 or ·95 is not often seen at* 17, *never in a meat-eater.*) She takes a little very weak tea or cocoa twice a day and has had occasional fish. She is easily put off her sleep. Weight 10 st. 4 lb. 8 oz.

In spite of all I could say, these people would not keep her entirely U.A.F., and the above slight troubles were, I have no doubt, due to this fact. Still, the epilepsy was cured, and they were so pleased with this that I had considerable difficulty in persuading them not to do as others do and go right back to meat. Such is the power of ignorance and prejudice. Nothing could be

better than this child's development, and yet they wanted to do evil, like others, and she would inevitably suffer if they did.

Case 21.—E. A., female, aged 35. Complains of fits ever since 12 years old; they come in attacks every three months, and then average five to fifteen in a day; has gone twelve months without any. Has been a vegetarian for two years and seven months, and the fits have been rather better these last two years. The attack is generally one week before the monthly period, or it may be with the period. Has a feeling as if her heart were expanding and a rush of blood all over her before the attack comes on. One brother and sister had fits in childhood, and one sister has sick headaches also at her monthly periods; this sister also suffers from dyspepsia. Patient had two fits at 8 years old, but they did not come on regularly till 12. Health otherwise good. Has had no fevers. Has pins and needles all over her body before fit comes on and then loses her senses. Is very excitable (*sign of weak heart*) and occasionally depressed. Sleeps fairly well. Eyes somewhat prominent. Right ear is deaf owing to an injury. B.D. ·7 to ·75. Pulse 104 (*partly due to excitement?*). C.R. 6·5; B.P. 125. Apex beat in left mid-clavicular line, first sound long or late systolic murmur, second sound somewhat loud. Has great fluttering and palpitation of the heart at times of attack and after them. Neck somewhat full in thyroid region. Bowels regular once a day; have acted better since being a vegetarian. Menstruation regular and natural. Urine clear, no albumin, no sugar; not passed in the night. Weight 8 st. 8 lb. 12 oz. An attack is generally somewhat as follows: There is first a fit, generally at night, next day none, on the third day one fit, on the fourth day four or five fits, on the fifth day the period commences, and there are no more fits, but occasionally there are one or two after menstruation begins. Present food consists chiefly of bread, breadstuffs, fruit and vegetables, hot water night and morning. No tea or coffee for eighteen months. Cannot take cheese and does not care for milk. Has been taking eggs till two weeks ago. Occasional pulses, but in moderation. (*She is probably underfeeding; hence the low B.D., very low for a vegetarian. Till recently she has had some poisons, pulses and brown bread, &c., hence also quick pulse and nervousness.*) Attacks have been more severe the last ten to twelve years, and she cannot walk about for fear of their coming on. Previously they were more like "petit mal." I advised her to go on with her present diet, but to increase nourishment by eating milk pudding freely twice a day, thus getting in some milk. I also cut down fluid to thirst level. I also saw her sister, who has her migraine attacks once in three months with her menstrual period, so that migraine here exactly parallels epilepsy. I told the sister that diet would cure her.

Three months later, weight steady and diet suiting her well. No pulses, no eggs now. Fits came as usual at the three months period, but none of them were so strong and there was one less than usual. I told her to leave off fruit at breakfast and to substitute potato; may take fruit at the other meals.

Two months later, fits returned after only two months interval.

This may have been a result of the increased collæmia produced by the potato. I always tell patients that an increase of attacks on first altering diet is not only a conclusive sign that they are due to uric acid, but also of good augury for the future.

The fits were also rather more numerous and stronger. They came in their usual relation to a menstrual period, but there were one or two after the period had begun. Has lost 1 or 2 lb. in weight.

Six weeks later the attack had again come after an unusually short interval, and about the same strength as the last series.

Three months later, no fits now for nearly twelve weeks, and then only one slight one. Got wet and a cold just after her last period, and has seen nothing since. Is now on two meals a day and a little fruit only between them.

Three months later, menses still absent. Had a series of fits nine days ago; there were eighteen fits, of which two were severe. B.D. has improved and is

now ·8 ; C.R. 7 ; B.P. 120 ; pulse 84 ; weight 8 st. 7 lb. 10 oz. Bromides have been left off ; she is taking no drugs at all now. Her fits are said to be generally short, lasting four to five minutes.

Five months later, had a series of eight fits, one of them strong. Menses still absent, but this does not appear to have any bad effects. Has now been on the U.A.F. diet for some sixteen months.

Three months later, she had a series of sixteen fits, one only being strong ; most of them were weaker than usual. Has been diminishing food somewhat with the object of lowering B.P. at the time of an attack, but she is always allowed as much vegetable and fruit as she likes. She is a cook and has very hot work, especially during warm weather. Weight keeps steady.

Three months later, twenty-two fits in series this time, three or four of them rather strong. Weight 8 st. 6 lb. 10 oz. Has had less exercise in a new place. Has had one or two slight headaches, but nothing to speak of. Takes no pulses, but occasionally some eggs. I advised her to avoid eggs and to try a purgative pill twice a week, just before the next series were due. Given pil. cal. c. col. et hyoscy.

Three months later, has again changed her place, and has now more chance of exercise and fresh air. Weight has increased to 8 st. 11 lb. 1 oz. Tried the pills before last attack, which gave fifteen fits, none severe. I advised her to rather lose than gain weight and to take the pills if possible before the attack.

Three months later, twenty-three fits in series this time, but all much less severe. Weight 8 st. 4 lb. 6 oz. (*a loss of* 6 *lb.*). She was not able to take the pills. Menstruation still absent.

Three months later, in very hot weather had a series of fifty-one, but all very slight. They came three weeks before they were due. Weight 8 st. 6 oz., a loss of 4 lb. She considers that this series was a great improvement as regards severity, most of them being mere vertiginous sensations.

Three months later, twenty-one in series, three of usual strength, one strong, the rest very slight. She had diminished her food, taking merely a little dry bread and fruit, before the attack was due ; she prefers this to purgation. Weight 8 st. 4 lb., a slight increase again. Has no tingling of the nerves before attacks now.

Four months later, has now been three years on the diet. Weight 8 st. 1 lb. 8 oz. Fits came in two series a month apart, but neither numerous nor severe. Has been cutting down food and fluid before them as much as possible. Pulse 84 ; C.R. 7 to 8 ; B.P. 115 (12 noon) ; B.D. ·75 to ·8 (*not improving, as food is being kept down*). Eyes are still prominent, no myopia.

Three months later, had sixteen fits in last series, and many of them very strong ; this was after hard work and some extra milk and cheese.

Three months later, less work and also less food ; had a series of fits, but all very weak. I advised her to go on (*it is better to have less food and less severe fits*).

Seven months later, had a series of nineteen fits two weeks ago, but none at all severe, mere vertiginous attacks which did not interfere with her work. Weight 7 st. 7 lb. I advised her to get rid of baking powder, yeast and brown bread.

Six months later, she reported thirty fits in last series, but all so slight as not to be worth reporting. B.D., ·85 ; C.R. 9 ; B.P. 100 ; pulse 88. Her muscles are firm and stout, and there is no sign of starvation about her. I advised her to cut off all food and drink for a few days before the attacks were due, or when the first of the series began. On one or two occasions she was able to reduce the number of fits by this method, and once the series was reduced to a single fit.

I then lost sight of her for several years, and only recently came across her by accident, she being cook in the house of a patient. She then told me that three years ago she had had her last series of fits, this being seven years from the date of my first seeing her. The monthly period returned one year before the fits ceased, and is now quite regular, and at times a little profuse. She used to have heats and giddiness with the return of each period, but does not suffer in that way now. Weight 8 st. 6 lb. B.D. ·75 to ·8 ; C.R. 7 ; B.P. 100 ; pulse 85. She still keeps to a strict U.A.F. diet, and has cured several members of her family of various complaints by means of it.

In this case we may note that the B.P. steadily fell as she continued the U.A.F. diet; that in the last record she was as anæmic as at first, having almost the ordinary B.D. of a meat-eater, and one which is very low indeed for a patient who has been on the U.A.F. diet for ten years; that the quick pulse has all through pointed to some weakness of the heart muscle; and that doubtless she has from first to last been underfeeding.

Cure has thus been produced, as in the case mentioned in "Uric Acid," p. 270, by lowering B.P. partly by clearing out and keeping out the uric acid, and partly by debility owing to underfeeding. The heart muscle does not now fail, even though not very well nourished, because the B.P. is never high. But it is possible to keep down B.P. and avoid attacks of epilepsy or headache without at the same time producing anæmia and muscular debility. The cure of Case 20, where the B.D. is very good, the pulse slow, and the C.R. B.P. ratio almost normal, is much more satisfactory than the result in this case. Where the heart is defective, and tends to fail occasionally in spite of a normal B.P., the use of digitalis is indicated, but I think it is advisable to do all that can be done by taking work off the heart and lowering the B.P. before resorting to this drug.

A few years ago the diet of an asylum for epileptics was submitted to me for criticism and suggestion, and I think it may be interesting to give it here, with some remarks prompted by more recent experience. There were four meals a day, in which 23 oz. of bread pudding and breadstuffs, 5 oz. of meat or fish, 1 oz. of cheese, and 8 to 10 oz. of vegetables were given, also three pints of fluid, of which two pints were tea, coffee or cocoa, and one pint lime juice and water. My suggestion at the time was that the tea and coffee should be made as weak as possible, mere water flavoured. That the meat and fish should be diminished in favour of an increased quantity of cheese cooked in various ways, *e.g.*, toasted cheese, macaroni cheese, cheese sauces to vegetables, &c.; and 4 oz. cheese, a quantity by no means difficult for a labouring man, would be quite equal to 6 ozs. of meat or fish. Apart from its flavouring, the quantity of fluid seems much too large, even though these epileptics live a laborious life in the open air. Their blood pressure might be kept down some 20 to 30 mm. of mercury by reducing this to 1½ or 2 pints at most; and it will do them no harm to be a little thirsty at times, and even a good deal of thirst is better for them than many fits, and the bromide necessary to

restrain them. As to the kind of fluid, I think there are few better drinks than a little oatmeal water flavoured with apple-peel, lemon, or a few raisins. It may be given hot in winter, cold in summer, and is the drink that the more thrifty and sensible working men substitute for beer; 1d. for oatmeal and ½d. for raisins should make many gallons of it. The lime-juice and water is rather too acid a drink, especially in cold weather, even for labouring men.

I should now add to my suggestions two meals a day in place of four, as a collæmic circulation does better digestive work on the former number, and dyspepsia is a common initiating cause of collæmic storms, and so of attacks.

### *Neurasthenia.*

Case 1.—A. G. M., female, aged 44. Has suffered with her nerves for years, with ups and downs. Worse since a great shock last year. Full of fancies about herself. Her mother was gouty, also very nervous and excitable (*weak heart, this was inherited*). Had typhoid nine years ago, ill for seven weeks. Eyes slightly prominent. Appetite fair. Sleeps fairly, except when in great trouble. B.D. ·8; pulse 108 (*? some excitement*). C.R. 7·5; B.P. 150 (*i.e., normal ratio, but the quick action shows some weakness or early failure*). Occasional palpitation on exertion or cycling (*this shows the same thing, a heart tending to fail*). Apex beat to left nearly in anterior axillary line, area increased, first sound (*? murmur*), second sound loud apex and base. Is never thirsty (*rule in collæmia*). Pins and needles and cramps in hands, arms, and feet (*i.e., neuritis due to defective collæmic circulation, just as in last epilepsy case*). Has read my books and been trying diet. Flatulence is worse on diet, and head is worse on milk. (*She is taking too much fluid and probably too much breadstuff.*) Has giddiness and rushes of blood to the head. Urine, as sent, 1010; acid, trace of albumin. Microscope. Uric acid crystals, epithelium and a few pale cells (*? leucorrhœa only*).

Such cases of high B.P. lasting over years are practically equivalent to chronic Bright's disease, whether albumin is always present or not. All her other symptoms are results of the defective circulation in brain cortex, nerves, digestive organs and tissues, and these are all intensified as the heart fails, as it is just beginning to do here.

Her present modified diet contains fish or fowl twice a day, tea twice a day, some lithia water and some whisky; so it is far from correct, and contains too much fluid.

The treatment of such cases is (1) to cut down fluids; (2) the U.A.F. diet without much bread or starch; and (3) some heart tonics for a time, after the fluid has been cut down. Such cases, if they merely play with diet, continuing sedative and depressant drugs and going to spas, are likely to end in an asylum, as the heart gets weaker and weaker and becomes at last incurable.

Case 2.—W. H. B, male, aged 52. Complains of giddiness, dyspepsia, and palpitation. Feels as if walking on a quicksand. Used to be worse in the

morning, but a glass of whisky cured him. Is giddy when walking, but not when cycling. Gout in family. Father had giddiness at 70. Mother slight rheumatism. Often suffered from ulcerated throat and has enlarged tonsils (*rheumatic throat*). Teeth drop out (*Rigg's disease, common in high acidity of the gouty*). Sleeps very badly, cannot get to sleep till 3 or 4 a.m. Feels as if dying all day long. B.D. ·75; pulse 72; C.R. 7·5; B.P. 175. Apex beat in left nipple line. First sound long, second sound loud. Heart area enlarged. Liver dulness decidedly increased, edge palpable. Has much acidity and flatulence, which was relieved by a diet of beef and toast. Occasionally takes blue pill. Never thirsty. Lithia and piperazin relieve the palpitation (*i.e., lower blood pressure by temporary clearance of collæmia*). His present diet includes meat three times a day, four cups of tea and at least as many glasses of whisky and water (*this probably accounts for the enlargement of the liver, as there is not much sign of heart failure except the occasional palpitation*). He also smokes a great deal. He takes hot water, for which he is not thirsty, and occasionally bicarbonate of potash or lithia. (*Here we have another case of chronic collæmia and its results, none of which are improved by the alcohol and tobacco used to mitigate its more urgent symptoms.*)

Case 3.—M. C., female, aged 26. Complains of dyspepsia, nerves and palpitation, also considerable flatulence. Has been subject to headache all her life, and now has two every week. Her father has headaches and has improved considerably on U.A.F. diet under Dr. Little, of Great Crosby, who sent this patient to me. Dyspepsia worse two or three years. Palpitation only since the birth of her last child, 3 years ago. Headache is increased on stooping. Is nervous, sometimes excited, at others depressed. Sleeps badly at times when nervous. B.D. ·75; C.R. 10; pulse 96; B.P. 165. Has slight headache this morning. (*Slight headache at* 165; *many have considerable headache at* 140.) Apex beat is to left of left mid-clavicular line, second sound loud, both absolutely and relatively. Has occasionally slight rheumatism in left shoulder and arm. A good deal of flatulence, especially at night, and some palpitation with it. Stomach is down to the umbilicus and there is a slight splash. Menstruation regular, scanty and some pain. Head is bad just before it. Present diet contains meat twice, fish once, cheese once, tea four cups a day, coffee once, cocoa once also.

This case is one of chronic collæmia and resulting high B.P., with headaches marking its exacerbations. The heart is somewhat strained by the labours of a pregnancy; this makes circulation worse, increases dyspepsia, and palpitation shows itself. As further signs of weak heart, we have the quick pulse and the abnormal C.R. B.P. ratio, and the nervousness and excitability are the results of this, while the headache and depression are chiefly related to the high pressure. To lower B.P. by quickening C.R. will cure cure them all, while to cut down fluids is indicated as much for the dilated and splashing stomach as for the dilated and palpitating heart. Migraine has become complicated by dyspepsia and neurasthenia, owing to heart failure under continued collæmia and the added strains of pregnancy.

Case 4.—A. M., female, aged 40. Ill for nine months with attacks of nerve exhaustion and collapse. Head and heart are both affected. Used to have craving for food and sinking after it.

This is very characteristic of collæmic dyspepsia; circulation is so defective in the stomach that digestion comes to a stand, there is a feeling of sinking and loss of strength from deficient absorption of albumin into the circulation.

All the family are anæmic and nervous. Has had occipital headache at times very bad. Feels as if no blood went to the brain. Has attacks of depression with weeping. Occasional palpitation, when she feels as if dying. B.D. ·75 to ·8; pulse 84; C.R. 7·5; B.P. 110. Apex beat not felt, sounds not well heard. Menstruation regular; occasionally excessive quantity; headache generally on first day. Urine 1033, acid, no albumin, no sugar. Not at all thirsty. Sulphate of soda in small non-purgative doses, o.m. has helped the dyspepsia greatly. Has several times been stuffed for neurasthenia; was relieved by it at first, not much the last time. Present diet contains meat three times, fish once, coffee twice and tea once a day. Weight now 11 st. 1 lb. 6 oz. as the result of stuffing, was 8 to 9 st. before. I advised her to go to a bracing climate and get slowly (*one meal at a time*) on to U.A.F. foods. She got on well at first in the bracing climate and lost her palpitation. Later she found herself unable to take enough milk and cheese, and could not complete the diet changes.

She ought to have gone on to a drier diet, with less milk and less breadstuffs; both these are bad for collæmic dyspepsia and flatulence. For the rest this was a case like the preceding ones, mental troubles supervening on collæmia and headache as the heart failed.

Case 5.—N. K., male, aged 72. Complains of dyspepsia, lassitude and a muddled brain. Four years ago went on Salisbury diet, very strict for eighteen months, less strict since. Has read Dr. Dewey's book and given up breakfast. Is a very hard professional worker. Head has improved on Salisbury. Sleep bad and gets worse. Wakes 4 a.m., sleeps later, and is languid and heavy at 7 a.m. B D. ·75. (*A rather poor result for four years of extra meat.*) Pulse 60; C.R. 10; B.P. 165. Apex beat low and outside left nipple line. First sound long, second sound loud. Impulse somewhat heaving. (*Here we have a wrong ratio indicating heart weakness, but the pulse is slow. Looking to the patient's age it is possible that there is some fatty degeneration of the heart muscle.*) He has no dyspepsia on the Salisbury diet (*absence of carbohydrates*), but stomach is down to lower border of umbilicus and there is some splashing (*its reaction to excess of fluid and the collæmic circulation C.R.* 10). He suffers much from piles and some prolapse. His weight has gone down about 1 st. on Salisbury. Very fond of salt and eats it often; has heavy cold in head in morning (*chloridism*). Three months later his circulation was: pulse 68; C.R. 10; B.P. 165, showing but little change. (*Here was a case in which U.A.F. diet and diminished fluids would have done much good, but it was difficult to use either treatment after Salisbury and excess of fluids.*)

Case 6.—F. J., male, aged 75. Said to suffer from gout and neuroses, much nervousness, worry, and weakness. Articular gout off and on since influenza two years ago. Appendicitis two years ago; got well without operation. A single dose of opium produced a convulsive attack. One brother has Dupuytren's contracture. Patient has now been nine weeks in bed, and is getting better of his gout on colchicum and alkalies. Has a tophus in left ear. Sleeps badly, and lies awake much at night. Much depression also. (*Effect of collæmia produced by removal of uric acid from the gouty joint.*) B.D. ·8; C.R. 7·5; B.P. 125; pulse 75. (*Here the B.P. should be* 150, *so there is some weakness, possibly a fatty heart.*) Urine 1018. No albumin. No sugar. His present diet includes meat three times, fish once, egg once, tea twice, also beans, asparagus, and whisky. (*Here again we have chronic collæmia, recently alternating with gout, and becoming complicated with nervousness and depression as the heart begins to fail.*)

Case 7.—M. M., female, aged 40. Subject all her life to pain in the stomach, coming in attacks and ending in vomiting of bile. Thinks the liver does not work. Pain in stomach is relieved by vomiting or by washing it out. Often has much eructation of gas. Had diphtheria as a baby and almost died of it. Had acute enteritis (? cholera) ten years ago. Had a floating right kidney, which has been supported by a bandage for two years. Is nervous but

full of energy. Is slightly depressed when the liver is bad. B.D. ·75; pulse 80; C.R. 8·5; B.P. 125. Apex beat in left mid-clavicular line. First sound long. Gastric attacks now once in three to six weeks. Pain in lower part of epigastrium. The stomach extends to the upper border of the umbilicus and there is a slight splash. The right kidney is easily felt, appears to be enlarged and somewhat tender. Liver dulness somewhat increased, edge not felt. Menstruation painful and scanty, occasionally goes to bed for one day. Urine 1022, acid, cloud of albumin, which microscope shows to be due to leucorrhœa.

These gastric attacks are clearly collæmic storms. Defective circulation causes the stomach to stop work, and its contents ferment in place of digesting. This causes pain, which ends in vomiting, and some reversed peristalsis causes ejection of bile. The liver is enlarged for the same reason that the stomach is flabby and the circulation in the skin slow. These are migraine, or collæmic attacks, without the headache; this patient has a cranial circulation which is not easily affected by high B.P. At present all her troubles are increased by some weakness of the heart, perhaps dating back to the old diphtheria. The signs of weak heart are the quickened pulse-rate and the abnormal ratio of C.R. to B.P. This weakness doubtless reacts on the condition of both stomach, liver, and kidney, as well as accounting for her nervousness. All people with weak hearts are nervous, and more nervous when the heart is worse, less nervous when it is better and stronger. Displaced and floating right kidney is very common with dilated and splashing stomach; probably, like the congested liver, they are all results of congestion and relaxed fibre from collæmia and a weak heart. The indications are clearly to cut down fluids, to ease the heart, and to clear up the collæmia by withholding uric acid. The whole trouble will clear up just as migraine does, unless there is some defective development, as well as defective nutrition of the heart muscle; but even this may improve, given time and fairplay, which latter they are very far from getting under present conditions.

Case 8.—R. E. N., male, aged 42. Dyspepsia and constipation since a child. Nervous also, and worse since influenza two years ago. (*Probably influenza weakened the heart and precipitated a chronic collæmia.*) Has been trying U.A.F. diet for some time, but cannot eat cheese. Mother and father are nervous and dyspeptic (*congenital tendency to weak heart*). Had measles and scarlet fever as a child, rheumatic fever at 15, 17 and 18, chronic rheumatism ever since. Influenza twelve years ago, was delirious in first attack (*another sign of weak heart muscle*). Fifteen years ago intestinal catarrh, severe abdominal pains with passage of blood and mucus (*? rheumatic colitis*). Headaches occasionally when bilious, and is worse after fatigue (*a common cause of collæmia*). Skin rather puffy. Has rheumatic sore throat, tonsils removed five years ago. Sleeps badly of late years. Cannot get to sleep. B.D. ·75; pulse 84; C.R. 8; B.P. 145. Apex beat about left nipple line. First sound long, second sound loud. (*A hypertrophied and dilated heart showing signs of impending debility of muscle.*) Has feelings of fulness and emptiness (*signs of*

*collæmic dyspepsia and slow or imperfect digestion*). Stomach extends to lower border of umbilicus. (*His dyspepsia is due to defective circulation and is a cause in its turn of increasing debility. Increasing debility of heart muscle is the cause of the nervousness*). This patient has been doing U.A.F. diet incorrectly, and did not know how to make it suitable for both his rheumatism and his dyspepsia.

Case 9.—E. C. K., male, aged 45 (medical). Headaches fifteen or twenty years; worse the last five or six. Wakes with headache in the morning, it may go off about 8 or 9 p.m. Generally on the right side. Father's brother has much headache. Family dyspepsia. Scarlet fever at 12. Spasmodic cough as a child and very delicate. Teeth all artificial. Appetite fair. Is easily worried and is depressed when he has a headache. Sleeps well. Pulse 88; C.R. 7; B.P. 120. Apex beat in left nipple line; first sound long. Has occasional pain in epigastrium but not much dyspepsia. Stomach extends quite to the lower border of umbilicus and there is a splash. (*Here again migraine followed by nerves and depression with fairly marked heart failure and dilated stomach; there is no end of similar cases.*) Diet includes meat twice, fish and egg once, and tea twice a day, soup occasionally. Drinks less than most people, does not perspire much (*these are in the rule*).

Case 10.—G. C., male, aged 59. Attacks of vertigo, which began one month ago; they make him more nervous. Some vertigo five to ten years ago. Has a sensation of heat in his legs, and face gets pale in the attacks. Had fever in India twenty years ago. Doctor has advised him to diminish smoking and avoid strong tea. Is nervous, tremulous, and excitable. Has never had a headache (*some heads are little affected by any change of B.P., but still the other results of defective circulation go on*). Is a large eater and sleeps well. B.D. ·8; C.R. 9·5; pulse 80; B.P. 155. Hand tremulous. Apex beat outside left nipple line, late systolic murmur at apex. Second sound loud at base. (*Here is a heart of chronic collæmia, enlarged and beginning to fail, hence the nervousness and tremor. The heat in legs is a sign of neuritis from defective circulation.* Stomach is well down to umbilicus, but there is no splash and he does not complain of dyspepsia. Diet includes meat twice, fish and eggs once, tea or coffee three times a day. He drinks claret and hock and smokes strong cigars. (*No wonder circulation is bad and function tottering. He was frightened of U.A.F. diet, or loved his stimulants too much to give them up. The slavery of stimulation under such conditions is strong.*)

Case 11.—C. McA., male, aged 53. Pain in head after "breakdown" two years ago, with congestion of the brain and nervous exhaustion, and loud noises in head. Has done no regular work since, and always has some giddiness and pain in the heart. He was told to take life easily, and went round the world. Has been a hard worker. Had blood poisoning from drains eight years ago. Considerable pain in left parietal region, which gets worse when a giddy attack comes on. Noise is worse on left side. Aural surgeon said nothing much wrong. Appetite good. Slightly depressed. Sleeps fairly, has bad nights when vertigo is worse. B.D. ·75; pulse 80; C.R. 8·5; B.P. 125. Apex beat not made out, first sound long. Gets an attack of vertigo at once on going out into cold air (*contraction of surface vessels and rise of B.P.*). Has had tonics, but they do no good. (*This is the rule, a tonic only increases the pressure and defective circulation in the skull* (*as does cold air*); *but lower B.P. by diminishing fluid and collæmia, and then a tonic will do good.*) Diet includes meat twice, egg or fish twice, soup once, tea or cocoa twice, wine or whisky twice. He is not thirsty and yet he takes 2½ to 3 pints of fluid per diem.

Such a case would have to be distinguished from an intracranial tumour, if not by duration of symptoms, then chiefly by absence of neuritis and presence of enough uric acid in the blood to account for the slow circulation.

Case 12.—R. M., male, aged 55. Debility and weakness, increased by influenza seven weeks ago. Is worried and badly nourished. He has been a vegetarian for some years; the diet has done him good but he is still badly nourished.

Before being a vegetarian he went on the meat cure, and it improved him for a time, but he got dyspepsia. Left ear deaf and he has noises in it. Is often much depressed. B.D. ·8; pulse 52; C.R. 6·5; B.P. 135. Apex beat well outside left nipple line. First sound long. Stomach extends two fingers breadth below umbilicus and there is a splash. His diet includes wholemeal bread, nuts, rice, macaroni, cream cheese, milk, hot water, vegetables, salad and fruit, egg occasionally. He is apparently taking about 770 gr., and he requires at least 1,020 gr., so he is decidedly underfeeding. (*The slow pulse is probably due to his underfed condition, for the pulse in starvation is usually slow, and he has not been at it long enough for the heart to be weak.*) I put him on right quantities, and a few weeks later his B.D. had risen to ·9; C.R. 6·5; pulse 64; B.P. 140; and he felt considerably stronger and better. He had some flatulence from mixing acid fruits with his carbohydrate foods. (*Vegetarians frequently underfeed from knowing nothing of food values.*)

Case 13.—J. R. H., male, aged 35. Complains of having no strength and being soon finished. Comes over sick and queer when going about. Father's family suffered from sluggish livers. Patient low fever at 18. Had much worry this last year. Loss of memory last two months. Appetite bad, much flatulence. B.D. ·75; pulse 76; C.R. 10; B.P. 125. First sound long. Apex beat in left nipple line. Stomach down to upper border of umbilicus, no splash, not tender.

Here we have slow circulation, a collæmic stomach, dyspepsia and underfeeding. The heart muscle was weak, hence the abnormal C.R. B.P. ratio, but the pulse was slow owing to his underfeeding; he was also anæmic.

I tried to get him on to two meals a day and diminished fluid, but my directions were not properly carried out. (*He was a collæmic, like his father's family, and was becoming neurasthenic as the heart got weaker owing to chronic dyspepsia.*)

Case 14.—F. G., male, aged 39. Complains of atonic flatulent dyspepsia with debility and nervousness. Never very robust. Has occasional headache and neuralgia and is sometimes depressed. Appetite good, sleeps fairly. B.D. ·85; pulse 72; C.R. 10; B.P. 155. Artery tortuous, pulsation visible. Apex beat in left nipple line. First sound long. Flatulence varies and is worst after breakfast. (*This is not the rule, it is generally worse in the evening.*) Stomach extends quite to the umbilicus, and there is some splash. Urine 1018. No albumin, no sugar. Was at one time a great meat eater, 16 oz. a day (*hence his high pressure circulation and tortuous arteries*). Now, some 8 oz. meat and some eggs are his only poisons. He was put on U.A.F. diet, and a month later his circulation was: pulse 68; C.R. 9; B.P. 140. Still has nerves and liver, but not so bad. Stomach same size and still splashing. Three months later, pulse 68; C.R. 7; B.P. 130. Six months later, or ten from first visit, pulse 68; C.R. 7; B.P. 135 (*a more normal ratio*). Had increased 10 lb. in weight and felt better for it. He was still taking too much fluid (milk), and stomach was splashing. He had such a poor appetite for solids that it was difficult to feed him with less milk. Nine months later he was still suffering from flatulence and acidity, but B.D. had risen to 1·05, a considerable improvement, and he had gained more weight. Pulse 70; C.R. 7; B.P. 140. He only required a little adjustment of foods and cutting down of fluids to be quite well.

I give this case in contrast to some of the preceding ones, as it was clear that we had here little or no heart failure, and the nervous symptoms were not nearly so severe as in some of the previous cases, where we had not only a dilated and splashing stomach, but also a dilated and failing heart. The C.R. B.P.

ratio was not correct at first, but the pulse was never quick, and the ratio soon became more normal as the effect of improved diet. Here we had practically the effect of collæmia and high B.P. alone on the cortical circulation of the brain. The effects of such collæmia vary considerably in different persons according to the shape of the skull and its foramina, the size of the arteries at the base of the brain, the thickness of membranes, closure of foramina, &c. (the anatomical factors); but in all cases the effects of collæmia, whether of themselves important or not, are greatly intensified if heart failure is added. I believe that in all severe cases of nerves or neurasthenia, where there is marked œdema of the brain membranes, there is also clear evidence of heart failure and dilatation.

Case 15.—F. Y., male, aged 27. Has difficulty in settling down to any work. Head gets heavy after meals, and he takes no interest in things in general. Both father and mother have headache; one brother headaches occasionally, and a cousin has them. Patient has always had headache since the age of 8; had rheumatism in shoulder at 14; scarlet fever at 21; nervous breakdown five years ago; was in South African war four years ago; headaches general, but worst pain over the eyes; skin slightly puffy; catarrhal deafness in left ear; nasal catarrh; is neurasthenic and often very depressed. B.D. ·85; pulse 60; C.R. 8; B.P. 130 (*? is he underfeeding, hence the slow pulse and defective C.R. B.P. ratio*). Apex beat in normal place; first sound long; skin all covered by papular rash; has undergone the Lebenswecker treatment, which clears poisons out of the system by producing a rash on the skin.

No doubt some uric acid is thus deflected from the circulation to the surface, reversing the old observation that rapid cure of skin irritation, where uric acid goes the other way, from skin to the circulation, often leads to serious results, such as cerebral hæmorrhage, heart failure and dropsy.

He has fulness after food, and slight pain in the left hypochondrium, and the stomach extends to the lower border of the umbilicus. On Weir Mitchell treatment he increased 2 st. in six weeks, but felt nearly mad after it, as his headache was much worse and he was more restless. Present diet includes meat once, fish once, and five cups of tea, which he takes to relieve the depression.

He is still pouring in poisons, though trying to clear them out by the skin. His food seems deficient in albumin, and the slow pulse is probably due to this; there is no sign of heart failure, and he obviously suffers more from headache and collæmic high pressure than from neurasthenia, though his heart probably failed for a time five years ago, and if he allows collæmia and dyspepsia to continue it will fail again.

Case 16.—D. T., male, aged 38 (medical). Complains of debility and intermittent pulse, worse after heavy meals. Has had heavy strains and family losses; always suffered with headaches since a boy of 10; tried Turkish baths, got

debility and heart weakness, and headaches fell to one in a month. (*This is not cure of migraine, but substitution of debility, which is worse.*) Then got pain in chest, and pulse found to be intermitting 1 in 4; two weeks ago had palpitation in the morning. B.D. ·75; pulse 84 (*intermitting 1 in 4 would make it about* 100); C.R. 7·5; B.P. 115. (*Very marked heart failure.*) Heart's area increased, apex beat not felt, first sound short and flapping; liver dulness is increased, but edge cannot be felt; urine 1029; trace of albumin, no sugar, *i.e., a congested liver and kidney;* has lost 7 lb. in weight over the Turkish baths. I advised tonics and retentives, but a week later pulse was 80; C.R. 7·5; B.P. 110. I advised nux vomica to be continued for a long time. He took a holiday and went for a voyage, and three months later there was less intermission, no pain in chest, and can lie on right side in comfort. Pulse 64 (*add 1 in 6 = 74*); C.R. 6·5; B.P. 115 (*this is an improvement, but still much to do*). Advised continuation of tonic, and diet to diminish collæmia, if possible. He had tried diet wrongly with some increase of dyspepsia.

*Same patient nine years later.*—Still suffers from migraine, which he cures by aspirin. Has never been able to manage U.A.F. diet. Now complains of vertigo and insomnia. Is giddy, especially on rising after food. Has occasional vomiting also. Head feels constricted while working. Eyes are painful from want of sleep. Right ear has singing in it. Some slight naso-pharyngeal catarrh. Wakes 3 a.m. to 4 a.m., only four hours of natural sleep. B.D. ·75, no improvement. Pulse 84; C.R. 8·5; B.P. 175; flattened 230. Pulse rises to 90 on exertion. Is only intermittent now occasionally after breakfast. Heart area increased to the left. First sound long or late systolic murmur. Second sound loud. The liver dulness is about half what it was nine years ago. Urine free from albumin. Stomach one finger's breadth above umbilicus. No splash. Dyspepsia only occasionally now. Weight has increased nearly a stone since last seen.

Here we have a heart the left side of which has hypertrophied and gradually brought the C.R. B.P. ratio nearer normal; the intermittence is only occasional, and this and the quick rate alone show any tendency to weakness. The tonics and rest have done their work and the heart muscle has hypertrophied. With this the congestion of liver and kidneys have vanished and the dyspepsia has diminished. When first seen he was just hovering in the balance between heart failure and death, or hypertrophy and longer life, and the balance turned to the latter, but obviously the result would have been better and more lasting if collæmia and anæmia could have been wiped out of the case by diet. The points of most interest in this case are the relation of the intermission and precordial pain to the heart failure; as I point out on another page, such precordial pain is common in melancholia, and heart failure is its cause, *i.e.*, the cause of the cerebral œdema and defective circulation in the cortex. We here see also the relation of the enlarged liver, the congested kidney, the dilated stomach and dyspepsia to the circulation changes, and to the condition of the central organ of the circulation.

Case 17.—E. F. K., female, aged 38. Complains of slow loss of weight for two years since a shock by death of child. Feels as if her heart was feeble, and feels "awfully done." Family gouty. Mother's sister very gouty, goes to Bath. Father died of diabetes. Hysteria in family (*weak heart again*). Had "gout"

in the heel at nine years old. Rheumatism always, especially after each child. Influenza last year and has not enjoyed food since that. Much neuralgia of late (*defective circulation in nerves*). Has "faint turns" with violent vomiting in attacks, two in last six months (*? collæmic storms—petit mal*). Had nervous breakdown when sixteen. Has much worry and cannot sit idle (*i.e., anything to distract thoughts, which are painful*). B.D. ·75; pulse 92; C.R. 8; B.P. 135. First sound long. (*This ratio, with a quick pulse, points to obvious cardiac debility.*) Had dysentery in Russia six years ago (*a cause of general debility*). Food all turns acid, stomach one finger's breadth below umbilicus and splashes freely. Liver dulness moderate size, certainly not diminished. Menstruation regular, some slight pain. Three children, last eight months ago. Urine high specific gravity, very acid. Walks a good deal but hates it (*I do not wonder, a weak heart like this requires rest*). Diet includes meat twice, fish or egg twice, tea four to five cups a day. Took more than this up to twelve months ago. Unfortunately, she loathes milk, does not like cheese, and could not possibly digest nuts. (*Complete U.A.F. diet is almost impossible for such a patient, but the important thing for the heart is to cut down fluids and give up tea, and she must make up albumin by eggs, fish and fowl till she is stronger.*)

Case 18.—J. D. K., male, aged 43 (native of India). Complains of "mind wandering" when in Bombay, also occasional headaches, three or four in a month. Is fairly well at present, and when not in Bombay. Has been subject to mind wandering for three years. No dahl for two years and then only occasionally. Has some pains in the joints of his hands. Has great forgetfulness, even his wife's name, also loss of energy and exhaustion of body and mind. Mind wandering is in the family (*? tendency to weak heart*). His father committed suicide last year. One brother and one sister also mind wandering. Malaria when young, and sunstroke fifteen years ago; since that gets headache on slight exposure to sun. Is irritable, and always in fear and trembling; has no power for business. Never refreshed on waking in morning. Occasionally has insomnia for two or three days. B.D. ·85; pulse 88; C.R. 8·5; B.P. 145. Breath is short on exertion. Apex beat is in left nipple line, and first sound is long. Has considerable flatulence, bowels act once or twice a day, never constipated. Urine 1014, acid, trace of albumin, no sugar. Has been on a vegetarian diet, but no use. Calomel ½ gr. relieves the headache at once, not the mind wandering. Mind gets well at once on coming away from Bombay. When there he has excessive perspiration and cannot wear a shirt. Diet includes meat twice a day, fish twice, tea or coffee twice, wine or beer twice. No appetite for food in Bombay, only takes quarter the food he takes here. Has noticed that his head got worse when he increased his peas and beans. Says soldiers in India get 3 lb. of beans a day and take opium as well.

Here we have collæmia with fairly marked cardiac debility, causing some œdema of brain membranes, especially when both collæmia and debility are increased in the heat of Bombay. Calomel will quicken the circulation, but it takes time to relieve the œdema of the brain.

I advised him to go to a cool climate, to try U.A.F. diet for eighteen to twenty-four months, and then to face Bombay again. I also gave him some aspirin to clear out his stores while in this country. A month later he said aspirin had done good. A month later his pulse had slowed to 76. C.R. 7·5; B.P. 135; showing still some heart weakness. (*In Bombay he ought to live largely on fruit, and depend on that chiefly for his fluid, so as to diminish the chance of œdema of the brain.*)

Case 19.—E. E., female, aged 21. Complains of acute depression alternating with excitement. Her mother's mother suffered from very bad headaches. Measles and mumps as a child. Occasional sore throat, congestion of lungs three years ago. Skin of face slightly puffy. B.D. ·8; pulse 96; C.R. 10·5; B.P. 165. Apex beat in left mid-clavicular line. First sound long. Second sound loud at base. Heart area enlarged, especially to the left. Liver dulness

is somewhat increased. Stomach is down nearly to umbilicus, but there is no splash. She is living on a very foolish vegetarian diet, containing deficient nourishment, and yet some of the poisonous pulses.

This case was so severe that her friends were advised to consult a neurologist, but I give these notes to show that we had here just the ordinary conditions of collæmia with a family history of headaches. There were marked signs of heart failure in the quick pulse and the abnormal C.R. B.P. ratio. If the heart failed still more markedly under the influence of menstrual pain and deficient food, depression would no doubt give way to more or less severe excitement; but, if she could be fed up so that the heart should recover some of its lost ground, the excitement would in its turn give place to depression. So long as the mental condition varies absolutely in accord with circulation changes I regard these as circulation diseases, and believe that treatment of causes may bring about a cure. The difficult point is what to do with such cases while depression is severe and danger of suicide considerable, for no efficient treatment of the circulation has yet been attempted in houses and asylums for the insane, nor is any such treatment possible under the prevailing beliefs as to food and feeding.

Case 20.—W. A., male, aged 56 (medical). Complains of chronic arthritis, with general debility and neurasthenia. The arthritis is relieved by salicylates. This, however, caused some irritation in the urinary passages, which had to be relieved by potassium citrate and hyoscyamus. Has some buzzing in the ears. Pulse 80, feels high tension with long systole. Second sound loud at right base (*this was in pre-instrumental days*). A trace of albumin has been found in the urine on several occasions. Diet includes meat twice, eggs twice, tea or coffee twice a day. A rather large eater of meat. I advised diminution of meat and increase of cheese, and he improved on this and began to feel better, but his pulse was occasionally irregular and intermittent. I tried to get him to take enough nourishment, and three years later his friends thought him nearly as well as he could be, and he was then having a little meat only once a day. Next year he complained of palpitation and irregular action of the heart and of sleeping badly on this account. He has also considerable flatulent dyspepsia. I was now able to measure his circulation and found pulse 84; C.R. 8·5; B.P. 130 (*very obvious debility of heart muscle*). Says he is always more or less depressed and very nervous. His diet is by no means U.A.F.; he even takes meat soup (*too much rubbish and not enough good nourishing food, also far too much fluid, being under the influence of the washing-out plan. Yet he probably does not even wash out as much as he puts in in soup*).

I did my best to alter these unfavourable conditions, but prevailing superstitions were too strong for me, and I am bound to acknowledge that he had a little gravel, a condition unfavourable for great reduction of fluids. I give the case to show that cure is impossible when uric acid cannot be shut out, when fluids cannot be reduced, and the failing heart saved from inevitable and progressive dilation. Under the treatment I now use in such cases, where

plenty of albumin is supplied without any uric acid, and where both stomach and heart are relieved by cutting down fluids, many years of useful life could, I have no doubt, have been added.

Case 21.—E. H., male, aged 44. Complains of attacks of "liver" every three months or so. Is depressed with the attacks and suffers with more or less marked hysteria in the severe ones. Had fits at five and twelve years of age. Attacks are followed by a rise of temperature, in which they resemble those of paroxysmal hæmoglobinuria. (*This case is mentioned in "Uric Acid," p. 557, under the heading "Paroxysmal albuminuria" and I give here merely the circulation conditions and their bearing on the mental symptoms.*) In an attack he may go to bed all right and then wake in the morning with shivering and retching, but does not vomit. He is restless and depressed and if the attack is severe becomes hysterical (*i.e., if the heart fails*). The liver enlarges at time of severe attack, and may then be as much as three finger-breadths below the ribs (*we have seen the meaning of this in some previous cases*). The attacks, as we see, begin in the morning (*alkaline tide collæmic period*). Tongue: yellowish coat, is never clean. Pulse tracing shows very high first wave, little or no dicrotic wave, rate 54. Apex beat in left nipple line. First sound long and second sound loud. Liver dulness is full size, but the edge is not now to be felt. He is not now hysterical, there is no present heart failure, and therefore the liver is not specially congested.

We have here, then, a case of chronic collæmia with paroxysmal exacerbations (uric acid storms) every two or three months, in which there is sometimes a paroxysmal albuminuria, and if the heart fails congested and enlarged liver; and the misery and depression of collæmia changes to hysteria. With our previous experience of such conditions this pathology is quite simple.

His diet includes meat twice in large quantity, tea twice, wine or whisky twice, and cheese once a day. I advised that his meat be reduced to half and then to a quarter, and then, if enough cheese and breadstuffs could be taken, left off entirely, and the same with tea. Seven months later he had carried out the diet alterations. Does not feel quite so strong, but has not taken as much cheese as was ordered. Urine has specific gravity 1020, and is free from albumin. Pulse 66. Tracing still showed high tension, but not so high. First sound long or slightly reduplicated, second sound loud everywhere. Liver normal. Apex beat same place. He was given some iodides for a time, together with improved and more complete U.A.F. diet, and his attacks gradually diminished in frequency and severity, and in three years time his doctor was able to report that he had not had one of his attacks for more than a year. (*Here, in contrast to previous cases, the cause being removed the effects departed.*)

Case 22.—W. B. F., male, aged 44. Complains of gastric troubles since 13 years of age. Has "neuralgia of stomach" in attacks lasting two or three months. Seven years ago had pleurisy and has been weak since. Two years ago gave up meat, but took too little food and lost weight. Has recently been at Nordrach feeding up. One uncle and a brother died of phthisis and another brother died of lung trouble. Was two months at Nordrach; his temperature was first below normal and then rose to normal. Has had "head neuralgia" (? *migraine*) for years, and had to work through it. Suffered from collapse fifteen years ago. Sleeps badly as a rule, and occasionally is very nervous at night and feels as if going mad. B.D. ·75 to ·8; pulse 92; C.R. 7·5; B.P. 130. His breath has been short on exertion for a long time and he often sighs. Apex beat in left nipple line. Area increased, especially to left. First sound long, second sound loud. Lungs no definite signs. Never had hæmoptysis. Was probably only fed up on account of his debility and family history. Liver dulness is not increased. Stomach rather low and splashing. His nervous depression and insomnia go together, and he then cannot think of anything

naturally. At Nordrach he was forced to eat and eventually his stomach got better. Thinks some stomachs will not stand this. Present diet contains meat three times, fish twice, egg once, soup once, coffee once a day. Smokes cigarettes twelve to fourteen per day. I advised a gradual diminution of the poisons in his diet, also of the cigarettes, and prescribed heart tonics. A year later had had many and various experiences, had attempted U.A.F. diet several times; milk makes him bilious, and finally stomach gives up work and he can digest nothing. Had a bad attack of bronchitis in April and his left lung was slightly affected. (*He had no doubt plenty of poison in him to account for his getting bronchitis.*) He then read Dr. Dewey's book and went to see him, spending two days with him. Dr. Dewey put him on one meal a day and a small snack in the evening, if necessary. He at once got better power both of mind and body. His mornings became comfortable, and he could work. Only fish and fowl, no meat. On Dewey diet he lost 15 lb. in five weeks, and stomach got smaller (*i.e., diminished flatulence*). Has been on three meals during voyage to this country, and therefore lost some of the benefit of two meals a day, but he notices that he is calmer in mind on diminished meat. He spends much time in chewing his food, according to Dr. Dewey's orders, Says Dr. Dewey looks strong, bright and cheerful. Sodii bicarb. relieves his stomach greatly, but has hardly had to use it at all since he saw Dr. Dewey. Pulse 92; C.R. 6·5; B.P. 135; B.D. ·8.

There is still some heart weakness as shown by the quick rate, but the C.R. B.P. ratio is about normal. This is a probable result of the Dewey treatment which, as will be noticed, I now use in all these cases.

His New York doctor says his lungs are now absolutely clear, but that his circulation has been defective since childhood, (*i.e., he has been a constant poison taker*). Sodii bicarb. eases the colic but makes the head worse. A day without food makes the head better and gives him back his strength and clear eye; but mental torture increases after each meal. Has bulimia at times, (*i.e., collæmic dyspepsia and false hunger*). Has recently suffered more from vertigo, high B.P., agoraphobia and signs of neurasthenia; also occasional feelings of pressure in the region of the heart, and no wonder, as he is at present taking three to four pints of fluid in a day. Last year at Homburg nearly fainted with vertigo and bad head. A month later complains of getting tired in afternoon, and has acidity at night. Still feels like a worm. Pulse 88; C.R. 9; B.P. 110, first sound long or late systolic murmur (*these showing marked cardiac debility*). I did my best to get him to continue Dr. Dewey's two meals a day and to keep down fluids, which had often been excessive. I also gave nux vomica, to be continued for a long time in increasing doses.

I give this case chiefly for its interesting history of Dr. Dewey's treatment, as administered by himself. It was an obvious case of chronic collæmia, weak heart and neurasthenia, and Dr. Dewey's treatment did more good than anything else, and would probably have cured him completely if he had kept to it properly, and had also cut down fluids and made his diet U.A.F.

Case 23.—M. M., female, 76. Complains of loss of memory and mental excitement, increasing during the last eighteen months. Is most excited and unmanageable in the evening hours. Has always been strong-minded and comes of a gouty family. Father gouty and died young. His sons the same. Suffered for years from dilated stomach and "gastro-intestinal intoxication" (*for which we shall probably not be far wrong in reading collæmia and defective circulation in stomach and intestines*). Five years ago had cerebral hæmorrhage, but recovered well (*another sign of defective circulation, not yet claimed as due to microbes*). She sleeps badly, wakes early, and has nightmare. Is not depressed. Pulse 96; C.R. 7·5; B.P. 135. Second sound loud. Suffers from constipation

and takes Kutnow's salts. There is some œdema of the legs. Is taking bromide for the excitement (*a cardiac depressant*). Her diet includes meat once or twice, fish once, soup once, coffee, tea, whisky and brandy each once. She has been a great tea-drinker. When she stopped the bromide for a few days her excitement got worse.

This case is not difficult to read in the light of some previous ones. Clearly a gouty patient with years of collæmia and excess of tea, both head, heart and stomach being affected by it, and ending in cerebral hæmorrhage. Since that progressive heart failure, as shown by the circulation measurements and the œdema of the legs. The increasing mental excitement is here, as always, a result of the heart failure, and it is worse in evening and night for quite obvious reasons.

I advised nux vomica as a cardiac tonic, gradually increased, the bromide to be diminished and left off. This was done, and a week or two later her doctor reports "The periods of excitement which occurred so regularly of an evening have ceased."

If we raise the pressure too much we shall have another hæmorrhage, if the heart fails too much we get excitement; such cases are essentially incurable, though prevention would have been easy by stopping the food poisons twenty years ago. I do not say that even here life may not be considerably prolonged, but one rarely gets a chance of supervising such cases sufficiently closely.

Case 24.—M. F. B., male, 52. Complains of rheumatics and lumbago. There is brain trouble in family. Often has dull occipital pain in the morning and vertigo along with it; they wear off later. Father died at 52 of melancholia. One brother suicide from sunstroke in the East. One brother dumb and in asylum. Father's brother died in asylum. Six years ago saw London doctor, who ordered him extra meat and wine and to live like a fighting-cock.

This is what I call piling on full steam and sitting on the safety-valve—it does good for a time by clearing the blood of collæmia by high acidity and stimulation, but it leads to considerable disaster if any of the tackle breaks.

Worries a great deal over things. Sleeps badly, wakes in early a.m. hours, and remains awake. Appetite good. B.D. only ·75 in spite of all the meat and wine. Pulse 80; C.R. 8·5; B.P. 190. Apex beat at least one finger-breadth outside left nipple line, heart's area enlarged. First sound long, second sound loud. Has slight cough in the morning (*congested bronchi. There are very few people who would not have some "brain troubles" with a circulation such as this*). Urine 1018. Acid, cloud of albumin. No sugar. Micturition once in the night. Liver dulness is not increased, but there is much emphysema. Present diet includes meat twice or three times, fish twice, coffee twice, tea and soup each once a day. Has to entertain and be entertained a good deal. I advised a slow alteration of diet, and to get rid of tea, coffee and soup as soon as possible. Is frightened he will lose his strength if he gives up meat. (*And yet this is the poison which is endangering both life and sanity.*) Eight months later, has been abroad for a holiday. Has had some eczema, chiefly on legs. Pulse 72; C.R. 7·5; B.P. 135. Diet has been altered, but still takes a little fish and fowl. B.D. ·75 to ·8, *i.e.*, better. I did not see him again for two years, when he

reported that lumbago and rheumatism had quite gone. He feels weak, and still sleeps rather badly, his will-power is diminishing, has an insufficient appetite and does not eat enough food. B.D., however, has improved to ·9; C.R. 6·5; pulse 68; B.P. 135.

The slow pulse is due to underfeeding, and his B.P. has fallen greatly, but no doubt part of this is due to present underfeeding, and hence his diminished will-power. What these poor collæmics, with their muddled brains, cannot understand is that they must not entirely give up their meat till they can take enough of the alternative foods. Here there is a great big man of 16 st. who cannot manage more than 1½ oz. of cheese in a day—a day labourer would easily take more than twice that quantity at a single meal. Rich people with luxurious and tasty foods have utterly ruined their taste for what is natural and simple, hence so many of them are practically incurable. They seem to put every possible difficulty in the way of reform, and yet it is their own lives or their sanity that depend on it.

Case 25.—M. S. G., female, age 36. Complains of debility with depression and irritability, worse at times, especially at the monthly period; occasionally lifts for a little. Had a shock at the age of 19, and nerves have been upset since, also suffers frequently from anæmia and debility. Has had influenza three times. Her head aches a good deal at times. Has been a bad sleeper. B.D. ·75; pulse 88; C.R. 8·5; B.P. 125. Apex beat normal place. First sound occasionally ends in a murmur. Has some flatulence, weight, and discomfort after food. The stomach is down to the lower border of the umbilicus. Suffers from chronic constipation, which is increased by fatigue. Has feelings of empty sinking in the night and has to take a biscuit. (*This is very characteristic of collæmic stomach and defective digestion, especially if complicated, as in this case, with some weakness of the heart.*) She had been attempting U.A.F. diet for some eight to nine months, but had been taking too much fluid and sloppy food for such conditions.

Case 26.—M. B., female, age 52. Complains of insomnia and mental trouble. Had insomnia and peculiar ideas after influenza five years ago, and the same twelve months ago and since. Never mentally strong, her family the same. Has no energy in the morning; subject to heats and flushes. Now suffers from lethargy and depression and finds life a burden. Sleeps badly and wakes often. B.D. ·85; pulse 88; C.R. 8; B.P. 120. Apex beat to left of mid-clavicular line; first sound reduplicated. Often feels faint and looks pale. Often dyspepsia and flatulence. Bowels act only with cascara. Urine 1028, acid, no albumin, no sugar. Some œdema of legs. Complains of numbness in left leg, of which veins are somewhat enlarged.

Here, again, heart failure and neurasthenia. She has previously been given heart tonics, which make her stronger but bring on headaches in the morning. The explanation of this is obvious. One must in such cases strengthen the heart only after lowering B.P. by diminishing fluids. Then one gets a stronger heart without increased pressure and its result, headache.

Her present diet includes meat twice or three times, egg once, soup once, tea or coffee three times a day. She is very fond of tea. As her pulse remained fast I suggested some nux vomica and digitalis in small doses long continued;

and later on this was changed to strychnia, arsenic, and dilute phosphoric acid. Three months later she said she felt perfectly well and could do anything. Is still very fond of coffee and tea, but these and her meat have been greatly reduced. Since feeling right in herself has had some headaches, especially on waking in the morning, also slight rheumatic pains in hands and feet. Pulse 78; C.R. 6·5; B.D. ·85; B.P. 130 (*a slower pulse and a normal ratio*). I advised a continuation of as U.A.F. a diet as possible. A month later I advised her to use a sulphate water in the morning to cure her headache in place of tea (*i.e., a retentive in place of a xanthin compound*). A month later the report is, "Am now feeling quite well and sleep grand from 11 p.m. to 5 a.m." There is some pain in toes and great stiffness in joints. Asks if a Turkish bath would relieve? (*Here we had a sulphate given to cure headache and producing retention, i.e., arthritis.*) I said Turkish bath might bring back the old collæmia, nerves and insomnia, and advised a little oil of wintergreen locally for the joints.

Case 27.—A. E. H., male, age 46. Complains of dyspepsia with depression and exhaustion after meals. Has had acidity of stomach since 17 or 18. Began to smoke when 9 or 10 years old, got dyspepsia and heartburn from it. Always subject to some headaches and bad colds. Also has chest pain and palpitation at times. Head pain is generally occipital. Skin slightly puffy. Has ravenous appetite but does not eat on account of acidity. (*Probably "ravenous appetite" is only a symptom of dyspepsia; natural hunger is not ravenous.*) His depression is increased by wind and acidity. His present trouble is lethargy and depression; he sleeps badly, and never after 2 a.m. B.D. ·7; pulse 72; C.R. 7; B.P. 140.

Here we have some collæmia but no immediate signs of heart failure, and yet he had puffy skin and probably some œdema of the brain. It is possible to have œdema of the brain without heart failure (see "Uric Acid," p. 247), but my point with regard to other cases is that those who do not get œdema of the brain cortex from collæmia alone are certain to get it if the heart fails. Probably this patient has heart failure at times when he has a collæmic attack and there is palpitation.

Liver dulness is diminished, urine free from albumin. He suffers from the dyspepsia of collæmia, with the bulimia and starch dyspepsia so common in these conditions, and some puffiness of skin and brain membranes causing depression. Has already been put on U.A.F. diet by his home doctor (Canada), and tonics, such as nux, acids and valerianate of zinc have done good. Probably there was more heart failure before these tonics. He is, however, taking 60 oz. of fluid per diem (*which is a great mistake*). Urea was estimated and came out 2·8 gr. per pound on 205 lb., so he is not having too much albumin. Three months later, has had two uric acid storms since last seen. Feels dull and much exhausted after his day's work. Pulse 64; C.R. 6; B.P. 120. Has difficulty in taking enough food and consequently has to make up with milk, the fluid of which is bad for him. His intestinal rumbling and griping pain is cured at once by bicarbonate of soda. Three months later C.R. 7; B.P. 140; pulse 60. Has been to Canada and is better in a cold, bracing climate. (*If his heart were weak he would be depressed by cold.*) He wants to go to the Gold Coast, but I advised against it, as it is not healthy for meat-eaters, and he has still the defective circulation of a meat-eater. Six or seven weeks later he complained of having had some palpitation of the heart with slight pain in the heart region. Pulse 64; C.R. 6; B.P. 115. Has been diminishing fluid, hence the fall of B.P. Wind and dyspepsia have been better on diminished fluids (*as one would expect*). Has been taking salicylate of soda; probably that accounts for the palpitation. The apex beat is in normal place. Eight months later, getting on well and stomach is improving. Advised to keep on with the diminished fluids, and, as far as possible, to take no drugs. He takes tonics for his depression, and they cause retention and so make matters worse again later on.

Case 28.—J. N. E., male, aged 40. Complains of breakdown from overwork, which took the form of rheumatism. Two years ago pains in back; sciatica seven to eight years ago. Has now pain in the body and arms. Father had gout. One sister has rheumatic fever. Has headache occasionally after heavy work. Is somewhat excited. B.D. ·75; pulse 89; C.R. 8; B.P. 135 (*all the signs of debilitated heart muscle, the cause of the excitability*). Apex beat is low and to the left, heart's area increased. First sound rather long. Had chilblains as a boy, no doubt had bad (*collæmic*) circulation for years. Some enlargement of finger joints is visible. Bowels only open with aperients, has piles which bleed. Stomach extends below the umbilicus. We have here chronic collæmia becoming complicated with heart failure. There is some arthritis, but much of his pain is neuritis from defective circulation in the nerves and their coverings. His present diet, which has been modified by his doctor in the direction of uric acid freedom, contains meat twice, fish once, tea twice, stout or wine once a day. Is fond of meat and smokes moderately. The medicine that does him most good is iodide with nux vomica. A year later he was reported to have improved and gained weight on the U.A.F. diet. (*This was some years ago before I had fully realized the value of spaced meals and diminished fluids for the collæmic stomach, heart, and circulation. In the absence of these measures he required drugs.*)

Case 29.—M. M. H., female, aged 52. Doctors say "neurasthenia": was on Salisbury diet five years ago and got bad colds and neuralgia in the head. Always been a large eater of meat and dependent on it for nourishment. Father died of Bright's disease. Her brother and sister suffer much from colds. Has occasional rheumatic pains and tenderness in the feet. Measles at 21, and was a wreck after it for some time. It was followed by a bad cold. Nervous system always weak. Brain work is affected by languor and want of clearness and grasp. Appetite good, often ravenous hunger, some dyspepsia, sleeps better just now, but dreams much. B.D. ·9; pulse 80; C.R. 9·5; B.P. 105. Apex beat is to the left of mid-clavicular line and there is a presystolic thrill. A rough murmur precedes first sound. Suffers much from flatulent distension. Liver does not work well. Menstruation has ceased. (*Here we have an obviously weak and diseased heart associated with neurasthenia.*) Has been trying U.A.F. diet on her own account, but making many mistakes. Thus she is taking 760 gr. of proteid when she requires 1,050 gr. She is also taking excess of fluids in the hope of washing out poisons.

She is thus increasing the work of the heart when the important thing is to diminish it. The poisons are not important here; the weak and diseased heart is (as usual) the central factor in the neurasthenia.

She was put on proper quantities, an attempt was made to diminish her fluids, and she was given some nux vomica and digitalis. A month later she was feeling better on the increased food. C.R. was now 7·5 and B.P. had risen to 135. She was again cautioned as to taking sufficient nourishment and avoiding excess of fluids and slops.

Case 30.—M. W. K., female, aged 38. Complains of getting run down; she is then given extra beef-tea and port wine, but they do no good. Gout, rheumatism, and sciatica in the family. Has had sick headache since a child, less often of late, now one in three weeks. Often feels chilly and has cold feet. She wakes with a headache and it lasts all day. Dreams a good deal and wakes tired. Appetite fair. B.D. ·75; pulse 96; C.R. 6; B.P. 120. Apex beat is just in left mid-clavicular line. Menstruation regular, headache not worse then (*exception to rule*). Is taking excess of milk and slops, and some warm water in addition. Has meat twice, fish and soup once, no tea or coffee. Advised to get on to diet in stages and diminish fluids. Eight months later says she is much better, no sick headache, but still feels headachy in the morning, takes occasional caffein or anti-kamnia for it; advised not to do so, but to try calomel in minute doses, or inhalation of ammonia. Pulse 84; C.R. 6; B.P. 115. A month later was complaining of some eczema, apparently brought on by eating

crab and lobster. (*I think her C.R. would have been slower on both occasions but for some erythema of the skin.*) Eighteen months later she came to bring me another patient.

Case 31.—R. M., female, aged 59. Complains of being very weak after six months on a vegetable diet, which she undertook for vertigo. There is gout in her mother's family. Had fever in Holland thirteen years ago. Had rheumatism and sciatica. Had eczema very badly after a shock and has taken much arsenic for it. Has bronchitis often in winter. Face vascular with many degenerate vessels on it. Eyes prominent. Had retinal hæmorrhage eighteen months ago, and sight has been dim since that. Appetite good, and has a longing for meat. Sleeps badly, wakes at 4 a.m. and may lie awake; feels very tired in the morning. B.D. ·7; C.R. 11; pulse 84; B.P. 175. First sound long, second sound loud. Lungs much emphysema. Suffers from wind in the bowels. Menstruation ceased some years ago, but still has flushings at monthly intervals, and has had epistaxis. Once passed a small stone and takes much water in the morning to prevent recurrence, also hot water at bed time. Has much wind in the bowels. (*An obvious case of collæmic vertigo, and defective circulation with chronic eczema and bronchitis.*) Urine, as brought, 1018, some extra acidity, free from albumin and sugar. Her present diet includes some eggs, also tea and coffee, with hot water at 6 a.m. and 11 p.m. She cannot drink milk and is a poor eater of cheese. I advised her to take a correct quantity of albumin (1,150 gr. per day), which she certainly was not doing, hence part of her cardiac debility. I also advised a cautious trial of gluten and nuts, as she was so bad at cheese. Eight months later she reported that she could not eat all the food ordered, and that she occasionally feels weak and run down. The tendency to flushes, headaches and nose bleeding has been less since she has been on U.A.F. diet. Takes 1 oz. nuts and 1 oz. cheese a day. Pulse 72; C.R. 8·5; B.P. 160; B.D. ·85 (*an all round improvement*).

The B.P. was 45 below normal ratio; now it is only 10 below it, and pulse rate is normal. If she perseveres this improvement will continue for several years, but she has great difficulty in taking the quantities. There are some for whom diet change is almost impossible on this account.

Case 32.—M. A. H., female, age 35. Complains of "gout on the nerves." Has pain in chest, vomiting, and occasional diarrhœa. Cannot digest bread and milk, but beef-tea is kept down. The vomit is generally water and froth only. Memory gets very bad. Eyes are bad, but went to hospital for them, and they said the trouble was migraine. Was in St. George's Hospital with anæmia at 18. Influenza badly twelve years ago. The "migraine" attack two years ago was followed by giddiness and flushings, which are bad one week before the monthly period, and at these times cannot speak to people or look at anyone without feeling as if drunk. One year ago suffered much from urticaria round body. Sleeps fairly, but has bad dreams. Her doctor has generally given her tonics. B.D. ·75; pulse 80; C.R. 8; B.P. 125. Apex beat displaced a little to left; first sound long. Has much wind after meals, especially in attacks. Stomach and liver both enlarged, but there is no splash and no tenderness. Urine often thick with urates, especially one week before the period (*i.e., time of migraine phenomena*). Has varices of legs and has to bandage them to get her boots on. Takes food very frequently, at times every few minutes, generally Benger and milk. Has attacks of coldness and teeth chattering, even in the heat of summer, and may feel faint. (*Obviously collæmic attacks, with migraine and eye phenomena when she is strong enough.*) Port wine relieves the faintness, but she has to take it more and more frequently. Occasionally has palpitation and becomes unconscious for a few minutes; her doctor gave sp. am. arom., bromide and sumbul for this. Three weeks ago went out feeling well except for hot flushing and "drunkenness," but after a few steps lost power in right hand and arm, became cold all up one side, lost sight (*? a migraine eye symptom, i.e., evidence of collæmia*) and fainted. As attack passed off she brought up wind, which relieved

the abdominal pain. On another occasion had pain in chest and back and brought up water. Her ordinary diet consists of meat twice, eggs and fish each once, and tea twice a day; she is not thirsty and does not drink much. Five meals a day. When she is bad she lives entirely on slops and feeds more often. In these conditions a tiny bit of bread and butter causes dyspepsia, pain, and wind at once.

I have given this case at length because it illustrates several points of great importance for etiology and pathology. First of all there are the history of migraine, the eye symptoms and obvious collæmic attacks, which become faints or hysterical attacks as the heart gets weaker. Then there is the history of chlorosis at 18, her case showing what a chlorotic may become. Then we get the physical signs when I saw her, anæmia, weak heart, enlarged liver and stomach and, as a result of these, more or less constant dyspepsia. Her attack described above is quite typical, and is relieved by bringing up wind. It is sometimes said of such cases that "the wind got round the heart" as the patient puts it, and dyspepsia is thought to be the cause of the whole thing—pain, palpitation, faintings, flushings, migraine, phenomena in eyes and all. I am quite sure this is an inverted etiology, that the primary factor is the weak heart, of which, in addition to anæmia, we have here all the signs. The attacks are collæmic, when more or less paroxysmal collæmia makes the heart failure greater and increases the consequent congestion of liver and stomach. The dyspepsia is entirely secondary to the circulation, but of course wind, water brash and gastric fermentation of all starchy foods do not make matters any better. Her doctor was quite right to give tonics; the whole thing was due to weak heart affected by anæmia and collæmia; but if this woman had only been fed rightly from the time she left her mother's breast she would never have had chlorosis, migraine, bad influenza, or heart failure and secondary dyspepsia and hysteria. No stomach with these circulatory conditions will do good work on five meals a day, to say nothing of more frequent sloppy meals and excess of fluids.

I spaced her meals, eventually getting her on to two (at 11 a.m. and 6.30 p.m.) and nothing except water (if thirsty) between. I gave Benger as the only fluid, and only carbohydrate, and diminished the fluids to thirst level. (*When the heart is strong and collæmia absent she may digest starch all right again, but not just now.*) I gave a heart tonic, and later on changed her gradually on to a U.A.F. diet, with little or no starch at first, and she did well, gradually regained her "normal health" (*no very exalted standard, I fear, for prevention is always better than cure*).

Case 33.—B. M., male, aged 66 (medical). Has had a life of mental trouble, brain will not act, was proud and ambitious when a student and no doubt overworked. (*Carlyle, it may be remembered, likens a youth plus ambition to a dog with a tin kettle fastened to its tail—ambition urges him on to ever more and*

*more disastrous acts of folly.*) This patient was just sufficiently sane to put his finger on one cause of his trouble. One sister died of asthma and bronchitis. Some head injury in childhood from falling into the hold of a vessel. Had scarlet fever and bad throat thirty-nine years ago. Had asthma for years very bad. Head is worse on lying down and on sleeping, especially sleeping after a meal (*feeble circulation in brain, as all the blood and heart power are wanted for stomach*). He may fall asleep at any time and is often thought to be drunk. Very easily becomes excited (*again sign of weak heart*). Pulse 84, regular; C.R. 7; B.P. 95. No murmur, but first sound is defective and inclined to be short. (*Note weakening and dilating effect of asthma on heart, also the effect of collæmic troubles in general in the same direction.*) Patient is untidy and careless of appearance, and there is some irritation of the skin, which is none too clean. C.R. 4 to 5 at seats of irritation. Thinks doctors do not give him enough time and care and feels that he leaves no impression on their minds. One blistered the back of his neck with no result. Has loss of memory, loss of thought and power of control.

A fortnight later I again examined his circulation and found pulse 92; B.P. 105 (*again obvious signs of heart weakness*). Present diet is an ordinary one: three or four meals, with meat, fish, eggs, soup, and beef-tea, and tea or coffee three or four times a day. Falls asleep at once after dinner and sleeps three or four hours, then wakes very bad in head. Has had plenty of bromides and depressants, but they have obviously done no good. Thinks arsenic and tonics did him some good. Always dreams of his troubles, was naturally a very active-minded man. I tried to put him on a dry and less poisonous diet, and gave for a time calomel and iodides, which slightly relieved the feeling of head pressure (*œdema of brain cortex*). Teeth very few and bad, so has difficulty in eating solids, and a very poor appetite. Has at times taken opium in doses of gr. iv. to v. with some benefit. Pulse (two or three weeks later), 100; B.P. 115. (*My first observation was in the evening, hence lower B.P., but the fact that heart quickens with rising B.P. is in itself good evidence of cardiac debility.*) Three months later I got a report from a doctor living near him. There is considerable excitement, worse in the morning and after sleep. The normal pulse 96, low tension. Has cardiac dyspnœa pointing to weak heart muscle, to which my physical signs all pointed. I advised to feed up as much as possible on dry food, and after some discussion gave small doses of nux and digitalis, the effects to be watched. All doctors looked on him as hysterical, and of course weak heart always means hysteria and excitement.

This was more than ten years ago, before I had got much grasp of such circulation problems, but I give the case for its interesting history. It may be summed up shortly, perhaps, as inherited tendency to asthmatic reaction to collæmia (? inadequate heart muscle), head injury, active brain, ambition, tendency to overwork, progressive collæmia with asthma, heart failure and debility, leading eventually to progressive anæmia and œdema of brain cortex, the signs of which are writ large above, and eventually, after long years of dilatation and defective nutrition, to more or less degeneration of heart muscle. Correct prevention and treatment follows obviously from this etiology.

Case 34.—M. W., female, aged 48. Another old time case and imperfectly observed for want of instruments, which it is now easy to read. Complains of "nerves," also of rheumatism in feet, legs and back (*lumbago*). "When water is thick (*collæmia*) she feels bad all over." Is much worried, and has a severe headache lasting thirty hours at the monthly periods. Is depressed often, especially when she has flatulent dyspepsia, and urine is thick and scanty then (*three effects of one cause—collæmia*). Pulse 85, soft, Heart sounds feeble and distant, first sound short. Occasional euonymin for bowels; menstruation ceased two years ago. Has tender spots (*? myalgia*) in upper and left epi-

gastrium, and left thigh. Urine free from albumin and sugar. Some œdema of the shins (*and of the brain?*). Diet ordinary—some tea, whisky, and port wine. Takes benzo-naphthol for flatulence. (*This is a mere treatment of symptoms while neglecting causes—the collæmia and circulation.*) Bromides, antipyrin and colchicum make her worse. (*This case may be summed up as migraine, chronic rheumatism (? gout), heart failure, dyspepsia, collæmia, depression, cerebral anæmia, and œdema, "nerves."*) I gave carminatives and tonics, and a dry diet; and six months later she reported herself as much better in many ways and having had no headaches (*the last was not due to absence of collæmia, for which time was too short, but to diminished fluids*). She still requires tonics.

Case 35.—S. M. G., male, aged 41 (medical). Complains of loss of energy and general inability for work. It only comes at intervals, and is bright between. Urine is thick in the attacks of depression, which are worse in winter. Rheumatic fever twice as child, and third attack at 19 years of age. Had bad dyspepsia three years ago (*probably this was the time when his heart muscle gave out*), relieved by soda, salicylates and bromides, or magnesia carbonate. Six years ago was very stout, 13 st. 8 lbs., went on meat and hot water diet, and continued excess of meat for three or four years. Since that ordinary diet till three years ago, and then on modified U.A.F. diet. Salicylates increase the depression. Pulse quick after some exertion, habitually intermittent. Apex beat is displaced to the left, no murmurs heard. Has had much alveolar trouble (*? gouty*). Fingers slightly nodular. Urine no albumin, no sugar. *His excess of meat has obviously neither strengthened the heart nor diminished the collæmia.* I calculated his necessary proteid and told him to leave out tea and egg from his diet. I also suggested some cactina as a heart tonic. Eight months later he was decidedly better, and the cactina appeared to have stopped the intermittency of pulse and acted as a general tonic. No alveolar troubles since on diet; weight, slight increase; eczema of scalp and pruritus ani are also better. B.D. ·85, but pulse is still quick (96). I advised him to continue tonic and U.A.F. diet, and keep down fluids.

I now look upon the fact that depression is worse in cold weather as a sign that the heart is weak. Such a heart is overpowered by contracted skin vessels and collæmia, both increased by cold (the colder the limbs become the more the circulation slackens and the more the colloid urate is thrown out of solution in the blood-stream), and the circulation in brain becomes still more defective, hence increased depression.

Case 36.—M. C., female, aged 40. Complains of chronic urticaria; worse after eating any food which disagrees. It is worse in cold weather and on exposure to cold (*? due to rheumatism or gout*). Lives on West Coast of America. Lived for two and a half months on milk diet, but it was no use. Hands swell up and get puffy, and chest the same, so that she cannot go anywhere or wear low dresses. One sister died of rheumatism and morbus cordis. Patient had measles at 18, rheumatism and sciatica ten years ago, much dysmenorrhœal pain after measles. Bad nerves all her life. Abscesses in pelvic organs and two miscarriages. She is now better as to pelvic troubles, but worse as to skin. B.D. ·8. Sleeps badly, may wake twelve times in a night. Pulse 84; C.R. 8; B.P. 125; C.R. on urticarial patches 6. Heart no murmurs. Second sound relatively loud (*? first sound deficient*). Has one urticarial spot on hand. Has much flatulence in lower bowels, worse in the morning. Her mother had the same. Bowels act four to five times a day, and has slight diarrhœa all summer. Lower border of stomach is level with lower border of umbilicus, and there is some splash. Menses last only one hour (*mother irregular in same way*), had a good deal of pain, two miscarriages, no child. Urine clear now, had inflammation of bladder after a chill driving. Skin irritation is much worse just one or two days before period, and better about ten days after it (*i.e., the increased*

*irritation corresponded with retention and stimulation just before the menses and the improvement in ten days with what would be the latter part of post-menstrual collæmia in a normal person. Does this show that the irritation is a gout of the skin?*) ; her only free time from skin troubles was after many Turkish baths, which pulled her down ; as she got stronger skin trouble returned (*clearly a gout of the skin*). She takes meat twice, fish and fowl once, and tea twice a day, whisky and Apollinaris—wine causes rheumatism in knees and feet. Since urticaria came on joint rheumatism has been less.

Here we have clearly rheumatic or gouty troubles, bad nerves, dyspepsia, congested stomach and liver associated with weak heart, and defective C.R. B.P. ratio ; doubtless gastro-intestinal irritation and fermentation did not lessen the tendency to gouty urticaria.

Case 37.—R. M. P., male (medical). Referred for insurance on account of reducing substance in the urine. Feet gouty, subject to bilious attacks (*collæmia or migraine*). Albumin in urine five years ago after injury in renal region. Tends to be excited and nervous. Rather thin and pale. Apex beat slightly to left, and first sound long or slightly reduplicated. Pulse 84, tracing shows fairly marked first wave. Urine 1028, acid, no albumin. Does not affect Nylander's solution, very slight reduction of Pavy = ·2 per cent. glucose ; microscope, epithelium and urates, no yeast plant. I put him on a milk and fish diet and gave iodide of mercury for ten days to relieve congestion (*circulatory*) of liver and stomach. I gave the opinion that the reducing substance in the urine was not glucose, and the insurance officer examined him again in a few weeks and passed him.

Here, again, we have collæmic attacks acting on a somewhat weak heart (hence his nervous excitement) and causing congestion of liver, scanty urine and some relative excess of reducing substance. These might develop into real glycosuria, or even diabetes, later.

### *Mental Depression.*

Case 1.—M. D., female, age 56. Complains of attacks of vertigo, of being very nervous and much depressed. Has been treated for gout in a general way. Has also suffered from gravel and acidity of blood. Headaches for years, but are not so bad as they used to be (*this is because the heart has now failed and cannot keep up [the necessary pressure*). A year ago she woke up one morning with giddiness and vomiting, and was very bad. Headache is generally occipital (*nuchalalgia of melancholia*). Sleeps fairly. This was in pre-instrumental days, and the only record is pulse 84. Apex beat one to two fingers' breadth outside left mid-clavicular line. First sound long, second sound loud at both apex and base. (*An obvious heart of chronic collæmia, the muscles of which are now beginning to fail, hence lessening headache and increasing nerves and depression.*) The fingers are somewhat nodular and the joints lipped. Bowels act only with Hunyadi water in the morning and occasional hydrarg. c. cret. Menstruation ceased four years ago. Had "ovarian complaint" for years, and been an invalid with it. (*Probably fibroid irritation by uric acid [gout]*). Urine passed frequently in the night (*another sign of collæmia and heart failure*). Sp. gr. was 1015, acid, contained a minute trace of albumin ; no sugar (*? granular kidney*). There is slight œdema of the ankles (*another sign of heart failure*). Before the attack of vertigo she took extra meat, also meat extract and Brand's Essence "to get up her strength."

In all such cases there is no real debility, but a powerful hypertrophied heart is becoming over-taxed, undergoes dilatation, and

suffers some pressure from the pericardium, and should have some of the work taken off it, whereas here more was added.

Her present diet contains soup once, meat twice, and egg once or twice, with tea twice, coffee once and whisky twice (*stimulant poisons ad lib.*).

This patient was afraid of altering her diet, and naturally, for she felt weak. The proper treatment in such cases is to space the meals (two a day) and cut down the fluids and fluid poisons, taking work off the heart; and then to slowly substitute white of egg and curd for fish and meat; but I did not learn all this till years afterwards, when my instruments brought out causation in a way there was no misunderstanding. It is obvious that all these cases merge into one another, and that no real line can be drawn between headache, vertigo, nerves, neurasthenia, mental depression, melancholia and suicide; they are but different stages of one and the same process, and all cry aloud for the same treatment.

Case 2.—W. E. K., male, age 59 (chemist). Complains of depression, with chronic dyspepsia and delicate stomach; was worse in the summer of last year, and very prostrate. Had fairly severe arthritic pains six years ago. Sleeps very badly, takes sulphonal or bromide. Much depressed in the early morning. B.D. ·7; pulse 72; C.R. 6; B.P. 90; this is after coffee, of which he takes considerable quantities as a stimulant. Hands are tremulous, and he is nervous and excitable. The apex beat is in the nipple line, and the first sound is long. (*B.P. would probably be high but for the coffee*). Has a good deal of flatulence, as well as some colicky pain in the abdomen; wakes at 3 or 4 a.m., and cannot get to sleep again. Has taken many drugs, chiefly tonics and sedatives. Is now weak and fit for very little work. Mineral acids cause at once severe pain in epigastrium and between shoulders; probably there is some gouty gastritis. His present diet includes—egg once, meat twice, wine once, coffee 25 fluid ounces in day. Never large eater, never feels thirsty. (*Here we have collæmia and its effects, increasing in proportion as the arthritic pain diminishes.*) I gave him some salicylate to help him to leave off the coffee which he has been resorting to with increasing frequency, and he considered that it helped him to do this. Two months later he had got rid of the coffee and given up the salicylate, and felt stronger and better. Has had occasional fulness of head and vertigo. Has occasional brain muddle, for which he takes calomel or tinct. valerinæ ammon. Pulse 76; C.R. 5·5; B.P. 100; B.D. ·7. (*It is remarkable that he has no higher pressure, but he is constantly taking some drugs. The low pressure is not due to heart failure, or C.R. would be slower and pulse quicker.*) I advised him to keep down fluids for the head symptoms, and to make his diet correctly U.A.F.

Case 3.—S. C., aged 56, male. Suffered from headache and depression off and on for sixteen to seventeen years when in a low state. One brother died of cerebral hæmorrhage. Had gout in great toe and knee twelve months ago. Was treated by potash and much pulled down. Complains also of more or less continuous pressure in the head, worse in early morning. Appetite poor, takes food by habit. Suffers from very severe depression at times. Is most comfortable sitting straight up. Pulse 80, feels high tension. Apex beat is displaced to the left. First sound slightly reduplicated. Urine 1018, acid, no albumin, no sugar.

Here, again, an obvious case of headache and depression due to high B.P., as shown by the effects of position. My friend, Dr.

de Watteville, who sent him to me, looked on it as neurasthenia connected with gout on account of the joint symptoms. There was some sign of slight heart failure in the quickened pulse, and the effect of potash in curing gout, and increasing collæmia and debility, is interesting. Collæmia with heart failure is, as we have seen, the cause of neurasthenia.

I tried to lower his B.P. by iodide of mercury followed by diet, but this was in old pre-instrumental days before I knew much about treatment.

Case 4.—R. D. B., male, aged 40. Complains of depression and insomnia. Generally sleeps very badly except when taking much exercise. Had "rheumatic gout" in the foot a year ago, and catarrh of stomach before that. Is very much depressed now. Wakes at 5 a.m., and may burst out crying. B.D. ·8. Appetite fair only. Pulse 80; C.R. 8·5; B.P. 130. First sound slightly long. Heart area somewhat enlarged. Has some discomfort after food; stomach is enlarged, but there is no splash. Urine 1026, acid, no albumin, no sugar. Present diet includes—meat once, eggs twice, coffee once, and an early glass of milk in the morning. He is probably taking excess of fluids, and I advised him to diminish them. I gave an iodide mixture, and advised change of diet later. (*Here we have evidence of uric acid excess in the past, of its present excess in the blood, and of some heart failure corresponding with the more marked depression.*)

Case 5.—C. A. L., male, aged 48. Complains of dyspepsia and melancholia. Worse in the winter and when he has liver troubles. He improved during a holiday in Switzerland, but trouble returned again after it. Has general nervous twitchings. Sits and sighs and cannot work well. Better last ten days since giving up tea and coffee; used to take much coffee. Sleep bad of late, only five hours. Depression now severe. Appetite poor. B.D. ·8; pulse 72; C.R. 8; B.P. 155, flattened 190. Apex beat displaced to left, area increased to left. First sound reduplicated, second sound loud. Has a feeling of discomfort in the epigastrium, along with the worst depression. Liver dulness about normal, stomach rather large, but no splash. Urine of 5 p.m. 1017; no albumin, no sugar. Hands are tremulous in the morning (*a sign of defective circulation and often of heart weakness*). His diet contains meat twice, fish once, and soup once, four whiskies and sodas, and also some hot water in the early morning. Coffee has been left off and whisky and soda taken in its place. (*This is about as bad a diet for such conditions as it is possible to find.*) I tried to alter diet slowly, and also to diminish fluids. Three months later he reported that he was marvellously better; diet has even diminished the stiffness after hunting. Pulse 80; C.R. 7; B.P. 120, flattened 160. (*Here is a great difference in the circulation, but it indicates some weakness of the heart, and possibly some underfeeding, though part of the fall of B.P. is due to diminished fluids.*) Nine months later I heard from a relative of the patient that his depression was cured, but three months after that he came back again suffering as before, except that he thinks the attack is less severe. Feels miserable, but can eat. No stiffness and no eczema (*no doubt because there is collæmia*). B.D. ·9 (*i.e., an improvement, so he has not been underfeeding*); pulse 92; C.R. 7·5; B.P. 140, flattened 190. Heart, first sound long or reduplicated. (*Here we have still evidence of cardiac debility*). Still takes a little whisky or wine; took beer in the summer. (*This was unwise; did it cause retention, of which this attack is a rebound?*) Was told to diminish fluids by taking bread and fruit only for a time, and a little later he was given a mixture containing chloride of ammonium and some iodide. Three weeks later was somewhat better, but B.D. had fallen to ·8 (*probably he had been underfeeding too much*); pulse 80; C.R. 10; B.P. 160, flattened 200. (*Here is a return of the old high B.P., together with signs of cardiac debility*). Champagne did him much good on one occasion, and then he went for a 10-mile walk, and was worse next morning. Heart sounds as before, has been losing some weight. Is now feeding irregularly, no correct diet, and

taking wine. I advised him to go on to full diet, but to keep down fluids. Three days later he complained that he could not eat and that his liver was out of order. Is much worried and cannot even read a book. Pulse 80; C.R. 7·5; B.P. 150, flattened 190. (*Probably his liver is congested on account of the heart failure.*) There is slight tenderness in the gall-bladder region, but nothing definite to be felt. Bowels open once a day, motions rather pale. Has had similar pain and liver discomfort in other attacks. Given some calomel, followed by ol. ricini. He was more cheerful and the tongue cleaner after the bowels had acted freely. A few days later his appetite again became poor, and the depression returned. Three days later has been on ordinary diet, but feels that he does not want any food, and cannot shake off the depression. Had a bad night last night. Pulse 88; C.R. 6·5; B.P. 145, flattened 200. This is the fifth attack of mental depression in five years. He stopped one last year by U.A.F. diet.

Why has it returned now? Probably this is a rebound after the beer he took last summer; and in this case his "cure" was due to retention, and was therefore temporary; it could hardly be due to freedom from uric acid, as he had not had time to get free.

A few days later his pulse was 92; C.R. 8; B.P. 140, flattened 180, showing still more marked signs of heart failure, owing to deficient food, insomnia, and considerable quantities of champagne, brandy, and port wine. (*Such a case requires to be sent to a nursing home to be strictly fed and to have fluids cut down, and as this was impossible I fear that the case was incurable.*)

Case 6.—R. S., male, aged 34 (silver polisher). Complains of more or less severe and continuous headache, which is hemicranial. It only comes in attacks, but they last on for six to eight or ten days or more. A sample of urine passed in the morning only gave a relation of uric acid to urea of 1 to 34 (*i.e., normal*). It was free from sugar and albumin. Patient says he feels as if there was something growing on the left side of his head, and there is numbness on left side of face and head. There was no specific history, but as these seemed to to come into the category of chronic or organic headache an ophthalmoscopic examination was made, but nothing abnormal was found. Subsequent enquiry elicited the fact that he had been in hospital before for this headache, and that large doses of iodide had relieved it. He was accordingly put on pot. iod., gr. xv., four to six times a day, and this soon relieved him. I saw him in several subsequent attacks, all of which were relieved in the same way; and in one of these I measured his circulation with instruments and found C.R. 5 to 6; B.P. 110.

I mention this case in contrast with those due to uric acid. Here we had a headache which came in attacks and was hemicranial, but it differed from the hemicranial headache of uric acid in being continuous for several days, in giving no abnormal uric acid urea relation, and showing no circulation changes or rise of B.P.

Case 7.—T. M., male, aged 53. Complains of chronic rheumatism following acute. Has been overworked for many years. Rheumatic fever twenty-five years ago, had temperature 108°. Chronic rheumatism ever since. (*This is really very common. Once the joints have been irritated by urates these food-poison products find their way back to the irritated spots again and again; the only way to prevent this is to keep clear of excess of urates.*) Has taken much whisky, 12 oz. a night, or more. Skin puffy. B.D. ·85. Has much depression and irritability. Sleeps badly owing to late hours of work. Pulse 72; C.R. 10; B.P. 145. Apex beat in left nipple line, area increased. Some bronchitis in winter. Bowels act easily once a day. Dares not take fruit, as it causes diarrhœa. Liver dulness increased, 4½ inches.

Probably in part the results of the alcohol and this congestion accounts for the easily produced diarrhœa. Probably at times there is an element of dyspepsia and heart failure in connection with gastro-hepatic congestion, and this accounts for the alcohol craving, the depression and irritability.

Present diet includes—fish thrice, meat once, soup once or twice, tea or coffee thrice, several whiskies and sodas, a pint of wine and some cigars. (*A diet full of stimulant poisons, and containing excess of fluid, about as bad as possible for his condition.*)

Case 8.—W. R. C., male, aged 30. Complains of mental depression and loss of energy, increasing of late. Has been a heavy smoker. Is always worse in morning, and worse since a recent shock. Mother died of morbus cordis; had rheumatism and gout. Father died fatty heart, kidney disease, and alcoholism. Suffered from constipation and dyspepsia. Head feels too full. Is much depressed in the morning. Sleeps fairly long time, but very restless. B.D. ·75; pulse 60. Right radial measures 2·2 mm. (*which is large for a radial*); capillary circulation very slow. Apex beat outside left nipple line. First sound long or reduplicated. Second sound loud and reduplicated at base. Liver not enlarged, stomach not dilated. Present diet contains eggs once, meat twice, soup or fish once, cocoa twice, whisky and water once, and lemon and water in morning. Has giving up smoking. An occasional Turkish bath does good; it makes him worse at the time, but better next day. (*Here, again, a case of chronic high B.P., becoming neurasthenic.*)

Case 9.—M. K., female, aged 50. Had chronic rheumatism for ten years or more. Mother and sister had rheumatism. One brother rheumatism. Is nervous and much worried. Wakes 5 a.m. and no sleep after. B.D. ·75; pulse 88; C.R. 8·5; B.P. 160. Apex beat in left mid-clavicular line. First sound long (murmur?). The stomach is down to umbilicus, and there is a splash. Liver can be felt below the ribs and is slightly enlarged; the right kidney can be felt. Menstruation now irregular, used to have bad headaches at that time. Often has bilious diarrhœa, probably a result of liver congestion. Her doctor has put her on U.A.F. diet, but has not given sufficient albumin; hence some increase of debility. (*Here we have chronic arthritis followed by collæmia and headaches; and then, as the heart begins to fail, nervousness, worry and depression.*) I increased her albumins and gave a cardiac tonic for a time. Three months later her doctor reported that the depression was much better, but the joints were giving some trouble again; the catamenia have also returned, and with them some headaches. Pulse 80; B.P. 160; B.D. ·85 (*some improvement*).

Case 10.—J. N., male, aged 62 (medical). Had occasional lumbago, and now complains of weight on chest, breathlessness, irregular pulse, and mental depression, worse in the morning after breakfast. Has done forty years of hard work. Is temperate in habits. Had some irritation of the bladder three or four years ago. Had some influenza four months ago, and then the late Sir W. Broadbent said his heart was all right. Has occasional frontal headache on waking. Gets depressed over his work. B.D. ·85: pulse 58; C.R. 7·5; B.P. 135. Apex beat slightly displaced to the left. First sound long or reduplicated. Second sound reduplicated at left base; has chronic dyspepsia with flatulence and discomfort, increased by nervous worry. Takes occasional blue and colocynth pill. Liver dulness about 3 in.; right kidney can be felt, is rather low. Urine 1011, no albumin, no sugar. Present diet includes meat twice, fish once, egg once, soup once, tea twice, wine or whisky once a day.

Here, again, we have chronic collæmia alternating with lumbago, some cardiac debility shown by defective C.R. B.P. ratio, occasional irregularity of pulse and reduplication of heart sounds. Secondary

congestion of liver and stomach causing dyspepsia, which, in turn, increases collæmia and heart weakness, leading to depression and neurasthenia.

CASE 11.—R. N. N., male, aged 23. Complains of depression and nervousness alternating with bulimia. At times food digests very slowly. Has been on fruitarian diet with nuts for four years; his father and family all on similar diet. All the family are nervous (*? effect of deficient albumins and weakness*). One sister has rheumatism and some slight depression. His depression lasts twenty-four hours, and is then well for seven days. Has had some psoriasis on legs for two years. When depressed he feels dull and unable to speak his mind. His depression is worse in winter, and better in warm weather.

This is often characteristic of a weak heart, for a weak heart is overpowered by cold and collæmia, and hence the circulation is worse in the cold. In the warm weather slight collæmia is dissolved and it is easier to drive the blood along. This explains possibly the fact that some cases of neurasthenia can be relieved by heat (*e.g.*, Turkish baths daily for several weeks). These are probably cases in which C.R. is slowed more by heart weakness than by collæmia, and where urate stores are not great. The heat takes work off the heart and it comes round; but if there were much urate and the heat thus increased collæmia, it would increase the work of the heart and make matters worse in place of better. Neurasthenia is the expression of defective cerebral circulation owing to slow C.R.; but slow C.R. has two causes: (1) collæmia, and (2) cardiac debility. In cases where there has been chronic cardiac debility, the urate stores are not likely to be large, as one important factor in retention (good nutrition and high acidity) is absent.

B.D. ·85; sleeps well; pulse 68; C.R. 6·5; B.P. 125. (*Some deficient ratio, but the slow pulse may be due to underfeeding and not necessarily a sign of a strong heart.*) First sound is long. Stomach nearly down to umbilicus, but there is no splash. Some discomfort after food. He may be all right for a time, then gets an attack of ravenous hunger (*bulimia, sign of defective or slow stomach absorption*), and this is followed by depression. Urine sp. gr. 1028, very acid, no albumin, no sugar, a few oxalates (*the result of his dyspepsia*). Present diet contains cashew nuts and a good deal of fruit, condensed milk, some ordinary milk, puddings, brown bread, occasional chocolate, no tea or coffee. Used to take peanuts regularly at one time. (*It is evident that he is not and has not been U.A.F.*) Feels so nervous at times that he cannot do any business. He was depressed before he began to be a fruitarian, when he lived on ordinary (*meat*) diet. If anything he is rather better on the fruit diet (*i.e., still on poisons, but not so much as on the meat*).

This case is interesting on account of its periodicity. I have no doubt that the sequence was somewhat as follows: (1) He got some retention from the acids of fruit acting on the introduction in pea and cashew nuts, &c.; (2) on this followed collæmia, which upset the stomach and irritated it, causing slow digestion and an unnatural

feeling of emptiness and ravenous hunger (bulimia); (3) excess of food only aggravated the dyspepsia, and more severe collæmia with temporary depression followed (the exact parallel of a migraine attack, and bearing an exactly similar relation to the dyspepsia, gastric upset, bulimia, oxaluria, &c.). The proper treatment was to get free from poisons, to help digestion by spacing meals (two meals a day), to help the circulation and lower B.P. by cutting down fluids. The proper treatment of the bulimia would be rest and a carminative, but no food.

Case 12.—M. G., female, aged 38. Complains of depression and of being easily overtired, and a general sense of blackness, worse in the morning. Has constant excessive desire to get through work which never seems to be done. Had severe headaches seven to eight years ago, but less severe of late, and more debility. One sister suffers from biliousness, and one is depressed. Father lame from chronic rheumatism in hip. Mother had slight gout and eczema. Patient always subject to bilious attacks and suffered from neuralgia. Measles at 22, which left her weak. Had bladder catarrh with local pain, said to be "rheumatic gout." Had sunstroke in Switzerland eleven years ago. More depressed and miserable since that. Her doctor said she would be well when married, which was wrong. Suffers from physical and mental debility. No enjoyment in anything, and has haunting ideas. B.D. ·75; pulse 84; C.R. 10; B.P. 150. Apex beat nearly in anterior axillary line. First sound long. Second sound loud. Has numbness in hands and arms and tends to drop things. Fingers all deformed by chilblains. Liver dulness not increased. Bowels kept regular by fruit and brown bread. Stomach below the umbilicus and splashing freely. Menstruation regular, no pain, depression is worst just before and after it. Many stellate venules and some varices in legs. Urine 1023; slightly acid; phosphates; no albumin; no sugar. Present diet contains fish once, egg twice, bovril or gravy twice, tea or coffee twice. (*A diet probably poor in proteid, yet containing much poison.*) She left out tea and coffee for one and half years, but this did not appear to have much effect, so she went back to them. (*Doubtless she did not know bovril and gravy were as bad.*) Is too nervous to cycle, and fears to run into things. Has been taking six or seven meals to keep up her strength (*but no doubt both appetite and digestion were sacrificed to do this, and no collæmic stomach dreams of doing good work on seven meals a day*), so she has also had recourse to tonics.

In such a case there is no difficulty in understanding the mental perturbation. The food is full of poison, the blood is full of poison as shown by the slow C.R., and the heart is beginning to fail in its efforts to carry on so blocked and obstructed a circulation as shown by the quickened pulse rate and the defective C.R. B.P. ratio. Here was a patient for whom much might have been done, but she was ignorant, easily frightened by others, and gave up the attempt to alter her food and mode of feeding.

Case 13.—M. H., female, aged 40. Seen with my colleague, Dr. Sunderland. Complains of mental depression, with pain in epigastrium and left hypochondrium, increased by worry. Is excitable (*sign of weak heart*), and has much family worry. One sister in asylum; has also uterine fibroids. Has been subject to migraine every week for years. Left off two years ago when she was under treatment at Eastbourne for headaches. She then had a faint attack, and since then headaches have disappeared. (*This was no doubt a sign of*

*heart failure, and since that it has not been strong enough to keep up the pressure. Hence absence of headaches, but neurasthenia and depression have been worse.*) She now cannot walk so far as she used to do. The epigastric pain (*false angina*) also dates from this time. Used to suffer greatly from insomnia, now better, as she takes bromides. Pulse 96, soft. First sound reduplicated. Second sound rather loud. Apex beat in left mid-clavicular line (*pre-instrumental days*). Liver dulness full size (*? cardiac liver*). The pain in left hypochondrium is not related to meals, there is no tumour to be felt. Abdominal walls thick (*stout*), there is a good deal of distension with wind. She has excessive loss at the monthly periods, and the pain is worse then (*i.e., pain due to heart strain*). Urine sp. gr. 1014, acid, no sugar, no albumin. There is slight œdema of the shins. She takes beef tea in the morning for breakfast, as she feels so low then. (*An obvious case of cardiac debility following migraine and cardiac strain. Some similar precordial pain is common in cases of depression.*) I gave carminatives and a cardiac tonic, but, unfortunately, did not cut down her fluids. I never saw her again, but the case is most interesting as regards causation.

Case 14.—N. O., male, aged 44. Complains of attacks of worry since an illness two and a half years ago. Sent to me by Dr. A. H. Hoffman. Two sisters have migraine. One sister stammers. Has been in India, had fevers. Two and a half years ago had "nervous fever" due to pure worry (*? enteric*). Last winter when hunting hard, drinking champagne, and keeping late hours, used to wake much depressed in the mornings. Arcus senilis present. Has had trouble with his eyes and just got new glasses. Is subject to palpitation. Not thirsty, but takes whisky to relieve the depression. Depression is worst in the morning, goes off later in the day or after exercise (*i.e., with fall of B.P.*). Pulse 72. Pulse tracing shows high B.P. Artery can be rolled under fingers between the beats (*pre-instrumental days*). Heart sounds distant, lungs emphysematous. First sound long, second sound loud. Bowels always constipated. Urine sp. gr. 1022, no albumin, no sugar. Has lost some 6 lb. to 7 lb. in weight lately. An occasional blue pill does good. His present diet contains meat three times, fish twice in large quantity, tea or coffee three times, champagne 20 oz., and a liqueur. (*Here there were plenty of signs of circulatory disorder to account for the depression, and the palpitation showed that the heart did fail a little at times*). I told him to go gradually on to the U.A.F. diet, and six months later he was on it more or less correctly. A year later I met Dr. Hoffman, who reported that he was much better, and very much pleased with the results of treatment. He was going to get married.

Case 15.—W. M. McK., male, aged 33 (analytical chemist in U.S.A.), sent me the following: "Subject for a year to palpitation of heart, constipation, pains almost everywhere, and a feeling of dread. Palpitation and constipation occasionally for ten years. Rheumatism a constant trouble, but never severe. Pulse generally about 90, till twelve months ago I noted it as 60. I felt well and it remained 60 for six weeks. Then after a very hard day's work I got palpitation, and the pulse suddenly ran up to 140, and this was accompanied by feelings of bodily weakness. Was put on strychnine, arsenic, &c., for 'nervous prostration' and became worse for several months, being obliged to leave work and losing 25 lb. in weight. I travelled the States over for advice, and consulted some dozen doctors, who gave strychnine with variations, and this 'always produced severe pains in the left breast.' At last I found a doctor in Chicago who diagnosed my case as 'Uric acid diathesis.' Treatment: no meat, tea, or coffee. Drug treatment: sodium salicylate, lithia, and yellow iodide of mercury, each for one week, and then the three over again. I then went on to sodii salicyl., only 30 gr. in day. I regained lost weight in three months, and resumed work. Am still subject to apprehension and nervousness, slight pains coming and going, and irregular pulse. Have been many times assured that I am organically sound, but am inclined to think my heart went through a work just a little too hard before it gave up and bothered me."

Such was the case on which my opinion was asked, and it is easy to see that it was a most interesting one. Being a chemist, he

analysed his urine for two months and found (just as we should expect) that there was retention of uric acid while he was taking the lithia and the iodide of mercury. Then he found that his doctor was merely going by my books, and so wrote to me direct. He did better on the salicylates, which cleared out the uric acid, than on the retentive drugs.

I have seen quite a number of similar cases of "nervous prostration," many of which had also been told that they were organically sound; and yet in no single case, so far as I could discover, was this statement true. There was a saying quoted some time since in the *Dietetic and Hygienic Gazette* of New York which I read with much sympathy: "Do not tell your neurasthenic patients there is nothing wrong with them, for it is not true." In the above case it is quite clear that something more or less serious happened to the heart when its rate suddenly went up to 140; yet those who examined it were content with the shibboleth "nervous prostration," and practically said, and even perhaps thought, that there was no organic disease, simply because they had no means of measuring the extent of the injury. But if these cases are gone over carefully there will always be found most of the signs of a quite distinct lesion, and the future only too often shows that it is organic and, though slight, perhaps irreparable. What I have found in cases giving a history more or less identical with this one is not merely a change in pulse rate, but also a very marked change in the rate of C.R., *i.e.*, it is slowed; if in normal health it was 6 or 7, it becomes with the change in pulse rate 8 or 9. The B.P. rises more or less. And here we have the most important point, and the one which gives us the key to the extent of the heart failure and weakness. *B.P. does not rise to a corresponding extent.* If the C.R. in normal conditions were 6 to 7, the B.P. corresponding with it would be 120-140 (if the heart were strong). But now with C.R. of 8 to 9, the B.P. should be 160 to 180, but in such cases these pressures are practically never found, and the B.P. is probably not more than 130 to 150. And the difference is the measure of the heart weakness in the case with which we have to deal. Thus defective C.R. B.P. ratio, quick pulse and more or less palpitation are the prominent signs of the cardiac condition, and there is one more sign we shall get if we look carefully, viz., more or less dilation of the right or left sides of the heart, or of both; the C.D. being increased by perhaps 1, 1½ or 2 in., and with this dilatation there is often present, at least for a time, a more or

less marked systolic murmur. Outside the heart we may find such signs as some increase of liver dulness, and a somewhat large and splashing stomach, and here we have the physical explanation of the loss of weight; the above patient lost 25 lb. The enlarged liver and stomach are the outward and visible signs of a marked secondary congestion of the whole chylopoietic system; and engorgement of the duodenum, pancreas and common bile-duct often means obstruction to the flow of both bile and pancreatic secretions, with absence of bile and other digestive juices from the intestines; hence deficient digestion and absorption of considerable quantities of important foods. Absence of bile from the motions and deficient digestion and absorption of fats is quite common in these conditions. Doubtless other foods are dealt with in an equally defective manner, and hence at least part of the loss of weight is accounted for. The dilated and splashing stomach has also no small effect in bringing about defective gastric digestion. This condition also favours deficient muscle power, deficient emptying of contents into the duodenum, and fermentation of the gastric contents in place of digestion, leading to secondary dyspepsia and auto-intoxications, both gastric and intestinal, with easy microbic invasion, and very offensive and undigested stools as the results. The recorded constipation was obviously due to a similar weakness in the intestinal muscles similarly produced.

From such or similarly caused conditions the transition to albuminuria, glycosuria, diabetes or Bright's disease is simple and easy to understand, and the same applies to defective metabolism of the blood, resulting in various degrees of anæmia.

The general pains complained of are often due to neuritis and perineuritis similarly related to the stasis and thrombosis accompanying the generally defective circulation. The physical causation of the neurasthenia and mental depression, with the corresponding œdema of ankles and brain-membranes, I have already gone into. The feeling of causeless dread was the sign of defective circulation in the cortex of the brain.

Can we say anything as to what occurs in the heart when the pulse suddenly quickens, as in the above case, to 140? The patient was a rheumatic subject; did he suddenly develop a localized myopericarditis from strain, just as he might develop it in a shoulder joint that had been bruised or dislocated? The fact that he improved on salicylates is in favour of something of this kind, and so was the record that the strychnia given him by everyone he

consulted "always produced severe pain in the left breast." I have seen just the same thing with digitalis and other heart tonics in these cases; their administration or any sudden or unwonted exertion always produced pain. Now the explanation of this is quite simple; if there had been a recent myo-pericarditis the tender and inflamed tissues of the heart were stretched by the action of the drugs, or by the increased B.P. of exercise. Just as occurred in this case, the irritation gradually subsides under salicylates, the heart with the aid of rest and tonics slowly adjusts itself to the adhesions and altered conditions. The congestion subsides, digestion and nutrition improve, the weight is regained and all quiets down. But I am practically certain that these are organic conditions, that the heart ever after bears in its muscle or pericardium, or both, the scar of a lesion which should be quite visible after death, and which for years after the attack may give rise to pain when stretched by high B.P. I am also quite certain that we have here to deal with no "nervous prostration or neurasthenia" except such as are secondary to the very obvious circulation disturbance in the brain, nerves, and nerve centres, which, like all the other conditions, are results of weak heart. Doubtless these facts have in many cases been overlooked because the capillary circulation was never accurately measured and the diagnosis of "nerves" covered the clinical sluggishness of the observer.

It is possible in the case above recorded that the attack of myo-pericarditis which caused the "nervous prostration" was not primary, but a mere lighting up by the strain of overwork of an old myo-pericardial lesion dating back to previous years and of which the only recorded sign was the pulse rate of 90.

The diagnosis of "uric acid diathesis," if it has any meaning at all, merely shows that the doctor recognized that this patient was a rheumatic subject, and possibly this was the key to the whole trouble; but it could be better expressed as uric acid poisoning. For everyone can be poisoned by uric acid if they get enough of it. If there were an excess of uric acid in the blood at the time the heart got into trouble it would undoubtedly make the capillary circulation worse and increase the heart failure and secondary congestion of internal organs; and it was in clearing this out of the blood and so helping the circulation that the iodide of mercury and lithia acted in the above case. No doubt the doctor who advised this treatment wished to help the circulation on the one hand while he cleared out the excess of uric acid with salicylates on the other, just as I have myself done with similar drugs.

I note with interest that my colleague, Dr. Guthrie Rankin, records (*British Medical Journal*, June 5, 1909, p. 1339) a case where an abnormally small right coronary artery led to death from angina at 48. Doubtless a congenital defect of this kind would expose its owner to attacks of neurasthenia from time to time when such a deformed heart was doing badly under special strain—in Dr. Rankin's case that caused by the menopause and the collæmia which accompanied it in a meat and tea taker. This case was looked on as functional up to the time of the fatal ending, but I should have expected that some time before this there was a defective C.R. B.P. ratio and some signs of a dilated right side. I regard the matter from the very opposite pole to my colleague, and look upon "the neurotic element in disease" as the element which points to some more or less obvious, functional or organic, weakness of the heart. The neurotic or hysterical brain is that in which the circulation is defective, and our duty is to find out why it is so.

It is most interesting to note that in the case of W. M. McK. the effect of the arsenic and strychnine was to increase precordial pain, and the patient got worse on these drugs, and getting worse went from doctor to doctor, for none really understood his condition and did good. And this history is decidedly in favour of the original trouble being inflammatory (endo-myo-pericardial), for we all know that so long as there is a smouldering endocarditis it is wrong to give tonics, which quicken the pulse and raise the temperature, *i.e.*, increase the local irritation and sometimes cause pain. On the other hand, if we have to do merely with cardiac debility these tonics do good, slow the pulse, and cause no rise of temperature. Probably if this case had been carefully charted in its early stages the temperature would have been found running irregularly from 99 to 100 at some period of the day. This patient, it will be noted, eventually got better on solvent doses of salicylate, which removed the irritant from the cardiac fibrous tissues; the heart then gradually recovered its power and balance, and all the other improvement was secondary to this. Thus the whole illness depended from beginning to end on what some call the "uric acid diathesis," which we see stands for (in this case) a lesion of the heart due to local uratic irritation, this again being but an incident in a chronic smouldering endo-myo-pericarditis going on for years and years in a rheumatic subject (a quite common condition). Thus we see that gout or rheumatism—in a word, uric acid—is the cause of much widespread mental derangement, that it not only consigns thousands to an

early and painful death from morbus cordis, in the promise of youth when life is just opening before them; but of those who survive the period of adolescence with less severe lesions of the central organ of the circulation, a considerable proportion drift into our crowded asylums for the insane—a fate even more miserable than the death of those more severely affected. Seeing then that this metabolic poison is in many ways so deadly a foe to human health and happiness, shall we not do all we can to let the light of truth shine in on those dark places, and do its beneficent work for the abolition of this sorrow and suffering, which we can now see to be unnecessary?

Case 16.—H. W., male, aged 56. Complains of depression and debility, feels very wretched, almost always the same, but worse in the mornings. Two years ago took to cycling, but he lost weight at it, and it made him worse.

This is interesting, as no doubt his heart was beginning to suffer from the strain of collæmia of the second collæmic stage, and the exercise put a greater strain on it. Fresh air and rest would have been better. Thus motoring has done good in not a few such cases (but this was in pre-motor days).

Has had much insomnia, but his worst trouble now is almost continuous depression and melancholia. Has also some epigastric pain, and suffers much from flatulence, and cannot digest vegetables.

How easy it is to understand these symptoms from what we have learned in previous cases as to their causation. This patient doubtless feared he might be put on diet which was then popularly supposed to consist of vegetables.

Has always been healthy and never had a serious illness (*i.e., he had no doubt retained plenty of uric acid, in the second retention stage providing a store for his present collæmic troubles*). Father died at 85 of apoplexy (*i.e., collæmic disease*). Patient has a hopeless look on his face and moves and speaks slowly. The veins of the hands are large (*a minor sign of collæmia and venous congestion*). Pulse 75, some distinct plus tension, and artery can be rolled. Heart first sound long, second sound relatively loud. There is some defective nutrition shown by a poor sulphocyanide colour in saliva. He has but a poor appetite, does not like meat, has been reduced to fish and fowl, and probably is not eating enough proteid, or his signs of high tension (*pre-instrumental days*) would have been more marked. Urine sp. gr. 1022, acid, urea only 2·1 per cent (*pointing to some excess of uric acid*).

Has had various remedies for his dyspepsia and some disinfectants for his intestinal flatulence, without much effect, as one would expect, from such treatment of symptoms, while their causes, the collæmia and weak heart, were neglected. But in these early days I did not do much better, and the only good things in my prescription were some strychnia and phosphoric acid, and I did

attempt to get him to take more proteid, but without much success. In these days I should cut down fluids, space meals, insist on sufficient proteids, and give a continuous course of tonics, no doubt with much better results than were then possible. I then only partly understood the causation of the mental and other conditions, though I knew them to be in some way associated with the collæmia.

Case 17.—H. E. H., male, aged 45. Complains of mental depression. Has had malaria out in Brazil, and fell and injured his head a few years ago. Depression worse early in the morning. Sir A. Clark calls it "suppressed gout," and Carlsbad cures him in a week (*i.e., sulphates clear up the collæmia and set the circulation free*). Pulse 72, tracing shows some raised pressure. Apex beat to left of left nipple line. Second sound loud. Has pain about the apex, especially when lying on the left side. Urine 1024, no albumin, no sugar, but thick and urate-laden This patient found that his dyspepsia and depression diminished when he diminished meat, and this no doubt produced the same effect as the Carlsbad water, only in a different and more correct way. (*When anyone recognizes that he is poisoned the best thing is surely to leave off the poison; the Carlsbad water, on the other hand, was a mere temporary cure; it was "put off, not let off."*)

Case 18.—F. P., male, aged 67. Has suffered from chronic rheumatism and low spirits all his life. Spirits are relieved by violent exercise to the point of perspiration or by a vapour bath (*the exact parallel of migraine*). Gets well as to spirits when rheumatism comes on (*the rule*). Low spirits continue for weeks and months, then suddenly go; they come back as suddenly. Wine does good for a time, but he is worse afterwards (*rule*). Iron and strychnia do good; acids do good to some extent. Takes soup, fish and fowl for dinner, and tea twice a day, whisky in the evening. Cannot go long without food, has cravings for it and yet seems to get no good out of it (*bulimia*), and hence has difficulty in not eating too much.

Collæmic dyspepsia and slow digestion. Hunger is only sated when albumins enter the blood, and as digestion is slow in this case, they only enter the blood very slowly, so patient never feels sated and has to go on eating.

The rheumatism is chiefly in the form of muscular rheumatism and lumbago. Pulse 72, some slight high tension. Not depressed to-day, and has been exercising. Tracing takes 5 oz. to develop it and shows a moderate first wave. First sound reduplicated at apex. Second sound moderately accentuated. One brother has thoracic aneurysm. Has lately had some slight vertigo. Urine passed at 11 p.m. sp. gr. 1029, strongly acid. Acidity to urea 1 to 4·3. Uric acid to urea 1 to 43.

Here we have high acidity and retention, as one would to some extent expect at this hour, but this retention is no doubt the cause of the depression next morning. Hence, the success of an evening dose of potassii bicarb., a favourite prescription of the late Sir W. Roberts.

He gets attacks of gastric distension with white fæces and thick water (*already explained in previous case*). I gave phosphate of soda with the object of diminishing depression and at the same time helping to eliminate uric acid, and for a time it did good. This patient could not be got to complete the U.A.F. diet, but kept to small quantities of fish, fowl, and game and I saw him from time to time for many years. Eleven years later he reported that he had some

hæmaturia some months ago, probably due to gravel. (*He is now clearing out his urates, second collæmic stage.*) He now has both muscular rheumatism and depression, but neither so bad as they used to be. (*We must remember that some forms of arthritis are made worse by collæmia, and so may be contemporaneous with depression*). I now gave some iodide and nux vomica, which acted as a retentive, and relieved both the rheumatism and depression. Pulse 64; C.R. 6·5; B.P. 115. (*The B.P. should be* 130, *and yet the heart is slow; possibly there is some little fatty degeneration of the heart muscle*). This patient was told years ago by the late Dr. Todd, of King's College Hospital, to give up his morning cold bath as a remedy for his afternoon depression, and this was to some extent successful (*i.e., no retention in morning lessens collæmia in afternoon, just as diminished acidity at night diminishes retention and the consequent collæmia and depression next morning*).

Here was a case quite curable on U.A.F. diet, but age and prejudice rendered it impossible. He was better on diminished poisons, but never cured. It is possible that both the slow pulse and unduly low B.P. were due to underfeeding; many of these people who will not give up their meat do, quite unnecessarily, diminish their proteids. There were no other marked signs of fatty heart such as irregularity, dilatation or altered sounds, other than the reduplicated first sound already noted.

Case 19.—L. G., male, aged 35. Complains of constipation and a coated tongue, with mental anxiety, depression and a mental cloud. His father suffered from headaches. Has had depression for years, at times severe. Had diphtheria sixteen months ago. No headaches. Tongue yellow coat, red edges. Sleeps very badly, insomnia worse in attacks. Appetite fair. B.D. ·55 to ·6; pulse 76; C.R. 8; B.P. 135. Second sound moderately loud. Liver dulness full size, stomach down to lower border of umbilicus. Descending colon and sigmoid somewhat loaded. (*Collæmic dyspepsia and constipation.*) Takes Turkish bath twice a week to relieve his depression (*temporary lowering of tension*).

There was here some early heart failure under the collæmia, he should have had spaced meals, diminished fluids and a heart tonic in addition to U.A.F. diet later. He had diminished his poisons to some extent, but still continued eggs and coffee and was probably also underfeeding

Case 20.—E. B., male, age 58. Complains of insomnia and lassitude. He goes to sleep but wakes at 3 or 4 a.m. Tired and weary all day. A mixture containing sulphates does good. He wants advice as to diet. Has been thirty-five years in India. Habits temperate, but fed well. Drinks whisky-punch diluted with soda. Father and mother healthy, died in 70th and 80th years. Some brothers and sisters have rheumatism, sciatica and lumbago. Jaundice twenty-seven years ago. Sciatica three years ago. Lumbago this year. Eczema for several years, relieved by a course of alkalies. Appetite fair, tongue large, pale. B.D. ·8; pulse 72. First sound long and reduplicated. Second sound loud at base. A doctor he has been to told him his nervous system was weakened. Smokes a good deal of mild tobacco. He was advised to go on diet and to take a good deal of cheese and gluten so as to be able to diminish milk and fluid. He did well, and kept on diet for a number of years with benefit, becoming an active propagandist of the diet in India.

Case 21.—G. B. A., male, age 69. Complains of insomnia and nervous depression. His daughter says he is much worse in the morning. After late hours and overwork seventeen years ago had an attack of "nervous depression." Had enteric at 5 years old. Occasional lumbago in damp weather, obstruction

of bowels ten years ago, cleared up by enemata. Had insomnia and palpitation of heart at 20 years of age. "Is selfish in attacks." Pulse 72 (*generally slow*). Apex beat in left nipple line. First sound reduplicated lower sternum, second sound loud at base. Tracing gives large first wave high up on upstroke. Urine 1020, slight trace of albumin, urea 1·9 per cent. (*probably some plus uric acid? granular kidney*). He is worst as to depression in July and August, well in the cold months. A sea trip does him good. (*This patient was on the border line of mental troubles and my treatment did not get a chance, as he had to be put under restraint, where no diet or other physiological treatment was possible.*)

Case 22.—M. M., female, aged 56. Complains of feeling no good after influenza, insomnia, and headache. Headaches worse with the influenza. Had quinsy occasionally years ago. Occasional rheumatic pains and slight rheumatoid changes in knees. Influenza every spring for last two or three years. "Nervous headaches" for years. Worse after long nursing of invalid sister a year ago. Pain is all over the head. Has attacks of sudden tiredness. Pulse 85, not very high tension. Apex beat heaving and outside left mid-clavicular line. First sound long. Has occasional dyspepsia when weak. Urine 1018, no albumin, no sugar. There is a very slight œdema of ankles. Has taken bromide of ammonium, also bromidia and antipyrin for headaches, also bark, which made her worse (*as one would expect*). Headaches now average one a month, coming in the morning on waking and lasting six to twenty-four hours. Cannot take food or would vomit. One son has similar headaches (*this is obviously uric acid headache—migraine*). Takes much tea, three or four times a day, also meat three times, egg once a day. Brandy at night. (*Obviously a sufferer from chronic migraine, becoming depressed as the heart begins to fail.*)

Case 23.—A. S., male, 31. Has suffered from depression for five years. Has occasional headache (one in six months). No connection between headache and depression. Depression worse in the morning, better after his mid-day meal. Has been a masturbator for years, but not to any great excess. (*This is generally a result of high B.P. and defective circulation in the centres, and has little or no direct effect in increasing the depression.*) Father and mother alive and well, no headaches, gout, or rheumatism in the family. Has had gonorrhœa, no syphilis. Had scarlet fever ten years ago and dyspepsia cured by bismuth eleven years ago. Depression came suddenly one morning, feels since as if living in a dream. Has smoked many cigarettes. Pulse 72, at times 78, some plus tension even after a two miles' walk. Heart, first sound long, second sound loud. At times there is a systolic apex murmur heard also at left base (*? dilatation*). Pulse tracings all show high tension, take 5 oz. pressure to develop them and show a first wave and predicrotic notch above the middle of the upstroke. (Slowest pulse 65, shows also highest B.P.) Diet includes fish twice, meat once, tea four times and wine once a day. Urine as passed in morning 1028, acid, no albumin, no sugar. Urea 2·2 per cent. only (*therefore probable excess of uric acid*). When head is bad urine is thick and scanty. Has heaviness and depression, with flatulence after food. Is very irritable when the head is bad. A dose of pyretic saline has done much good in the mornings. Sleeps badly. Has feelings of indifference to everything.

Here, again, a high B.P. circulation in a man addicted to poisons with the usual dyspepsia and sluggish (congested) liver; the heart being at times in difficulties and causing deficient cortical circulation, with irritability, masturbation, and depression as its results. This was in pre-instrumental days when I understood little about causation or treatment, but on re-reading my old cases I now see it all in the light of more recent ones.

Case 24.—D. R. D., male, aged 44 (medical). Suffers from gradually increasing depression. Had an attack of melancholia in the spring two years ago. Has occasional slight vertigo with a sense of confusion and a dull aching at the back

of the head when awake in the early a.m. hours, "nuchalalgia." Eats fairly well, but not much sense of satisfaction. B.D. ·8. Is much worried about various things, sleeps very badly, wakes in early a.m. hours and cannot get to sleep again till 8 a.m. Pulse 88; C.R. 8·5; B.P. 145 (*should be* 170). First sound reduplicated, second sound loud. Suffers much from constipation. Present diet includes egg, fish, soup and meat once each, tea or coffee five times, wine or beer twice a day. (*Here again we have a collæmic circulation with marked signs of heart failure, the amount of failure no doubt varying from time to time, and with this an increasing depression, at times amounting to melancholia.*)

Case 25.—S. B., male, aged 54. Complains of being physically and mentally limp and unfit for work. Had gout in toe at 35 when at Homburg (*a water containing lime and chloride, therefore retentive*). Had influenza twelve years ago and badly. Had severe headaches six to eight month ago for which he was given phenacetin. He again had influenza four months ago and then gout followed in the right great toe as before. Both his father and his father's father suffered from gout and stone. Considerable headache and vertigo lately. Skin of face is puffy. Appetite poor, often some nausea. Is very depressed and suffers much from worry. Sleeps badly, wakes 3 a.m. and no restful sleep after that. B.D. ·8; pulse 76; C.R. 8; B.P. 175. Apex beat in left nipple line. First sound long, second sound loud. (*Here we have decidedly high B.P. but no marked sign of heart failure, and the depression has not gone as far as melancholia.*) Some black expectoration in the morning (*this may possibly be a sign of secondary bronchial congestion*). Considerable flatulence, but bowels act two or three times a day (*signs of chylopoietic congestion* ?). Present diet includes fish twice, meat two or three times, coffee once, brandy and soda or wine twice a day. Takes coffee and phenacetin to relieve the pain. I told him to diminish his fluids and four weeks later his pulse was 68; C.R. 6·5; B.P. 140 (*still above the normal ratio*). Gout has been better, though he has had some pain in right knee. He is still a good deal depressed and has headache if he does not take tea or coffee. This patient was afraid to give up either his meat, tea or coffee.

Case 26.—F. B., male, aged 49. Complains of depression, for a long time off and on, but increasing the last two years (*early second collæmic stage*). Father died young, mother old and well, one sister died cancer. Had pneumonia very badly ten years ago (*here is a thing which may bring on the second collæmic stage rather early*). Carbuncle on neck and temporary albuminuria one month ago. Never has headache, skin puffy about the eyes. No headache and yet his B.P. is very high. (*There are some the anatomy and physiology of whose skull and brain prevent them having headaches with almost any* (?) *pressure*). Appetite good, sleeps well. B.D. ·8; pulse 64; C.R. 9·5; B.P. 165. Apex beat in left nipple line. Impulse increased, first sound long, second sound markedly loud. Has occasional discomfort in epigastrium, increasing of late. Liver dulness not increased upwards, but its edge can be felt below the ribs, stomach extends to lower border of the umbilicus and there is a splash. A morning urine has specific gravity 1025, full amber, turbid with urates, free from albumin and sugar. Diet includes egg once, fish and meat twice, soup once, tea or coffee four times, whisky two or three times a day.

These are just the cases that crave for and tend to increase their stimulants. He had depression for a long time off and on, as he had had a collæmic circulation for a similar period. Then the pneumonia and the carbuncle knocked him about a bit and the collæmia increased and became more continuous and with it the depression; circulation was only occasionally bad enough to cause deficient combustion of albumins and albuminuria.

Case 27.—R. A., female, aged 25. Complains of acid dyspepsia, relieved by soda. Suffers from occasional attacks of mental excitement and has a fixed

idea that she has gout in the blood brought on by her own over-eating. Has occasional nausea, no vomiting. Dyspepsia has been worse last two months and now lives on milk only. Had gout in the hand two months ago and dyspepsia got worse as the gout in the hand got better. Was a large meat-eater. Father has mania and delusions and is under mental care. One brother dyspepsia and liver trouble. Patient had "low fever" at 16 years old. Appetite irregular. Dyspepsia is worse after the later meals of the day. Sleeps fairly; B.D. ·7; pulse 72; C.R. 9; B.P. 130 (*again a defective C.R. B.P. ratio*). Apex beat to left of left mid-clavicular line, first sound long or ? murmur, second sound loud. There is some œdema of the ankles. Present diet consists of biscuits, Benger's food, milk, jelly, and bread and butter. The total milk, including that in the Benger, is three pints a day.

This is about as bad a diet for a heart suffering under collæmia and debility as it is possible to get. It contains far too much fluid and probably, after all, deficient proteid; more nourishing solid food at once causes pain and so has been avoided. Hence the increasing debility, heart failure and excitement.

At other times she has attacks of ravenous hunger (bulimia) and cannot stop eating. This is a mere variation of her dyspepsia. I saw her again about eight months later when she had gained a little in weight, but still had pain after food and irregular appetite. Pulse 84; C.R. 7; B.P. 135; B.D. ·8, a slight improvement. She also suffered much from irritability, depression and various fixed ideas; was at times difficult to control and could not follow my directions, and I believe her friends sent her to a home for mental cases.

I give my notes as showing similar circulation conditions to those previously mentioned, similarly produced and leading to more or less similar results. Given a reliable nurse and the correct carrying out of my treatment I believe she could have been cured.

Case 28.—R. H., aged 42, male (medical). Complains of gout and depression. Mother had gout and died at 52. One brother has gout at 45. Had influenza five years ago accompanied by congestion of right lung. Had gout in toes from 21 to 23. Since then no gout but depression in its place. Sleeps well except during attacks of depression. Pulse 72; some plus tension to finger but no signs of heart failure at present. Heart sounds normal, second somewhat loud. Urine (part of) 1,403 c.c., amber, turbid, sp. gr. 1021, alkaline, no sugar or albumin. Urea 1·6 per cent. = 344 gr., or about 2·2 gr. per lb. on his body weight (154 lb.).

This low urea is probably the result of collæmic dyspepsia, and looking to the low relation of urea to specific gravity he was probably passing an excess of uric acid, and the excess in his blood accounted for the dyspepsia.

His present diet is obviously deficient in nourishment and yet contains some poisons, *e.g.*, egg, meat, soup, cocoa, and tea. I gave acid phosphates and strychnine, and ordered an increase of albumins, chiefly in the form of bread, milk, and cheese. His depression did not improve (*probably because I gave a good deal of milk and did not diminish fluids*). Urine three weeks later 1,560 c.c., sp. gr. 1018, acid; urea 1·7 per cent. = 480 gr. or 2·6 gr. per lb. (*which is an improvement*). A month later he had an attack of gout in head, face, and neck (*this means gouty eczema*) which relieved the depression (*here we have direct alternation of these two phases of food poisoning*). Three months later the urine showed 2·7 gr. per lb. of urea, and a month later he had gained 4 lb. in weight and was

feeling much better. Unfortunately he was told to take some pulses (*this was before I discovered the poison in them*), which no doubt did some harm later.

Case 29.—M. B., male, aged 46. Suffers from low spirits and insomnia, also pain in the back of the head for two years. His father suffered from depression. Had influenza followed by palpitation five months ago. Appetite bad of late. Is depressed and wants to avoid his friends, occasionally feels suicidal. Sleep very poor, awake most of the night. Pulse 80; C.R. 7·5; B.P. 120; flattened 160. Apex beat is slightly to the left. First sound long, second slightly reduplicated. Some signs of chronic arthritis in the hands, and has occasional shooting pains in them. Knee jerks equal and natural. Stomach down to umbilicus, no splash. (*I considered him to be suffering from post-influenzal collæmia, causing depression and weak heart muscles.*) Everything feels a burden now; he used to enjoy work. His depression seems to vary considerably, he is up and down. His diet contains poisons in meat once or twice, fish once, and egg once a day. occasional peas, and used to take strong tea and coffee, was fond of it. I gave a heart tonic and diminished his fluids and poisons, and he got much better as regards the depression. He died of pneumonia seven months later, and no doubt the weak heart accounted for this termination.

Case 30.—M. M., female, aged 66. Suffers from "terrific depression," alternating with gout. Has had gout for ten or twelve years. First had depression twenty-two years ago and then went to America for a change. Subject to it off and on since. Wakes in the morning in horror and fears complete loss of mental balance. Her father had gout and one brother gout in feet and eyes. The depression returned severely six months ago in April. Has had typhus and scarlet fevers, also "low fever," the last at 17 years old. Skin of face is distinctly puffy (*and brain membranes are œdematous, no doubt*). B.D. ·75 to ·8. Appetite fair, depression now alternates with brightness. Sleeps badly, often wakes at 3 a.m., even when taking sleeping draughts. Pulse 80, occasionally intermittent. Beats of unequal force, at times a rise of 20 mm., at others of only 5 on the sphygmometer. C.R. 11; B.P. 145 (*ought to be* 220, *an obviously failing heart*). Apex beat nearly in anterior axillary line, first sound long, second sound loud. Has a feeling of weight in chest and epigastrium after food. Lower border of stomach is just below umbilicus, and there is a splash. Occasional cascara for bowels, urine thick and much sediment, no albumin, micturates two or three times in the night. There is some slight œdema of the ankles, as also no doubt of brain membranes. Weight 14 st. 12 lb. Present diet includes egg, meat and fish once a day, tea twice a day. (*This is a comparatively moderate diet, much more moderate than it used to be.*) I advised diet in stages with diminution of fluids, and gave some retentive drugs, and occasionally phosphate of soda and nux vomica. Six weeks later is a little better, but still has frequent rushes of blood to head, especially to occipital region. Is doing well on diet, and fluid is reduced to 20 oz. of milk per day, and a few occasional sips of water. Pulse 92 (*real rate, as there are no intermissions now*). C.R. 10; B.P. 125 (*this fall is due to diminished fluid, not, as we see from the C.R., to absence of uric acid from the circulation*). Three months later she was still improving somewhat on heart tonics of various kinds, but she had had to increase her milk in order to get enough nourishment. I advised her to increase her solid food so as to diminish milk and fluids. (*This was in old times. I should to-day have put her on two meals a day, which not only diminishes dyspepsia, but also makes it easier to diminish fluids, and given her milk chiefly in the form of fresh curd.*)

Case 31.—M. P. G., female, aged 42. Complained of indigestion, headache and giddiness, which were worse last summer in the hot weather. May be giddy at any time of the day. Her mother suffers from sick headache. One sister has violent neuralgia, another has slight rheumatism. Father suffers from chronic nasal catarrh, as does the patient herself. She has been subject to sick headaches all her life. Has occasional pain in the left great toe (*? gout*). Gets violent colds in the head, especially after drinking claret or champagne.

No doubt she would suffer in the same way after much salt or other chloride, or after iodides. Catarrh, as I have elsewhere

shown, is a rheumatism (precipitation or gout) of the mucous membrane involved. The nasal catarrh of chloridism is often remarkable for its regularity, coming in many people with great regularity eight or nine hours after a single dose. It is also of short duration, lasting twenty to ninety minutes, and these two peculiarities serve to distinguish it from catarrh due to other causes.

Looks pale and has been worse since she has had so much headache and giddiness in the last six or seven months. Has noises in the head, which Mr. Cumberbatch said were due to trouble in the auditory nerve (? *local rheumatic irritation*), and used a blister. Has considerable depression at times. Sleeps well, up to 5 a.m. only. B.D. only ·65; pulse 95; C.R. 8·5. Apex beat to left of mid-clavicular line; first sound long, second sound loud. (*This was in pre-instrumental days, but no doubt the loud second sound pointed to some raised pressure, of which the headache and vertigo were in part the results.*) Has suffered from constipation, but it is already getting better on U.A.F. diet, which she has been on for a few weeks. Menstruation is regular, and headaches occur chiefly before and after it. Urine occasionally thick, no albumin, no sugar. Weight 112 lb. My diagnosis was, "Inherited migraine and gout, collæmia, vertigo, anæmia after excessive collæmia of a hot summer precipitating an early second collæmic stage." She had an increase of flatulent dyspepsia on the new diet, but that was due to doing it wrongly, *i.e.*, taking excess of fluids, soups and slops, and too much fruit for a beginner, especially in the cold season. Like all collæmic patients, she never feels thirsty and yet she takes an excess of slops. (*These are just the cases for the driest possible diet.*) I spaced her meals and advised her to continue the Blaud's pills she was taking, and of which she obviously stood much in need.

Nine months later she had a fairly good report to give. She had been keeping to diet, had no dyspepsia; headaches were slight and occasional only, and at the period. There is no giddiness, and everyone says she is stouter and has a better colour. B.D. now ·75; has still some nasal catarrh in the morning; pulse 85; C.R. 6·5; B.P. 110. (*Again a result partly of heart weakness and partly of diminished fluid; it should be* 130.) She feels tired at night, and is still probably not taking enough proteid, or B.D. would have shown greater improvement. Eight months later, in the summer, she complained of being tired, and had one very severe headache a week or two ago. B.D. ·7; tongue slight pale coat, feels constantly livery (= *collæmia*). Pulse 96 always (*too quick, another sign of cardiac debility*); C.R. 7; B.P. 100. Is on five meals a day, and still too much sloppy food and deficient proteid. Has only had 832 gr. proteid, and requires at least 1,000 gr. Has also been having some asparagus and peas. Weight has increased to 9 st. 6 lb. (*probably fat only and fluid*). Seven months later complains of getting too stout, but "headaches are things of the past." I advised a drier diet and cheese and dried milk, &c., in place of ordinary milk. Three months later B.D. was ·75 (*this was a slow improvement owing to her long collæmia and deficient proteid*); pulse 88. (*In a similar case I should now cut down fluids and give nux vomica.*) C.R. 6·5; B.P. 110 (*an improved ratio*). I made some alterations in the direction of increased proteid and diminished fluid, and she went on well. She had a friend who had been longer on the diet who was very well, and this encouraged her to persevere in spite of social difficulties, which she felt greatly.

These social difficulties are for the most part artificial and unnecessary, because people whose circulation and brain power are defective imagine that since they have once done foolish things they must always do them. Hence "the largest room in the world is the room for improvement."

Case 32.—T. C., male, aged 32. Complains of dyspepsia, and everything seems to turn acid. Has suffered with this acidity of stomach with some headache for three years. No fevers. Influenza seven to eight years ago. Head feels as if the top was lifting up when stomach is empty between meals; this is cured by food. Is nervous and excitable, also depressed at times. Sleeps fairly when not disturbed by stomach. B.D. ·8; pulse, 80; C.R. 6·5; B.P. 125. (*These were at 4 p.m.; C.R. would be slower and B.P. higher in the morning.*) Apex beat is in left nipple line; first sound long or reduplicated, second slightly loud. During digestion his head swims and all his food goes acid. Bowels only open with Carlsbad salts. The lower border of the stomach is below the umbilicus, and there is a splash. The right kidney can be felt, but is not tender. Urine normal; he is an analyst and examines it himself. Weight 145 lb. (*He has obviously got dyspepsia from the defective [collæmic] circulation, and head troubles are due to the same cause.*) Has put himself on a modified U.A.F. diet for four months, and appears a little astonished that it has not done him good. Is making many mistakes; continues meat once a day, and excess of fluids in the form of hot water, also porridge and slops and many meals (*four*) in the day, also dried milk preparations, the digestion of some of which in collæmic patients is doubtful. He was taking excess of hot water before he tried to be U.A.F., as he had previously been on a beef and hot water cure for six months. Meat digested well, but did not seem to do him any good, and he lost strength on it (*i.e., in his weakly and dyspeptic condition the urates at once passed into the blood and increased the collæmia*). I did what I could to put him on a more suitable diet and to cut down his fluids, but he had got so far wrong that he could only be got slowly back towards normal. I tested his digestion of some of the dried milk proteids, and found that when they were properly in solution he produced urea equal to two-thirds of their value in three or four hours, so that he seemed to digest them fairly in this form, but he still required a more solid diet. I got him to leave off his morning hot water, and he soon felt decidedly better for doing so. Later I found one morning a pulse of 68; B.P. 130, and C.R. 8 (*here obviously the pressure would have been higher but for the diminished fluid, so that the improvement noted was due to this and not to diminished collæmia*). I advised him to go on with diminished fluids and to take some nux as a tonic and occasional bicarbonate of soda for his stomach.

I here made, as I see now, two mistakes. The pulse being slow no nux was required, aud the stomach should have been got right by clearing up the collæmia with acids, fruits, &c., and spacing the meals, one, or at most, two meals a day, and not by bicarbonate of soda, which would increase the collæmia, even if it temporarily relieved the stomach. The removal of collæmia and the treatment of the circulation is in these cases all important.

## *Asthma.*

Case 1.—F. G. A., male, aged 30. Complains of asthma for fourteen years, except two years ago when he got married and was well for a whole year. Father had the same as a young man, but it left him at the age of 32 when he got the gout. (*A retention disease curing a collæmic one.*) Health otherwise good. Attacks begin at 2.30 a.m., after being asleep, and go off about 12 noon, except when he is bilious (*collæmic*), and then it may last all day. Pulse 96 soft, his doctor says it is tense at times. Apex beat in left nipple line. Sounds normal. Urine thick at times of attack, often pale before attacks, showing fluctuations in collæmia. I advised him to alter his diet, and he then told me that he was all right as a lad while on very plain bread and milk diet, but asthma came on when he went to town at sixteen, got more money and so ate more meat. (*Here was the parallel of my own headaches, sedentary life in town increased*

*collæmia and brought the poisons of the meat at once into the blood. In my case there was little or no alteration in the amount of meat eaten.*)

Case 2.—M. F., female, aged 29. Suffers from bronchitis and asthma, also from headaches which are worse at the monthly period. Has suffered from asthma since 12 years old. (*It may begin earlier in boys, whose hearts are stronger*—"*Uric Acid*," *p.* 381). Has generally lost two or three days in every month. (*It was the observation that diet given for headache cured asthma that led me to the causation of asthma.*) Three attacks of bronchitis and one of influenza this year. Is nervous and excitable (*signs of weak heart, people often get excitable as they get old and weak*). Sleeps badly and wakes at 3 a.m. with the asthma. Pulse 120; C.R. 7; B.P. 95. Apex beat a little displaced to the left, no murmur heard. There is a good deal of emphysema, which masks the real sizes of heart and liver. Takes much fruit to regulate the bowels. Has piles which bleed a good deal at times. Menstruation every three to six weeks, considerable pain first two days, and bad headaches then. Uses Tucker's spray for her asthma (*a retentive, cocaine*). Four days later she reported a very bad headache and asthma rather bad. Pulse 120; C.R. 8; B.P. 125 (*a rather higher pressure, which would have been higher still but for heart failure*).

Case 3.—A. B., male, aged 42. Dyspepsia four or five years. Bronchial asthma eighteen months. Is better in an elevated situation. Mother weak in chest, and died with chest trouble at 70. Patient's chest always weak. Sleeps badly at night owing to asthma. B.D. ·85; pulse 96; C.R. 8·5; B.P. 145. First sound long, second sound loud. Apex beat in left nipple line. General emphysema and some râles at bases. Stomach is quite down to the umbilicus, but there is no splash. (*Again an obvious case of collæmia with heart failure, these accounting for congestion of lungs and bronchi, as well as for dilated stomach and dyspepsia.*)

Case 4.—C. H. F., male, aged 18. Complains of asthma all his life. Father suffers from rheumatism. One brother bronchitis, one sister same, and nasal catarrh. Had eczema as a baby very bad in head.

This is known to be a very common sequence. Eczema is a retentive disease in the first retentive stage. Asthma, a collæmic disease, comes later on, as the first retentive stage passes off and gives place to the first collæmic stage. The very uric acid, which in the skin caused eczema, in passing through the blood later on causes asthma. There is here the exact parallel of the relation between acute rheumatism at 13 and chlorosis at 17.

Had appendicitis three or four months ago, ill five or six weeks with it. (*These are all results of uric acid food poisoning; appendicitis is a retentive disease and comes in the second retention stage, as we see. In boys the first collæmic stage is shorter than in girls.*) Sleeps well when there is no asthma. B.D. ·8; pulse 80; C.R. 9; B.P. 115. Apex beat slightly to the left. First sound long. Some râles at both bases. Has had occasional chilblains and suffers much from cold hands and feet (*still other signs of collæmia and weak heart*). Asthma less of late, since the appendicitis (*i.e., retention diminishes collæmia*). Bowels open with salts or magnesia. Stomach one or two finger-breadths below umbilicus and gives a splash. An indefinite rounded mass can be felt opposite crest of right ileum (*? residual thickening from his recent appendicitis*).

Case 5.—G. W. G., male, aged 42. A similar case to the above except for absence of headaches. Complains of asthma, gout and rheumatism. Has given up business on account of asthma. Had asthma as long as he can remember. Has been a great tea drinker till recently, five to six cups a day. At one time he took much black coffee to ease the asthma, and had very scanty urine after it. Father died of Bright's disease, aged 61. Mother had migraine, died aged 72. Mother's father, gout and rheumatism. Had influenza and rheumatism sixteen years ago. Hay's asthma cure relieves him but he gets an iodide rash with it. Skin of face puffy. Is subject to nettle rash and eczema. Polypi of nose removed three or four years ago, which diminished the asthma. Sleeps well till

4 a.m., then awake till 6 with asthma (*early collæmic period of morning*). B.D. ·8; pulse 76; C.R. 8·5; B.P. 140. Has occasional palpitation (*a further sign of temporary heart failure*). Some flatulent dyspepsia. Stomach large, below umbilicus and gives a marked splash. Urine 57 oz. per day, sp. gr. 1017, acid. Urea 2 per cent. = 526 gr. or 3·3 gr. per lb. on 157 lb. No albumin, no sugar. Veins in legs considerably enlarged and wears elastic bandages (*another sign of defective circulation*). A portable Turkish bath makes him better in himself, but does not diminish his rheumatism. As he is producing over 500 gr. of urea I gave him a corresponding quantity of proteid in his food.

Case 6.—E. H., male, aged 31. Complains of irregular action of the heart and general nervous exhaustion. Has suffered for four or five years, getting worse of late. "There is no dyspnœa, but the heart palpitates on walking." Feels better in cold weather, but collapses in warm. Has exhausted feelings and faint condition and trembling every day when warm (*collæmia and collæmic dyspepsia*). Has had no illnesses or fevers except a sprained knee. B.D. ·85; pulse 72; C.R. 6; B.P. 135, flattened 180. Pulse slightly irregular in time and force. Apex beat just outside left nipple line. First sound long and slightly rough. Second sound loud. Never coughs, has occasional colds in the head. Liver dulness full size. Stomach is down to umbilicus and the tip of the right kidney can just be felt. Urine full amber, acid sp. gr. 1026 (*collæmic urine*), no albumin, no sugar. Has been insured. Weight steady at 13 st. Has been diminishing meat of late, used to have four meat meals a day. Has generally nausea in the morning and is empty after breakfast in the morning (*i.e. collæmic dyspepsia of collæmic hours*). Has been a great smoker and has been told to stop smoking and alcohol, the diagnosis being "smoker's heart."

This is very interesting, but how does the smoking do it? I think this history and these physical signs tell us exactly how it does it. He suffers from intermittent collæmia and its effects, due to previous retention, which in its turn is due to the smoking. The sprained knee was probably a traumatic gout of the knee demonstrating one of the foci of retention. Then, given retention and accumulation, he would have more collæmia in warm weather and less in cold, the rest is simple; a mere result of collæmia, such as we have seen in many previous cases. Thus in the morning he has after breakfast a rush of retained uric acid into the blood, up goes the pressure, the heart falters, flutters, palpitates and does bad work. As a result we get enlarging liver, congested stomach and arrest of gastric digestion and absorption. The feeling of emptiness is due to the consequent break in the passage of albumin from the stomach into the blood. Everyone feels this, for in everyone the passage of plenty of albumin into the circulation is accompanied by feelings of increasing strength and power, and rising urea (the normal condition after a meal, see "Diet and Food," edition vi., pp. 29, 47); but stop gastro-intestinal digestion and absorption and at once there is a feeling of empty weakness (just such as this patient describes) with greatly diminished power and falling urea. With this we get naturally, in a collæmic, increasing collæmia, increasing heart block with palpitation and irregular action. This is but the

ordinary history of every migraine attack. This so-called "smoker's heart" is simply one which palpitates and acts irregularly when the pressure is raised by collæmia, as very many hearts (which are normal except for some slight loss of muscle tone) will do; the tobacco acts chiefly by causing retention and storage of urate, followed by intermittent collæmia, worse in the morning (breakfast time) and in warm weather. The tobacco is also, of course, a direct cardiac depressant. The slightly enlarged heart, liver and stomach are concomitant results which explain the symptoms. The general nervous exhaustion (neurasthenia) is a result of recurrent collæmic dyspepsia, deficient circulation and nutrition of muscles and brain. We meet with all these symptoms in the same relation to each other in collæmic cases in women and others who have never used tobacco, though in them possibly tea, which affects both introduction and retention, has played a similar role. This patient has no doubt some dyspepsia, though it was not painful, and the empty weakness, due to diminished income of albumin and falling urea, was its chief sign. I saw him at a time when there was no great collæmia and no palpitation, and, except for some raised pressure, the circulation ratios were fairly normal. The heart enlargement and altered sounds pointed to previous and oft repeated collæmia. The high specific gravity urine pointed to collæmia blocking the renal capillaries and, with the fact that he was insured, showed that there was as yet no kidney lesion. The whole was a result of meat poisoning, the retention being aided by the action of tobacco and wine acids. Most great meat eaters tend to take wine and to smoke to excess, because the first effect of these things is to stave off the collæmia while increasing the retention and accumulation, and insuring more severe troubles later, to defer which both wine and tobacco must inevitably be increased. His morning nausea is probably quite as closely related to his morning collæmia (with its congestion of digestive organs) as to his alcohol, though alcohol also acts by producing collæmia and secondary congestion.

Case 7.—M. C., female, aged 39. Complains of flatulent dyspepsia for twenty years. Has occasional vomiting with it and vomits all meat or anything with a skin on it. Mother had rheumatic fever seven times, father gout and rheumatism, one brother a touch of gout. Two brothers dyspepsia. Measles twenty and scarlet fever fifteen years ago. Skin slightly puffy. Leads a very active life, but is occasionally depressed. Sleeps well except when flatulent. Slight enlargement of left lobe of thyroid. B.D. ·85; pulse 112; C.R. 8·5; B.P. 115. Apex beat in left mid-clavicular line, no murmur, some slight constipation. Menstruation regular. Liver dulness increased, stomach below umbilicus and some splashing. (*Obviously a case of collæmic dyspepsia with weak heart muscle.*) Has read "Diet and Food" and left off tea and coffee, which she

previously took in large quantity; she is still taking excess of fluids and probably deficient proteid—hence the poor muscle power. I advised her to give up bacon, egg and meat, to diminish fluids and increase breadstuffs. (*This was in old times when I used to think it necessary to increase breadstuffs if fluids had to be diminished. I now replace milk by white of egg and fresh curd.*) A year later she was much better and vomiting was only very occasional. Previously she occasionally vomited every night for six weeks. Pulse 80; C.R. 6·5; B.P. 115; B.D. ·85 (*i e., as before*). I advised further reduction of fluids, and if possible two meals a day; in these cases even milk must be reduced to 20 oz. a day or less.

Case 8.—W. J. V., male, aged 46. Complains of bronchial asthma, which is relieved by iodide. Father was gouty. Father's sister suffered from aortic disease late in life. One brother died of Bright's disease. Is stout and complexion vascular. Pulse rather slow, and shows high B.P. Second sound loud. Lungs emphysema, and general cooing and wheezing of asthma. Has much flatulence. Urine no albumin. Weight 12 st. 12 lb. 8 oz., in heavy clothes. I told him about diet and to reduce his meat, and told him to keep urea about 3 gr. per lb., and advised that he should collect twenty-four hours urine and see what urea is before making any complete alteration of diet.

He returned in a month better in every way, having reduced his animal food by half; and says he is much better for leaving off tea and coffee. There is slight œdema of the legs. I now insisted on a twenty-four hours collection of urine. This was 61 oz., sp. gr. 1025, no albumin, no sugar, urea 2·4 per cent. = 631 gr., or nearly 3·8 gr. per lb., on 168 lb. But it must be remembered that he was stout and aged 46, and that his real bone and muscle weight (*the weight to be nourished*) was something decidedly less, probably only 10 or 11 st.

Thus he was producing about 4 gr. of urea per lb., and producing also by formation between 4 and 5 gr. of uric acid per day more than he need. No wonder such people suffer severely; they are introducing in flesh, tea and coffee some 8 to 12 gr. of uric acid a day, and are also forming from an excessive intake of nitrogen some 4 or 5 gr. more. There is no doubt, I think, that many flesh eaters not only swallow poisons in plenty, but they also largely overdo the nitrogen, and thus suffer both from introduction and formation of an excess of uric acid.

## *Chlorosis.*

Case 1.—F. A., female, aged 16. Suffering from chlorosis (*i.e., in the first collæmic stage, and chlorosis and anæmia are collæmic diseases, due to meat and tea poisoning in the preceding first retention stage, ending at* 13 *or* 14 *in girls*). Blood at first, hæmoglobin 43 per cent., cells 89 per cent. = B.D. ·36. She was sent to bed and given U.A.F. diet, with a little fish added, two weeks later B.D., same ·36, fish cut off. Rest in bed had done no good. This was followed by some headaches, and B.D. fell gradually to ·30 (*i.e., collæmia of diminished proteid*). Mist. ac. nitro-hydrochlor. was given for the head, and B.D. improved to ·32 and ·36 in the three following weeks. Some salicylate of soda was given with the acid, and there was a further improvement to ·38 and ·39, and in four weeks it had reached ·4, but it fell again later to ·35 and ·32. She was then put on citrate of iron and ammonium (*a double retentive*), and, to make sure of enough food, some meat and fish, and in three weeks B.D. had risen to ·57. She then gained weight and went on well.

After several experiences of this kind I gave up all attempts to put chlorosis cases on U.A.F. diet, which merely increased collæmia,

of which headache was a sign in the above case; the B.D. falls, of course, in all collæmia and with every collæmic headache. The best plan is to feed them up on any kind of proteid of which they can most easily take a sufficient quantity, and to give some retentives, namely, those that are least likely to cause general disturbance of important functions. Try first an acid, and then in some cases iron and ammonium, as above; in others iodide of mercury, or mercury in other forms may do best; mercury will often act when iron fails. Copper is not generally so good as the others, as it and zinc both cause colic early (retention in intestinal walls), and so upset digestion and fail to be retentives any longer; and the same applies to mercury, if it acts as a purge or causes colic and dyspepsia its retentive effect is lost in the collæmia of the dyspepsia, and so it, in common with zinc and copper, fails to produce retention (*i.e.*, to clear the blood of uric acid), and stop collæmia and the anæmia which is secondary to it, but chloride of ammonium, a noteworthy retentive, will sometimes do well when the others disagree. We have to clear up uric acid and it matters little how we do it, so long as we do it without upsetting digestion. Sufficient food (proteid) raises the acidity and helps to clear the blood of uric acid; deficient proteid lowers acidity, increases the solvent powers of the blood and so the collæmia. The same applies to dyspepsia; it is almost impossible to cure chlorosis while there is much dyspepsia, though dyspepsia is for the most part but one more result of the collæmia; and it is in clearing up collæmia and its results, sluggish liver and congested stomach, that mercury does so well; but all retentives act in the same way. Once the collæmic of 16 has been got into a condition of good nutrition and natural acidity with B.D. of ·8 or ·9, the retentives may be reduced and left off, and then she may be changed on to a U.A.F. diet, provided this is done slowly and without upsetting digestion or nutrition. She will then keep well and be free from relapses; on the other hand, if she is merely cured by retentives, and continues on flesh and tea, she is certain to relapse every six or nine months, probably in the next warm season after the so-called "cure"; for the power of retentives cannot be kept up constantly, and the accumulating urates in liver, spleen and elsewhere are certain after a time to overflow, and the chlorosis recurs. On a U.A.F. diet, however, there being no introduction of fresh uric acid, the stores are gradually eliminated without causing marked excess of uric acid in the blood, and she remains quite well. I have mentioned in "Uric Acid," p. 536, a patient who lived for

twelve months on nothing but bread and milk, and came back at the end of that time with magnificent blood in spite of both constipation and some slight dyspepsia; for, her stores being eliminated, these troubles could do no harm to the blood. And all girls of this age would have splendid blood if it were not for their previous meat and tea poisoning, and the rheumatism (one sign of retention) this produced at 12 and 13. The whole of these troubles are the effects of food poisoning, and are not and have never been "diseases"; but unfortunately for the races thus given over to flesh and stimulants the mental effects are worse, and more far-reaching than the obvious physical ones. For collæmia, poor blood and defective circulation mean defective development of mind, defective power of comprehension and mental absorption, defective initiative and balance, a wrong outlook on life and its meaning; and we may add to these irritability, bad temper, and a host of similar minor defects which are greatly intensified by the food poisons, and thus develop into traits of character and become part of the life-history of the individual, who is thus not merely chlorotic, but ill-developed both in body and mind, which are defective in all their functions. Thus we get a blighted, stunted, degenerate life, for which family happiness is nearly impossible, in place of the full and complete development of all bodily and mental powers and possibilities. The chlorotic child of to-day is the anæmic ill-developed mother of four or five years later; and by such folly and for the sake of such poisons is the whole future of the race mortgaged. The constipation and dyspepsia in the case above quoted from "Uric Acid" were probably due to the eating of white bread containing alum, out of which she made her bread and milk. Her B.D. was 1·05 (my own blood at that time being from ·95 to 1·0), and all her friends remarked on her splendid colour.

Case 2.—A. R., female, aged 19. Complains of dyspepsia and anæmia, following rheumatic fever eight months ago.

This again illustrates a common sequence, the alternation of rheumatism with anæmia, according as the poison is in the tissues or in the blood, and the self-same urate which caused pain and irritation in the tissues eight months ago produces anæmia, as it interferes with circulation and metabolism in passing through the blood to-day.

After some preliminary treatment by bismuth and Carlsbad salts for her dyspepsia, her blood gave hæmoglobin 52 per cent., cells 107 per cent. = B.D. ·48. She was then put on iodide of mercury. But eight days later there was still considerable dyspepsia with headache and occasional nausea, and the urine

showed urea 231 gr., uric acid 10·8 gr., relation 1 to 21 (*still a marked excess*). Blood gave hæmoglobin 64 per cent., cells 125 per cent. (*the larger percentage of cells was due to a diuresis which the iodide had now begun to produce*) = decimal ·51, and nine days later when the urine gave urea 314 gr., uric acid 11·5 gr., relation 1 to 27, the blood showed hæmoglobin 61 per cent. and cells 114 per cent. = B.D. ·53.

The improvement here was not nearly so marked as in some other cases I have put on this iodide, but still it shows sufficiently clearly, and it corresponded with a diminishing collæmia as shown by the excretion of uric acid in the urine. In another case I have recorded, a more marked diuresis occurred, while the iodide caused improvement in the blood condition (see "Uric Acid," p. 510). The above patient would have been watched longer only her friends wanted her at home, so she was given some iron to continue the cure and allowed to go out.

Case 3.—G. K., female, aged 18. Suffering from chlorosis. Blood on admission gave hæmoglobin 29 per cent., cells 98 per cent. = B.D. ·3. She was put on pulv. ferri carb. gr. x ter, and in four weeks hæmoglobin was 66, and cells 105 = B.D. ·62. The iron was then left off. Seven days later B.D. had not altered, and 4 gr. of uric acid a day were then given for three days. At the end of this time B.D. was ·6, but as the catamenia were present on two of the uric acid days this might have caused a fall. Seven days later B.D. was (on no drugs) ·67. (*Note the rise without further administration of iron*), and then the same dose of uric acid was repeated, and four days later B.D. was ·64, but three days later had again risen to ·67.

It is clear then that administration of a small dose of uric acid brought down the B.D., but that it otherwise continued to rise steadily for three weeks after the iron was left off. This is easy to understand if we remember that iron has little or no direct effect on the blood (as used to be supposed), but merely, like mercury, copper, zinc, acids or am. chlor., puts an end to a condition of collæmia which was interfering with the normal blood metabolism; then the collæmia being broken through, the fires of life burn up, and improving nutrition with rising urea and acidity keep the blood clear of uric acid in spite of the iron having been left off. But when you add fresh uric acid in such quantity as can at once pass into the blood (for obvious reasons a large dose will not do this), you get a definite but temporary fall of B.D. while it is passing through the blood. Sir A. Garrod, it may be remembered, gave 30 gr. of uric acid with no effect, but some eczema; that is to say, the large dose caused retention, and being itself to some extent retained in the skin and elsewhere, never remained in the blood at all, or only came into it later, when patient was not under observation.

Case 4.—A. P., female, aged 17. Chlorosis. On admission hæmoglobin 28 per cent., cells 72 per cent. = B.D. ·38. Like some previous cases, was put on pulv. ferri. carb. gr. x. ter, but she had rather frequent headache, which was

relieved by salicylate of soda. Eleven days later the B.D. had only reached ·44, so the iron was stopped and the more powerful retentive iodide of mercury was given as in a previous case; thirteen days later hæmoglobin was 73 per cent., cells 120 = B.D. ·60. Iodide of mercury taken off, iodide of potash and salicylate of soda given in its place and this produced a fall, for thirteen days later hæmoglobin was 72 per cent. and cells 124 per cent. = B.D. ·58. (*Evidently both iodides caused much diuresis, as shown by the increased percentage of red cells.*)

Case 5.—E. M., female, aged 20. Chlorosis. Mother, rheumatism and morbus cordis; one sister morbus cordis and anæmia. Headache, pain in chest and short breath for three months, May to July (*the collæmic time of year*), ankles swelled at night. Heart shows hæmic murmur, hæmoglobin 28 per cent., cells 80 per cent. = B.D. ·35. She was put on nitro-hydrochloric acid mixture but did not improve, and seventeen days later urine gave 360 gr. urea and 18·4 gr. uric acid, ratio 1 to 19 (*the acid obviously had not controlled the collæmia or its effects*) and B.D. = only ·37. She was now put on salicylate of soda gr. xv. ter p.c., and the acid was continued with it, but five days later hæmoglobin = 32 per cent. and cells 109 = B.D. ·29 (*a decided fall, more decided than in the previous case, where salicylate was given with and after iodide, i.e., the greater the excretion of uric acid the greater the fall*). Salicylate was left off, but the acid mixture was continued and pulv. ferri. carb. given as in previous cases, and an improvement followed, so that in three weeks hæmoglobin was 57 per cent., cells 120 per cent. = B.D. ·47. She began to feel much better, and went out, taking enough ferri. carb. with her to last a month. (*Here, again, the blood decimal varied absolutely in accordance with the uric acid, falling with collæmia and the drugs which either caused it or failed to prevent it, and rising with retentives.*)

Case 6.—G. H., female, aged 18. Anæmia and debility for three or four years. Mother had morbus cordis. Patient bronchitis two years ago. There is a venous hum in neck and a systolic murmur at left base (*hæmic*). Put on acid mixture and Carlsbad salts; three days later hæmoglobin 30 per cent., cells 120 = B.D. ·25. Ferri carb. given as in previous cases, and three weeks later hæmoglobin 66 per cent. and cells 120 = B.D. ·55. The iron was continued and caffeine cit. gr. ii. ter was given for three days, and in four days time hæmoglobin ·61 per cent. and cells 124 = B.D. ·49, and three days later the iron being continued it was $\frac{63}{109}$ = ·56.

Case 7.—Z. F., female, aged 23. Chlorosis. An obstinate case, has been on iron as out-patient for some time without improvement, and has been at other hospitals with same result. Was taken in and put on pulv. ferri. carb. like other cases; she took her food better, B.D. which was ·21 on admission reached ·32 in seven days, and on tenth day iron was stopped and she was given the iodide of mercury. In seven days B.D. was ·38, but in another seven days there was no further improvement, and in another seven days there was a slight fall (*part of this may have been accounted for by the presence of the monthly period and the collæmia this produces*). As the bowels were acting two or three times a day, and as this probably accounted for the failure of the iodide of mercury to act as a retentive, I added tr. opii m. v. to each dose of the iodide, and in five days the decimal bounded up to $\frac{46}{86}$ = ·53. The urine was estimated while on the iodide and opium and gave uric acid-urea relations of 1-35 and 1-36, showing absence of collæmia. The drugs were now all left off, and in seven days B.D. had fallen to ·47 and the urine showed an excretion of uric acid 1-23.

So that with the rebound after the retentive drugs there was collæmia and the effects of collæmia, a falling B.D. Here the iodide of mercury quite failed because it caused intestinal irritation and increased action of the bowels, but when opium put a stop to this effect the result was as good as ever; but as soon as we let go our powerful retentives collæmia returned and the B.D. began

to fall again. In all such cases C.R. may be taken as a guide; if we quicken it we do good for chlorosis, if we fail to quicken it, *i.e.*, fail to clear up collæmia, no drugs will be of any use. Clearly opium and iodide of mercury have a powerful effect. Precisely the same applies to iron, if it causes relaxation of the bowels it clears neither the blood nor the urine of uric acid, and has no good effect in chlorosis while this condition lasts; and here, again, the addition of opium would probably make all the difference. A friend once offered to take iron as an experiment for me, but here it at once caused increased action of the bowels and no retention of uric acid was produced, and had this friend been anæmic it would have had no effect on his anæmia.

Case 8.—A. M. H., female, age 20. Chlorosis. Hæmoglobin 40 per cent., cells 75 per cent. = ·53. Iron was then given exactly as in the other cases, and in three weeks hæmoglobin 57 per cent. and cells 92 per cent. = ·61; but in the following two weeks there was no further rise, because the bowels had been open too much from excess of Carlsbad salts, and because she had menstruated during this time. Three days later beef tea was given O ½ ter and two days later hæmoglobin was 72 per cent. and cells 103 per cent. = ·69. The beef tea was only given for three days, and four days later hæmoglobin was 73 per cent. and cells 108 per cent. = ·67, *i.e.*, a fall in spite of the iron being continued all the time.

Thus it is clear that the beef tea, though it at first acted as a stimulant and did not interfere with, but even aided, the rise of B.D., later on caused collæmia, and quite counteracted the effect of the iron.

Eleven days later, iron being continued, hæmoglobin was 74 per cent. and cells 106 per cent. = B.D. ·69. Iron was now left off and caffein grs. ii. ter given for three days, and seven days after leaving off the iron hæmoglobin was 68 per cent. and cells 107 per cent. = ·63, and three days later it was at the same point. (*Here we see that both beef tea and caffein produced collæmia and a falling B.D., for we have seen in Case* 3 *that merely leaving off the iron did not entail a fall in B.D.*)

Case 9.—R. W., female, aged 18. Chlorosis. On admission, hæmoglobin 25 per cent., cells 76 per cent. = ·32. Iron given as to others, and six weeks later hæmoglobin was 63 per cent. and cells 98 per cent. = ·64. Iron was then left off and beef tea O ½ given for seven days. On the day beef tea was left off hæmoglobin was 58 per cent. and cells 95 per cent. = ·61; but three days after the beef tea was left off there was a rise to ·65. Salicylate of soda gr. xv. ter were now given for three days, and four days from last observation B.D. = ·63. She was now given meat in place of fish, which she had been on before, but the fall of B.D. continued, and seven days later B.D. was ·59 and carbonate of iron was again put on, and two days later this had caused no rise, but seven days later we got hæmoglobin 65 per cent., cells 100 per cent. = B.D. ·65.

It is thus seen that in such cases iron alone causes a gradual rise of B.D., but its action is considerably interfered with by uric acid, beef tea, or caffein, and that to give salicylates in addition to these makes matters worse, while giving meat makes matters no better. As a rule a salicylate causes a slight fall of B.D. even in

physiological conditions, and with regard to meat, caffein and beef tea their effect depends on whether they act as stimulants precipitating the uric acid in the blood and clearing it out of the circulation, or whether they merely add themselves on to the uric acid already in the circulation and increase the collæmia. In a word, the result depends on the solvent powers of the blood. In pathological conditions such as those of chlorosis, so often associated with dyspepsia and debility, the latter (collæmia) is their more probable effect, but the same dose administered to a man in ruddy health would probably cause retention and have the opposite effect. The result also varies somewhat with the dose, large doses tending to act as precipitants and stimulants, while small doses are more likely to be got into solution and increase the collæmia, and this is the reason I gave small doses of uric acid, beef tea, and caffein, and even then on one occasion the beef tea acted as a stimulant at first (Case 8).

Case 10.—E. E., female, aged 19. Chlorosis. On admission, hæmoglobin 28 per cent., cells 73 per cent. = B.D. ·38. She was kept in bed on ordinary diet, no drugs. Seven days later B.D. was ·37. *i.e.*, practically the same. She was now given salicylate of soda gr. xv. and sp. am. arom. m xx. ter, and ordinary diet continued, a week later hæmoglobin 30 per cent., cells 90 per cent. = ·33; mixture continued, salicylates increased to gr. xx. and tr. nucis vom. m. v. added to each dose, and ten days later hæmoglobin 36 per cent., cells 87 per cent. = ·41 (*an improvement, showing that we were probably getting over the worst of the collæmia caused by salicylate and it was beginning to clear the blood a little* [*see Action of Salicylates in "Uric Acid"* (fig. 51)]). Salicylates were now stopped and pil. ferri carb. gr. x. ter given, and seven days later hæmoglobin 37 per cent., cells 99 per cent. = ·37, a fall. It was now noticed that the iron pills she was taking were hard like marbles, so pulv. ferri carb. gr. x. was substituted for them, and she now went on well, and a fortnight later gave hæmoglobin 63 per cent., cells 108 per cent. = ·58.

Case 11.—C. L., female, age 19. Chlorosis. On admission hæmoglobin 28 per cent., cells 70 per cent. = ·4. She was kept in bed on middle diet and Carlsbad salts p.r.n. for the bowels. Eleven days later she had a headache, and next day we found hæmoglobin 30 per cent., cells 84 per cent. = ·35 (*a fall probably due to the collæmia of headache; it is just in these sensitive cases that one finds the effects of a headache more marked*). Four days later 3 oz. port wine were added, and five days later hæmoglobin 32 per cent., cells 96 per cent. = B.D. ·33. Eight grains of pulv. ferri. carb. were now given three times a day, and in two weeks there was a great improvement, hæmoglobin 62 per cent., cells 100 per cent. = B.D. ·62, and she was soon able to go out.

Here it seems that three weeks of rest, good food and aperients did absolutely no good; they did not even prevent a further fall. I mention this because some say that rest and feeding up cures chlorosis. They do if they raise urea and acidity and clear the blood of uric acid, but, if they do not do this, the uric acid from the meat, fish and tea passes into solution in the blood and makes matters worse.

Case 12.—E. E., female, aged 23 (anæmia). In this case iron, as in others, brought B.D. from ·4 to ·63. Then beef tea containing the equivalent of 13 gr. uric acid per day brought it in six days to ·61. It rose to ·62 four days after beef tea was off, then uric acid was given as in other cases and in three days it was ·6. She was now put on a meat-free diet and the iron was given again, and two weeks later it was ·72. Iron was left off and 7 gr. of citrate of caffein were given for three days; four days later B.D. was ·61, rising again three days later to ·68. The patient was now sent out, the iron pulv. being given again and she was cautioned against meat soup and meat extracts, in which she had previously been "indulging." (*The fall produced by caffein came as usual, some days after it had been left off. Had the caffein not been given the rise started by the iron would probably have continued.*)

Case 13.—M. W., male, aged 33. Sent to me by the late Dr. G. Keith, complaining of general debility and loss of strength, chronic rheumatism and anæmia. He had rheumatic fever twelve months ago and did a meat and hot water cure for the chronic rheumatism it left behind it. It did good at first, but later he got bilious and the rheumatism increased (*i.e., dyspepsia and collæmia keeping up joint irritation*). He then tried starvation and diminished meat. Has had rheumatic fever several times, first at 13 (*i.e., first retention stage*). His B.D. is only ·65; obviously his previous diets have not done him much good. Pulse 96 soft, first sound long, no murmur. Urine 1800 c.c., sp. gr. 1016, acid, urea 1·6 per cent. = 443 gr. or 3·3 gr. per lb., on 132 lb., which is rather low for him. But weight is now going up. He had cut off meat for a week before coming to me, but continues egg and fish. He suffered much from dyspepsia, and diet changes had thus to be made quite slowly, but nine months later rheumatism was better and B.D. ·75, and he has gained 5 or 6 lb. in weight. A few months later he reports that he was wonderfully free from rheumatism all last winter. He is diminishing fish, but dyspepsia prevents him from taking milk freely (*i.e. a fluid diet*). A year later some dyspepsia continued, but he was otherwise doing well and gaining weight. Rheumatism not now complained of at all. Now, thirteen years later, this patient continues diet so far as he is able, taking a considerable quantity of milk foods and dried milk and being, for him, strong and fairly nourished. B.D. about ·8 to ·85, which is perhaps all one can expect with such a history and in a patient who was so much crippled by the old diet as never to be able to take the U.A.F. diet in its best form and full amount.

Here we have in a male a condition much resembling that in the rheumatic and chlorotic girl in her teens and early twenties, rheumatism alternating with or accompanying anæmia. Here the chronic arthritis between the acute attacks is kept up by the urate in the collæmic blood, which at the same time causes deterioration of the blood itself, and accounts for the severe anæmia this case presented when first seen. He was treated for his rheumatism at first with salicylates, but nothing beyond some acids was given for the collæmia and anæmia, so that diet accounts for the whole improvement in these latter conditions as well as for the departure of the rheumatism, and it would have done more and acted much sooner had the dyspepsia been less troublesome. I attempted to put him on two meals for this, but my directions were never properly carried out. It is wonderful what fear the degenerate Britisher has of a proper interval between his meals.

Case 14.—M. B., female, aged 18 (chlorosis). Here we started with a B.D. of ·34 and the usual pulv. ferri. carb. brought it in fourteen days to ·56, but a week later it was in the same place, apparently because an overdose of aloes and

nux vomica pill caused some abdominal pain and four actions of the bowels in two days, this no doubt lowering urea and acidity, thus overcoming the power of the iron to produce retention. Four days later there was a further rise to ·67. Iron was left off, and beef tea given on the following day. Seven days later there was a fall to ·58, when beef tea was left off and gr. xxx. of alkali (*pot. and sodæ bicarb.*) were given three times a day; and the fall continued, reaching in five more days ·52. The alkali was now left off and three days later B.D. was ·54.

Unfortunately this patient was allowed to go to a convalescent home before I had time to make a further observation. Still the observations show fairly well that everything that caused collæmia produced a fall in the B.D., while iron which prevented collæmia produced a rise. The effect of the beef tea was intensified and prolonged by the alkali, which kept the introduced uric acid in solution in the blood. If it had merely been retained in the liver it might not have affected the blood till later, but every grain of uric acid swallowed passes through the blood at some time on its way to the kidney, and does harm as it passes.

Case 15.—L. F., female, aged 17 (chlorosis). On admission, B.D. ·6; pulse 92; C.R. 7; B.P. 130; Temp. 97·4 (*i.e., slight cardiac debility from anæmia and malnutrition*). Weight 5 st. 8 lb. 6 oz. She was put on urea gr. xv. ter gradually increased to 30 gr. as a stimulant, and after a month was put on iodide of mercury. Her weight steadily increased up to 6 st. 1 lb., when she had a sore throat and was treated with salicylate of soda 10 gr. ter and chlorate of potash. The sore throat caused the weight to fall to 5 st. 11 lb., and so at the end of seven weeks the B.D. had only increased to ·75. Then iodide was given three times a day, her weight went up to 6 st. 2 lb. and three weeks after the sore throat the B.D. was ·82 and she was allowed to go out. I put her on two meals a day for the first five weeks, to help her digestion, which it did, so that she gained weight considerably. After the sore throat she was put back on three meals a day. There was a total gain of 7½ lb., and with this the anæmia improved considerably, though no iron had been given throughout the treatment. (*No doubt the iodide of mercury would have acted more quickly but for the dyspepsia at first and the sore throat later.*)

For comparison with the above, I will just mention the blood of a vegetarian friend, aged 69, when his blood was examined thirteen years ago. He had then been a vegetarian for thirty years, and was rather proud of his blood, which he thought very good. He was not, however, U.A.F., as he ate eggs and occasionally fish. His blood gave Hb. 71 per cent., cells 101 per cent. = ·7. My blood at that time, being twenty-six years his junior and fairly U.A.F., averaged ·85 to ·88, while the average B.D. of a large number of adult male meat eaters, of course coming to me for some disease, was about ·65 to ·7.

This vegetarian, therefore, was nothing remarkable, though the patients with whom I compared him were mostly considerably his juniors, but he was not U.A.F., and perhaps did not take sufficient proteid, for the B.D. is not only a measure of the amount of uric

acid passing through the blood, but also of the general nutrition. Thus a defect of nutrition not only means a direct blood defect, like that of all the other tissues, from deficient nourishment, but also collæmia for all who have stored uric acid anywhere in the body ; and only those who have been U.A.F. for years are free from such stores, such collæmia and the anæmia it causes.

*Concluding Remarks.*

We have now seen that migraine is constantly associated with high B.P., considerable anæmia, and more or less dyspepsia, with or without dilatation of the heart and stomach ; that if when weakened by dyspepsia and anæmia, and over-worked by collæmia, the heart begins to dilate, and so fails in any of its functions, then migraine becomes associated with some forms of epilepsy, neurasthenia or hysteria, the results of a cerebral circulation, which was bad in collæmia alone, but necessarily becomes worse, much worse, when heart failure is added.

Then to these circulation troubles may be added [according to the original integrity of other organs, or the injuries they have experienced from such things as strain, accident, or fever] an albuminuria which is not merely temporary but constant (Bright's disease), a glycosuria which is not merely occasional (diabetes), a skin circulation which is worse than that in chilblains or "dead hand," and goes on to actual gangrene (Raynaud's disease) ; not merely defective brain circulation, not merely stasis causing neuritis and neuralgia, but actual œdema of brain-membranes, ending in uræmia and coma ; not mere high B.P. and vascular strain, but vascular degeneration, ending in hæmorrhage ; not mere temporary heart weakness, but permanent dilatation accompanied by degeneration of structure, leading to valvular incompetency, defective coronary circulation, fatty degeneration of structure, angina, degeneration, aneurysm.

It now becomes clear that all these things are not separate and distinct diseases, but results of one originally functional disturbance—collæmia, round which they are all grouped in apparently endless variety of admixture ; yet the true sequence and history of their causation is easy to trace, at least in its main lines, once we have the key to the true causation of collæmia by food poisoning.

Depression as well as hysteria and neurasthenia are due to defective intracranial circulation. Hence, anyone with a weak

heart may be made hysterical by tiring him. A man with a weak heart may be as hysterical as a woman; a woman is hysterical because she has a weak heart muscle. Fatigue means collæmia and cardiac debility, and this is hysteria. Organic disease is often mistaken for hysteria, because it may be associated with similar conditions of the circulation.

I have sometimes seen writers on nervous diseases speak of precordial pain as one of the marks of neurasthenia or melancholia. It is, in my opinion, much more than that: it is the outward and visible sign of the *causa causans*, the weak heart muscle. Again, the choreic child has a weak heart, and suffers from chorea partly because its heart is weak. Now such a heart rarely completely recovers, it is never again so good as if it had not dilated, and it is generally liable to do the same again. Hence the choreic child is the nervous child, because everyone with a weak heart is nervous (see "Uric Acid," p. 404, and elsewhere). Now the precordial pain in the depressed and neurasthenic is often the sign of this heart weakness, the sign also of the one factor that must be treated if there is to be any success.

Not a few of these "Nervous Diseases" are the results of defective circulation in the capillaries of the brain cortex; we have seen how uric acid controls the capillary circulation of the skin; it does the same in the brain, only more so, as its results there are multiplied by a factor which does not exist in the case of the skin; namely, the effect of high B.P. acting in a closed cavity (the skull), and putting pressure on all the contents of the cavity.

It is clear that the more uric acid there is in the blood the slower and more defective will be the circulation in the capillaries of the brain, just as in those of the skin; and, as we have seen, the weaker the heart the more will a given quantity of uric acid interfere with the capillary circulation.

Now let us take the special conditions of the brain capillaries, which are not only subject to the above causes of slow capillary circulation, but, having to work in a closed cavity in which the pressure is raised by every rise of B.P., may have their circulation, as well as the circulation in the small veins, more or less suspended, when high B.P. below drives the brain and its membranes against the vault of the skull. This hindrance to circulation in the brain membranes eventually leads to œdema (as seen in uræmia), which, in its turn, still further hinders circulation and nutrition.

Thus we see that the capillary circulation of the brain is defective: (1) because there is collæmia; (2) also because there is a weak heart, or morbus cordis, and lastly (3) because there is high B.P., which by a simple mechanical action renders the capillary circulation of the brain cortex still more defective. You have but to exaggerate these conditions to cause severe headache, coma, or even death, as in uræmia or the "serous apoplexy" of olden times.

It is a very unfortunate thing, at least as regards the cerebral circulation, that all morbus cordis is accompanied by high B.P., that is, till near the final failure or syncope. We are not now considering the causation of this high B.P., which has been considered elsewhere, but its effects on the intracranial circulation, especially in those conditions of depression, neurasthenia, and hysteria associated with a weak heart or morbus cordis.

Now it is clear that we shall make the intracranial circulation worse if we increase the collæmia, hence it is always worse in the morning and better in the evening. We shall make it worse if we weaken the driving power of the heart by excessive exercise and fatigue, or if we allow our heart tonics to raise the B.P.

It looks as if we were here landed in an "impasse," as if nothing could possibly be done; and I do not say that it is an easy thing to do much for these circulation conditions, nor do I deny that the brain, impoverished by defective circulation due to these three causes more or less blended together, does react on the nutrition, function and structure of the whole body, and make things worse rather than better.

But this pathology makes it clear that we must treat the circulation, not the nerves; that the C.R., B.P., and their relation, the rate of the pulse, and the size and sounds of the heart are the things to be studied; that a quick pulse is not indiscriminately to be put down to "nerves," when there is a wrong ratio of C.R. to B.P., when C.R. is abnormally slow, and still more when the first sound of the heart is defective (as occurs sometimes in enteric), and careful examination shows some increase of the C.D.

I do not say that a quick pulse is never due to "nerves," but, when it is accompanied by the above circulation signs, it is much more probable that the "nerves" are due to the defective intracranial circulation; this is further borne out by the fact that treatment of the circulation often gives very much better results than treatment of the nerves; and, indeed, a considerable part of the ordinary treatment of nerves (rest and feeding up) is treatment

of the circulation, and we know how this same treatment acts on the circulation in chorea, in which there are undoubted signs of heart weakness (see next chapter). From this pathology we can see at once that we can do nothing but good by clearing the blood of uric acid, so far as diet will clear it.

For the rest we must give heart tonics without raising the B.P.; and there are several ways of doing this: (1) By combining the tonics with retentives which diminish collæmia (*e.g.*, mercury, iodides, opium, &c.); (2) by giving the tonics only at those hours (afternoon and evening) when the capillary circulation is freest, and then they will improve the nutrition of both brain and body, and yet have but little effect in raising the B.P; (3) by diminishing fluids till we lower B.P., and only using tonics after this has been lowered. As a rule we must be content with very small doses of heart tonics, and make all the play we can with diet and retentives which relieve the work of the heart, for, as the late Sir W. Broadbent used to remark, we do more good in morbus cordis by taking work off the heart (by diet, retentives and rest) than by spurring it on with tonics and stimulants.

The same applies to the use of fluids, as the B.P. can be reduced by diminishing fluid. Therefore give no more fluid than is absolutely necessary for nutrition and thirst; a dry, solid diet, with only 20 or 30 oz. of fluid in the twenty-four hours, is the thing to aim at. I am of opinion that Cornaro's long survival was at least as much due to diminution of fluid as to any other factor in his diet. The natural diet of a frugivorous animal contains very little fluid, and neither the stomach nor the heart of man will stand fluid well, especially when there is collæmia.

This pathology explains completely the numerous cases of depression and neurasthenia that have recovered on a U.A.F. diet, and demonstrates that, so long as the heart is not incurable, recovery is possible, provided, of course, that the delicate brain structures have not atrophied; and they have not done this, so long as the mental condition is fairly good in that portion of the day in which the circulation is nearest to normal (evening). It also helps us to understand completely the value of rest and sufficient proteid, and the importance of avoiding fatigue and circulation strains.

## CHAPTER III.

### Collæmia, complicated by an Organic Factor.

In this chapter we shall find the functional conditions that group themselves round collæmia as seen in previous chapters, merging more or less decidedly in one or other direction into organic disease. But here again there is no absolute line of demarcation anywhere, but almost every conceivable modification or admixture of one "disease" with another is to be met with, and this chapter only differs from the last in that the conditions are generally more severe and are therefore associated with some fresh signs indicating organic lesions. Thus we shall get again the great group of weak hearts, either originally defective or becoming debilitated from long exposure to collæmia, dyspepsia and defective nutrition, with associated mental and bodily symptoms of debility. On the other hand are the strong hearts, either originally stronger, or those which have hypertrophied in order to overcome the collæmic obstruction; and these are associated with degenerate and tortuous arteries and more or less decided tendency to cerebral hæmorrhage and its results. Then we have the cases in which severe or prolonged collæmia becomes albuminuria or Bright's disease, or glycosuria and diabetes, all these cases showing also the signs of chronic collæmia with defective circulation and results of high B.P. in other tissues as well as those (liver and kidneys) most affected. Then we get all these mingling or alternating with arthritis (gout or rheumatism), bronchitis, morbus cordis, skin disease, catarrh of any mucous membrane, irritation of any fibrous tissue, or with circulation diseases such as Graves's disease and chorea, gravel, hæmaturia and paroxysmal hæmoglobinuria in almost all imaginable combinations. And this is so because these things are not "diseases" at all, but are all alike effects of one cause, excess of uric acid in the body, causing local irritation where it is accumulated, and defective circulation and its results when it is in solution. These, one and all, in all varieties

and all combinations, are mere food poisonings and all disappear, so far as disappearance is possible, when the food poisons have been omitted. They do not practically occur at all in those who have never taken food poisons and are otherwise freed from external conditions (*e.g.*, cold) which accumulate endogenous uric acid. Thus these food poisonings are not due to an entirely foreign body, but to excess of a normal product of the metabolism of life, and are met with through most of the animal and vegetable kingdoms. A man without any uric acid is distinctly abnormal, a man with too much of it has this excess only because he has swallowed it, or has retained and accumulated it from his normal formation by exposure to unnatural conditions (cold, unsuitable food, and absence of natural bodily labour). These troubles, now we understand them, are seen to be but Nature's warnings not to do foolish things, not to live on unnatural foods and stimulants, and not to shut oneself out from natural exertion and toil.

### *Dyspepsia and Weak Heart.*

Case 1.—D. H., female, aged 46. Complains of dyspepsia, worse in afternoon and evening when tired. Much flatulence which increases two hours after a meal. One sister has been cured of "nerves and liver" by a vegetarian diet with cold baths.

"Nerves and liver," two results of collæmia previously explained; cold baths act as tonics and retentives, curing collæmia *pro tem.*, while a vegetarian diet (chiefly fruit and bread) stops introduction, but there is no diet more certain to produce flatulence.

Nearly died of malarial fever at six years old, and again ten to fourteen years ago. (*Here was a cause of heart weakness and strain.*) Has had hay fever on and off for fifteen years. Sleeps well as a rule. B.D ·75; pulse 84; C.R. 7·5; B.P. 135. Apex beat to left of mid-clavicular line, first sound long, tending to reduplication. Liver full size, stomach down to umbilicus, no splashing. Menstruation slightly irregular every three weeks. Dyspepsia worse before it (*i.e., in precipitation period, therefore this dyspepsia is a precipitation disease, being worse in the evening and allied to flatulence and colic, which are precipitation diseases*). Is now on this vegetarian diet and cold baths and does not feel less strong on it (*it is probably deficient in proteids, but she has only been on it a few weeks and is not yet short of albumins*). Meanwhile the vegetarian diet with cold baths does good for the collæmic troubles, slightly weak heart and nerves, but has increased her flatulent dyspepsia, as both cold and fruit are bad for retention dyspepsia (*flatulence and colic*). I advised her to diminish fruit for the flatulence and also to take her breadstuffs dry and super-cooked. I also said that this low proteid diet could not be indefinitely continued. She said that her sister, who was cured of "nerves" by this diet and cold baths, had previously had Weir-Mitchell treatment without permanent benefit.

Nevertheless, the sister's case was a cure by tonics, aided no doubt by a small amount of fluid internally, as fruit was taken in place of fluid and the cold baths diminished thirst, but the cure

will not last unless sufficient proteids are taken. A proper U.A.F. diet with diminished fluids and spaced meals would have cured both the nerves and the flatulent dyspepsia, and the cure would be permanent so long as uric acid freedom was kept up.

Case 2.—W. D., male, aged 37. Complains of gout in right ankle, right toe and both knees. It came on while walking to business one morning. Is very fond of beer, and, as we found out later, is often intoxicated either with beer or gin and soda. Temperature normal; pulse 96; some plus tension. Takes cascara for bowels, which act twice a day. Urine normal. Pains are worse from 3 a.m. to 7 a.m., *i.e.*, alkaline tide hours. As there was no temperature and the pains were worse in the morning (*collæmic anthritis*) I gave retentives, namely, iodide and ammonia, and a little salicylate of methyl to paint on the worst parts. He was told to continue his beer and his ordinary diet. (*This was a collæmic arthritis, of which beer was only an indirect cause by producing urate accumulations in previous years.*) The patient himself noted that the beer did the joints no harm, though probably his opinion was a biased one. This pathology was further borne out by the fact that after four or five days on iodides he was nearly well; he was able to walk and put on his ordinary boots. Ankle swelling had subsided, no pain in it since taking the first bottle of medicine. Four weeks later he had a relapse of pain after an unusually long walk. There is some flattening of plantar arches, and he saw a surgeon and got supports for them. He went on for some months having slight relapses, and having again to resort to retentives (*as one might expect in the spring, which favours collæmia*). Potus rendered his stomach sensitive, and he occasionally vomited his drugs and got a relapse from this cause. Four months later he again came under observation with a relapse. Pulse 96; C.R. 8·5; B.P. 155; B.D. ·85; temperature normal. As his appetite was poor he was told to go on two meals or starve entirely for a day or two (*for with dyspepsia and a poor appetite no retentive drugs will act, and so the arthritis continues*). He now went on much the same for several months and, being away for a holiday in the country, his appetite improved and so did the joints. On return to town in October he was still having pain, chiefly in the back (*lumbago*). As his appetite was still a difficulty, I decided to take him in, and he presented himself for admission obviously the worse for drink. Next day pulse 72; C.R. 8·5; B.P. 150. He was put on a water diet, and after three and a half days got hungry and broke his fast on fish, and after that was given one meal a day only. Pulse after fast 84; B.P. 135. (*Note the effect of the fast on the B.P.*) Two days later pulse 84; C.R. 7·5; B.P. 130. (*By this process it is possible both to lower B.P. and to keep it down.*) He was now put on two meals a day. He lost about 8 oz. of weight per day while on water only. He is still losing 3 oz. a day, probably chiefly diminished fluid, as his fluids are being kept down to thirst level. His appetite was still none too good (*potus stomach*) and he was only producing urea to the extent of 1·5 gr. per day on 150 lb. Three days later pulse 76; B.P. 125. Slight loss of weight continues, but food is being slowly increased. Four days later pulse 80; B.P. 130; still losing 2 oz. per day, but says he feels very well in himself.

The starvation and reduced fluids and no alcohol (lowering B.P.) in fact did him no end of good, but the patient would never have done it except under supervision; at home his alcohol crave and congested stomach would have been too much for him.

Ten days later weight had ceased to fall, and so had B.P. Pulse 84, B.P. 145. His joints were much better, and he was allowed to go out. (*Here mere putting stomach and digestion right put joints right, for an alcoholic stomach and dyspepsia were keeping up collæmia.*) A month later pulse 96, B.P. 160. He has evidently a weakish heart, as pulse rises with rising B.P. I advised a bread, milk and cheese diet in prescribed quantities; he had been initiated in this diet while on two meals a day in hospital. I

heard from his doctor next year that he went on well till the relief of Mafeking, when he had a big drink and got stomach trouble again, and the joints again got worse. I advised him to go into an inebriate home, and to continue diet. I have seen him several times since; he lives more or less U.A.F., and is practically free also both from alcohol and joint troubles, though I cannot say what he might be under national excitement, as he has a heart weakened by alcohol and chronic collæmia.

Case 3.—M. L., male, aged 39. Complains of piles. Has been on modified U.A.F. diet (*meat once a day*) for about twelve months; it had done much good for constipation, but he has now an attack of piles worse than before. Had boils till two weeks ago, cured by yeast, and then this attack of piles came on. No headaches, eyes slightly prominent. Appetite fair, sleeps well. B.D. ·9; pulse 96; C.R. 8; B.P. 145; apex beat in left nipple line or slightly to left of it. First sound long, second sound loud. Stomach is down to umbilicus, and gives a splash. Liver dulness is full size. Has often had slight piles with itching, and irritation about the anus. Present diet; meat at dinner, cheese at lunch, milk, and cereal breakfast. Fruit at dinner (*cold season, November*). I simply used local treatment, lubricants, and astringents and rest, and the piles got better. I also advised him to diminish fruit in cold weather.

I give this as an illustration of the circulation conditions (collæmia, right heart debility, congestion of stomach and liver), in which one is likely to meet with piles and anal irritation. Another possible factor here is eating fruit out of season in the cold part of the year; so close is the apparent connection between piles and excess of fruit or fruit out of season, that it has several times come into my mind that piles in gouty and rheumatic people are a gout of the rectum and anus. Possibly this patient took excess of fruit to relieve his constipation, and possibly the yeast he took for his boils caused some acid fermentation, and thus reinforced the effects of the fruit; hence the sequence he noted.

Case 4.—S. H., male, aged 75. Complains of flatulent dyspepsia, and a very sensitive nervous system, Always was very sensitive. Skin somewhat bronzed. Rather thin. Pulse 72, but occasional intermissions mean that it is really quicker. Apex beat in left nipple line. First sound reduplicated, second sound loud (*i.e. collæmic heart, beginning to fail somewhat*). Any exertion causes intermission of the pulse. Micturition once in the night. Nails reedy. Urine amber, turbid, strongly acid, sp. gr. 1025; no albumin, no sugar, urea 2·7 per cent., uric acid ·13440 per cent. Relation 1 to 20.

This was in old times, when few accurate measurements were made, but we have here all the circulation signs that account for dyspepsia and a sensitive nervous system, *i.e.*, collæmia, and a weak heart muscle, probably both of long standing, and on estimating the urine we find a well-marked plus excretion of uric acid. No doubt we should have also found a slow C.R., raised B.P., and a defective C.R. B.P. ratio, and the defective intracranial circulation which these entailed accounted for the symptoms complained of.

Case 5.—H. G. G., male, aged 37. Complains of flatulence and liver troubles, especially if he takes any alcohol or much fluid. Has been twice to

Carlsbad, and took waters, which brought down his weight. Tongue tremulous, and limbs also. Sleeps fairly, but only 5½ hours. B.D. ·7; pulse 108 (*always quick*); C.R. 8·5; B.P. 190. Heart acting very quickly, second sound loud. Apex beat outside left nipple line. Has morning cough (? *alcoholic stomach*); is a great cigarette smoker. Liver attacks last two days, and, with care as to drink, average two or three in a month. Bowels act two to three times a day (*i.e., congestion of chylopoietic circulation*). Has excessive sexual appetite (*? due to undue stimulation*). Passed for insurance eighteen months ago with a little extra because of stoutness. Weight 18 st., height 5 ft. 8½ in. Liver very large, almost down to umbilicus. Present diet: meat twice, fish twice, tea or coffee twice, wine or whisky twice a day, wine a pint at a time. Is a company promoter, and whisky promotes business and also, it appears, enlarged liver. Second day after much alcohol gets much flatulence. Goes to a chemist and takes liver pills. Cold bath every morning, and had a swim this morning. I gave some nux vomica to strengthen his failing heart muscle and retentives to lower his B.P. by diminishing collæmia. No alcohol except at meals, and reduce alcohol at meals to half of present amount. Diet later on. A week later he was better, medicine agrees and does good. Pulse 90; C.R. 7; B.P. 135. Liver smaller, only half way to umbilicus now. Has not found it a great effort to diminish alcohol (*i.e., with the help of the drugs*). Still acknowledges to four whiskies and sodas a day.

I give this case to show the kind of circulation one meets with in alcoholics (collæmic heart beginning to get weak in muscle), and the way in which retentives will lower the pressure, slow the pulse, and diminish the size of the liver.

Case 6.—A. E. M., male, aged 41. Complains of flatulent dyspepsia with pains in right hypochondrium for ten years. Has tried all kinds of diet for it. Lately has been diminishing meat. Father died of Bright's disease. Inflammation of lungs as a boy. Also pleurisy and jaundice. Passed some renal stones ten to twelve years ago with hæmaturia. Occasionally feels as if smothered in the night. Looks pale and cachectic. Is irritable and much depressed. Sleeps fairly, but pain may wake him up. B.D. ·85. Has always some flatulence. Pulse 70 (is often 40 to 50). Apex beat in left nipple line. Impulse heaving, first sound long; there is a systolic murmur at right base and neck vessels, followed by a second sound. Stomach, lower border just below umbilicus and there is marked splashing. Liver dulness, full size. Right kidney palpable, not tender. Bowels open with glycerine injections. Urine sp. gr. 1022, acid, trace of albumin (*? gravel*), no sugar. Weight steady, 9 st. 8 lb. 12 oz. Rubbing relieves the pain in the epigastrium. Has given up all drug treatment of late. Present diet: meat twice, fish once, egg once, cocoa once, wine or whisky twice a day. I gave some carminatives and advised a slow change of diet. Seven months later, still some flatulence and pain; has kept as near U.A.F. diet as possible. Three meals a day, appetite fair; gets fits of pain and then feels depressed. The right kidney cannot now be felt, but the stomach is still large and splashing. Has been drinking much water (*not by my orders*). Has gained 1 lb. in weight. I advised two meals if possible and to diminish fluids to thirst level. Three months later he has been much better. Milk, cheese, potato and fruit diet suits him best and keeps his bowels regular. Eats cheese and junket for lunch and dinner with much potato. Has eaten no bread and been much better without it. (*As with many collæmics with dilated stomachs, bread is the cause of much flatulent dyspepsia.*) Has been able to work and do more. Weight 3 lb. up. Takes a good deal of fruit, plums, figs, and bananas. Stomach is slightly smaller. Four months later, diet a little irregular. Felt better and could do more. Bowels regular, as never before. Weight steady. Again four months later has been away from home and food less regular. Still occasional returns of old pain, especially if he takes meat and wine when away. Has had slight vertigo of late. Twelve months later: has done well. Cheese and potato suit best. Pulse 58; C.R. 7·5; B.P. 115. Still splashing stomach, no sign of tumour anywhere. Weight increasing slowly. Neither salicylates nor alkalies

relieve his pain; it is only relieved by passing wind, but attacks are now less frequent and severe. Fruit and bread undoubtedly make him worse.

One can only suppose that his troubles were due partly to circulation and partly to rheumatism, which, like his renal calculi and his pleurisy, were due to uric acid, as was his father's Bright's disease. Diet, though late, did more than anything else for his relief.

Case 7.—M. M., male, aged 44. Found insensible on a doorstep. On admission he was pale, perspiring, and looked very like fainting. No dyspnœa, no pain. Pulse irregular and weak, pupils somewhat dilated but equal, and react to light and accommodation. Can walk. Says has not felt well for a day or two, and had no breakfast this morning. There is some history of potus. Heart sounds (?) normal or slight alteration of first sound, some thought a a presystolic murmur. He speaks clearly, and answers to the point. Fifteen months ago he had a similar attack, and was insensible for some time, and away from business three months. Did not bite tongue in either attack. His pulse kept bad for quite a long time, and he told us that the walls of his heart were considered to be weak. Wife said he had had a good deal of worry and anxiety.

I thought the heart weakness was the chief factor, and that collæmia in an early second collæmic stage, brought on or precipitated by worry and potus, was the cause; probably the attacks were syncopal or epileptiform (epilepsy due to heart failure), and due to the heart. In the absence of instrumental measurements it is impossible to say more; with our present instruments and methods of examination it would have been easy to speak more certainly.

Case 8.—W. H., female, aged 17. Complains of headaches and rheumatism in knees, shoulders and generally. Had rheumatism as an infant. Headaches began three years ago (*i.e., as she grew big and the heart got strong enough to keep up the pressure*). Mother has rheumatism and gout, father gouty, one brother delicate. Had erythema nodosum as infant. Headache is worse on lying down. Skin of face is puffy. Has been very irritable of late. B.D. ·7; pulse 92; C.R. 8; B.P. 155 (*a little below ratio, and this with quick pulse points to slight heart debility, and this with collæmia accounts for the headaches and irritability*). Apex beat is slightly to left of left mid-clavicular line. First sound long or slightly reduplicated, second sound loud decidedly. Has chronic flatulence, increasing of late. Stomach is dilated and gives a splash, and liver dulness is full size. Urine sp. gr. 1015, acid, no albumin. Menstruation is regular, but painful first two or three days, some excessive loss and lasts six to seven days. Headaches generally at this time. Joints are painful and stiff but not altered in shape.

Case 9.—R. S. H., female, aged 31. Complains of attacks of palpitation, and feelings of weakness, especially in the morning. Had it for five years, since a bad attack of influenza, in which she was very ill. Has been a vegetarian more or less for last three years. Colds go off slowly and scratches heal slowly. Has pain in left arm and elbow during heart attacks. Is irritable, but sleeps fairly. B.D. ·65; pulse 92; C.R. 7 to 8; B.P. 120. Apex beat a trifle to left of mid-clavicular line. There is a late systolic murmur over whole front of heart. Is constipated in spite of fruit and wholemeal bread. Has piles which bleed slightly. Menstruation irregular. Has one child, now 2 years old, whom she nursed. There is slight œdema of ankles. Weight 7 st. 11 lb. 6 oz., now increasing. Present diet, bread, beans, fruit, a little milk, occasionally coffee

(*i.e., she is taking probably deficient proteid and is not free from poisons*). She is only taking 800 gr. and wants 1,000 to 1,100 a day.

This is the way people who become vegetarians starve themselves. No doubt the influenza affected the heart and then lactation and deficient food kept up the weakness. A correct U.A.F. diet with sufficient proteid would probably have done much good.

Case 10.—W. G., female, aged 33. Complains of rheumatism and neuralgia. First had rheumatism in spring four years ago. Used to suffer from headaches and head pressure, but these were cured by visits to Switzerland ending six years ago (*i.e., collæmia cured by retention and then arthritis came on*). Never very strong. Father is rheumatic and gouty, "poor man's gout." Phlebitis in leg suddenly one morning two years ago. Skin of face shows some eczema. Pain in right groin since the phlebitis and this prevents her being active. B.D. ·75; pulse 85; C.R. 8; B.P. 130. Suffered from uterine prolapse three years ago, and had weak heart after it for some time. Second sound relatively loud, first sound weak. Bowels open once a day, some piles especially at menstrual periods. Is regular, but the period increases the pain in the groin. Weight 8 st. 13 lb. 12 oz. Had the veins operated on twelve months ago. Went to Buxton for rheumatism, but she gets weak on rheumatic drugs. Present diet, meat once or twice, fish once, egg once, coffee two or three times a day. Milk causes weight in chest and nausea, cheese also causes dyspepsia. As result of a heart tonic pulse was slowed to 78 and B.P. raised to 140.

I mention this case to show the relation of phlebitis to collæmia, rheumatism and cardiac debility. She was a collæmic subject, the collæmia was improved by a bracing climate and she got rheumatism. In curing rheumatism she got debility and a weak heart, and phlebitis was an incidental result of weak heart and collæmia. If you look into any of the conditions in which it occurs you will find these two factors.

It must never be forgotten that uric acid produces quite opposite effects, according to the time of life at which it is administered, that is according as the conditions favour solution and collæmia, or retention and gout. Given to a delicate ill-nourished woman over fifty it will increase collæmia, given to a well-nourished man in the prime of life it will increase arthritis. But the selfsame uric acid which causes arthritis in this man to-day will cause collæmia, depression, debility and anæmia as he begins to run down in old age.

Case 11.—B. S. W., male, aged 65 (medical). Complains of debility and insomnia, for which he takes sulphonal. Had influenza four years ago, three attacks, and broke up after them. Had some rheumatism last year in Naples, all joints of body affected and perhaps the heart also. Has had two anginal attacks in last few months. Arcus senilis marked. Face vascular, but pale now from diminished filling of vessels. Pulse irregular and uncountable, became regular at 120 after a tabloid of trinitrine co. Has difficulty in breathing. Apex beat nearly in the anterior axillary line, area considerably increased. Acts irregularly and there is a systolic murmur. Bowels open with Rubinat water. Urine,

sp. gr. 1026, acid, dark amber, large trace of albumin = congested kidney. There is some congestion of the bases of both lungs and some œdema of legs.

Here we have chronic collæmia alternating with some rheumatism, influenza, increased depression, collæmia, heart failure and angina. Here was a case for retention (iodides), nux vomica and occasional trinitrine.

But he had bad times and strychnia injections had to be resorted to for a time, and then he was given pil. hydrarg. 3 gr. or so, n. et m., so far as it could be taken without increasing the action of the bowels above once a day. This apparently caused some decided improvement. A week or two later the pulse fell to 72, though the systolic murmur remained; he now passed much clear urine and slept well. Bowels only act once a day, though pil. hyd. has been gradually increased to 7 gr. a day, but he is a big man. I now told him to slowly reduce all drugs, keeping the iodide on after the others.

Two months later has been much better since last note. Is up and about his house, and out when the weather is good. Pulse 85, slightly irregular. Systolic murmur remains as before. The right lung is quite clear, but there is still some congestion of the left base. No œdema of ankles, no cough or expectoration. No drug for ten days now. Is on a diet modified in U.A.F. direction as far as possible. Mercury eventually caused slight tenderness of gums, so he left it off except for occasional doses. I suggested iodide and nux vomica and small dose of digitalis as before; he is not so well on no mercury (*but it is never any use if it causes mercurialism*). He then went on fairly till the summer of the following year, when a fresh dose of collæmia made matters worse for the heart, producing ascites, general anasarca, and much congestion of bases of lungs. There were some reasons for not tapping the abdomen and it was not done. I gave the perchlorides of iron and mercury with nux vomica and digitalis, but he died in the course of two or three weeks with the above conditions but little altered.

I give this to illustrate one of the terminations of unrelieved collæmia and arthritis resulting in serious heart failure in the second collæmic stage of life. The patient was big and had been very strong, or he would not have lasted so long. The action of mercury was interesting; it proved itself by far the best retentive in this case, and, if we could have prevented mercurialism, it might have prolonged life for some time and given room for a correct U.A.F. diet to act. I consider that such a fine, strong man should not have died under 100 years; so uric acid cut thirty years off his life.

### *Chorea.*

As we shall see in the cases that follow, there is one constant physical condition in chorea, and that is the defective C.R. B.P. ratio and the quick pulse of heart failure. The B.P. is lower than it should be in relation to C.R. We shall also see, further on, that in cases of chorea that recover the C.R. B.P. ratio becomes normal, or nearly normal, by the time the movements cease.

Case 1.—J. B., female, aged 7. Rheumatism two weeks, chorea five days. On admission heart sounds normal, movements moderately severe, temperature

99·6° F. As the heart was believed to be normal, she was given liq. arsenicalis m. xv. ter, p. c. Next day temperature was about normal. Rose in the evening of following day to 100°F., and on the two days following to 100°·6 F. and 100·4° F. ; after that it kept between 99° and 100° F. till ninth day after admission, when the large dose of arsenic was left off. Next day arsenic m. iii. were given ter after meals. Highest temperature on this and two following days was 99·8° F., and for the next twenty days it was 99° F., when the arsenic was left off. Thirteen days later a well-marked late systolic murmur was heard at the apex, though some thought there had been a murmur there before, which had now become more marked. Temperature 99° to 100·6° F. Soon after this the movements had gone, though the apex murmur remained.

Whether this murmur was a result of the previous rheumatic processes which became more audible as the heart got stronger, or whether it was the result of an endocarditis produced by the arsenic, I cannot say. There was some marked quickening of the pulse (to 140) on the day the large dose of arsenic was left off, and it remained quick for some time after this. The temperature all through was compatible with a smouldering endocarditis.

Case 2.—L. S., female, aged 12. Complaining of chorea, headache and aphasia. Has had choreic movements, most marked on left side, for three months. Has some rheumatic pains. Not known to have had rheumatic fever. Her mother is in an asylum (*? congenital weak heart or tendency to it*). She recovered from her chorea and went out, and three months later attended as an out-patient, when she was said to have headaches, loss of speech and choreic movements all at the same time, lasting any time from thirty minutes to a whole day, and all going away together. At these times she talks nonsense and they tell her to stop talking.

Here we have choreic movements in a choreic child coming with headache and aphasia. I much regret that I have no circulation records of this case, as it was under my care more than thirteen years ago, but I give it for the interesting history. Possibly the attack began as migraine and aphasia, and then if the heart failed under the strain of collæmia, as often happens in migraine, choreic movements were added. I have already published a case in "Uric Acid," p. 775, in which migraine disappeared as chorea came on. In this case there was no doubt that the migraine departed because heart failure rendered its cause, high B.P., impossible. But such heart failure supervening on collæmia rendered the circulation (capillary and venous) in the basal ganglia still more defective and thus produced chorea, and the above is an instance of the same thing.

Case 3.—F. M., female, aged 12. Complains of chorea ; father and mother alive and well. No rheumatism, no gout. Had measles and whooping cough as a baby. Has often had joint pains. Last month had cough, sore throat and pains in the limbs. Irregular movement of legs noted three days ago. Headache and earache kept her awake for two nights. Fairly well nourished. Choreic movements are now well marked. Temperature on admission 100·6°. Pulse 92, irregular, apex beat in fifth space in mid-clavicular line. Has a localized systolic murmur at apex. Urine, no albumin. There was a little sore throat and an

enlarged gland in the neck. Two days later, temperature 99·4° F. ; pulse 92 ; C.R. 7 ; B.P. 95. She is taking arsenic. Four days later the throat troubles were subsiding (*no doubt a rheumatic tonsillitis*). Twelve days later choreic movements were getting less, but the heart murmur continued. Temperature 98·6° F. ; C.R. 7·5 ; B.P. 120 ; *i.e.*, the heart was recovering, but the collæmia still continued. A week later the movements were gone and the patient sitting up in bed. Temperature normal. Heart murmur as before. Pulse 88 ; C.R. 7·5 ; B.P. 130.

The pressure rose steadily as the improvement set in, and is now fairly normal in its relation to C.R. for a child. For an adult it ought to be 150, but my rule for a child is take 1 off C.R. before multiplying by 20, *i.e.*, 7·5 less 1 = 6·5 × 20 = 130. The history of this case I should read as cough, sore throat and rheumatic pains *i.e.*, retention, followed later on by collæmia and heart failure causing chorea, from defective circulation in the basal ganglia. The heart recovers under rest and arsenic, and as it recovers the pressure rises, the circulation in the basal ganglia improves and the movements subside. Some collæmia continues, but it is not collæmia alone, but collæmia plus heart failure that causes chorea.

Case 4.—L. M., female, aged 13. Complains of chorea. Six days ago she began to have difficulty in holding things or in feeding herself, and since that movements have been increasing. No previous attack. There is rheumatism in the family, two brothers and one sister died in convulsions. Has had measles. Heart sounds natural ; pulse 100 ; C.R. 12 ; B.P. not to be got at first on account of the violence of the movements. Was given chloral and bromide at first, but was then put on phosphoric acid and strychnia.

Four days after the alteration of medicine, pulse 80 ; C.R. 8 ; still no B.P. to be got.

Nine days later pulse 80 ; C.R. 7 ; B.P. 105 ; and eight days later C.R. 7·5 ; B.P. 115. A week later pulse 80 ; B.P. 120.

A week later B.P. 135, and fourteen days later she was sent out cured.

Here again a steady rise of B.P. without much alteration of C.R. as the movements diminish, and when the ratio is normal the movements are gone. It never seems to me to matter what heart tonic you use ; there is no special value in arsenic ; nux vomica, strophanthus or digitalis do as well or better.

Case 5.—F. W., male, 70. Sent to me by my colleague, the late Mr. D. H. Goodsall. Complains of paralysis agitans. The first sign was pain in the shoulders, preventing him from turning in bed at night. Has had repeated severe attacks of influenza and once had double pneumonia with very slow recovery six years ago. Four years ago influenza again. Has been given salines, nux vomica and generally strong tonics. When he was 55 he saw the late Dr. Mortimer Granville, who advised feeding up and tonics and gave much meat and port wine, and these revived him greatly (*i.e., tonics and retentives were pushed and revived him from collæmia for a time, but it came back later, and here we see with what results*). Slept very badly after influenza, better of late, wakes often ; B.D. ·75. Appetite fair ; Granville said " Eat little and often." Pulse 76 ; C.R. 11 ; B.P. 140. First sound long, second sound loud. Has occasional throat cough. Fingers slightly nodular from chronic arthritis. Often has constipation, but strychnine helps him. Urine free from sugar or

albumin. Menthol relieves pain in arms and shoulders to some extent. Weight 12 st. 6 lb. He has noticed that the more acid his urine the better health he is in (*a very interesting observation, i.e., he is better with retention than with collæmia*). Present diet includes meat twice, fish twice, egg twice, soup twice, tea or coffee three times a day, wine twice a day. Has had much champagne. Is now taking nux vomica and caffein. Buxton used to be like magic; in four days he could walk four miles, when on arrival he was hardly able to crawl (*i.e. tonic and bracing, retention*); has lost its effect now (*all tonics and stimulants eventually do so*). The baths at Bath are very exhausting. Went to Kissingen two years ago and lost 2 st. there.

I mention this case for the very interesting circulation found along with paralysis agitans (cause and effect?). There was very marked heart failure. B.P. should have been 220; it was 140. Why was the pulse no quicker than 76? Quite possibly because there was some fatty degeneration of the heart muscle and nerves. C.R. of 11 will account for many changes both in muscles and nerve centres. His history shows that collæmia had supervened on chronic arthritis, and that he had been better on tonics and retentives, and worse on everything that brought back collæmia, which yet, in the nature of things, was bound to come back, and each time it returned could not be better, but worse. There is here a most interesting parallelism with chorea.

Case 6.—H. W., female, aged 10 years and 8 months. Choreiform movements, chiefly of left side, for one week; began to drop things. Heart sounds indistinct. Two days later first sound was noted as being defective (? systolic murmur). Pulse 68; C.R. 7·5; B.P. 85; flattened 110. Nux vomica was added to the mixture. Six days after admission, movements were less marked but still considerable. Heart sounds natural. Four days later pulse 60; C.R. 7; B.P. 110; flattened 150. Two weeks later pulse 68; B.P. 100; flattened 140. Four days later movements much better and she was sitting up. She was now put on phosphoric acid and strychnia, and eight days later the movements had ceased. The pulse however quickened when she was allowed to get up, and a week before she went home pulse was 88; C.R. 7; B.P. 110; flattened 150. Heart sounds now normal.

Case 7.—D. B., female, aged 12. Choreiform movements; not had them before. Had rheumatic fever one year ago, followed by diphtheria. Movements most marked in right arm and leg. Is excitable. Double mitral murmur heard at the apex of the heart. Four days after admission the C.D. measured 4½ in. from right border of sternum. C.R. 8·5; pulse 84; B.P. 90; flattened 130. Is on sodii salicyl. gr. v., sodii bicarb. gr. xv., ter. Temperature subnormal. Four days later pulse 60; C.R. 7·5; B.P. 110; flattened 150; C.D. 4⅛ in. Nine days later after dose of salicylate had been increased to 17 gr., pulse was 100; C.R. 8; B.P. 80; flattened 120; C.D. 5 in. (*a very obvious bad effect from the increased dose*), and this was now changed for a 4-gr. dose. A week later pulse 68; C.R. 7; B.P. 90; flattened 130; C.D. 4¼. Movements are now slight, but a systolic apex murmur remains. She was now allowed to sit up. Twelve days later, and four days after all drugs had been left off, pulse 90, quickened by getting up, C.R. 8·5; C.D. 4⅞ (*another effect of getting up*).

Case 8.—R. W., female, aged 8½ years. Admitted for pains in knees and elbows and twitching. The twitchings began on right side four weeks ago. At present movements affect both sides of face and body, Child very emotional (*sign of weak heart*), and speaks in a halting manner. Heart normal, apex beat ¼ in. inside nipple line in fourth space. She is small for her age. On admission,

urine sp. gr., 1030, acid, no albumin, no sugar, some phosphates (*a high sp. gr. urine due to weak heart*). She was put on 12 grains salicylate and 15 grains of bicarbonate ter. The day after admission the pulse had run up from 80 to 105, and it rose in the evening to 120. C.R. 7; C.D. 4 in.; B.P. not obtainable, owing to movements. The salicylate was reduced to gr. vii. Next day the pulse fell to 110, the following day to 100, and the day after that to 85, where it remained for some time. Six days later the movements began to get less marked, but we were still unable to get a B.P. record. Sixteen days after admission salicylate was stopped, pulse being 60, and she was put on mist. acid phosph. c. strych.

In all these cases I diminish fluids so as to diminish the work of the heart, and milk, beyond one pint a day, is given in the form of curd. Fruit is given for slight thirst, and further fluid beyond the pint of milk only if thirst is imperative.

Three weeks later, when she was up and about and ready to go home, we found pulse 80; C.R. 7; B.P. 130, flattened 160; C.D. 3½ in.

Here, again, we find a ratio of C.R. B.P., which is normal (see Case 3) when the movements have ceased, and with this goes diminished size of the heart and slowing of the pulse. Another point of interest in this case is that the pulse rate rose at first, in spite of rest in bed, on the larger dose of salicylate, as we saw in a previous case, but slowed again after the dose was reduced. A small dose of salicylate, as I have elsewhere (*Proc. Royal Soc. Med.*, February, 1909) shown, quickens the capillary reflux, and by lowering B.P. takes work off the heart, thus allowing it to slow.

Case 9.—L. B., male, 7½ years. Had influenza three weeks ago, and it was followed by chorea, movements slight. (*Here again we have a disease preceding chorea that notoriously precipitates collæmia.*) Movements affect both arms and legs. They began on fourth day of influenza (*probably as the temperature came down*). Apex beat of heart in fourth space in nipple line. There is a systolic murmur at the apex conducted towards the axilla. C.D. 4½ in.; C.R. 7·5; B.P. 105; pulse 100. He was put on small doses of salicylate and bicarbonate of soda and some sp. am. aromat. ter. Two days later pulse 80, and three days after this pulse 70; C.R. 8; B.P. 110. A week later, however, C.R. has slowed to 9·5, pulse had quickened to 108; B.P. 110, and there had been a loss of 8 oz. in weight (*for some reason collæmia had increased, and this was the result. The B.P. did not increase, as it should have done, but the pulse rate quickened, showing heart failure*). Four days later pulse was still about 90, and C.R. 8. The medicine was changed to gr. x. of aspirin ter. Three days later pulse 80; C.R. 7. (*Aspirin was apparently acting as a retentive; hence the slowing of the pulse.*) Nine days later aspirin was given four times a day in place of three times, and the pulse then began to quicken again, but the child now got a sore throat and a rise of temperature, so the observation could not be continued. The aspirin was stopped, and after the throat was better he was given nux vomica m. iv. ter. When he was ready to go out, ten days later, and quite free from movements, the C.D. measured 4½ in., *i.e.*, ⅜ in. less than when first measured. The systolic murmur remained.

Case 10.—M. V., female, aged 15. Some choreic movements, most in hands and face; has had these for two or three months, once in twelve to eighteen months for nearly eight years. Had paralysis of left side, arm, leg, and face, eight

years ago, which lasted several weeks. Measles as an infant, no other fever. The second sound is reduplicated at the base. The day after admission, pulse 100; C.R. 7 to 8; B.P. 115; C.D. $5\frac{3}{4}$ (normal $4\frac{1}{2}$). Liver dulness $3\frac{1}{2}$ in. Stomach down to umbilicus, and there is some splashing. She was put on nux vomica and strophanthus, m. iii of each tincture three times a day. The pulse fell to 70 in five days, and she did well: but I went for my holiday, and so no further records were obtained. (*I give the case to show cardiac dilatation and defective circulation ratio at the onset of the trouble. There was nothing to treat except a weak heart.*)

Case 11.—R. P., female, aged 18. First had chorea three years ago, and on and off since that. Had rheumatic fever, second or third attack, two months before the chorea (*note chorea is a collæmic disease and therefore does not coincide with acute rheumatism, which is a retention disease: all retention is followed by collæmia, hence chorea follows acute rheumatism*). She also had an attack of rheumatic fever four years ago. Movements affect all limbs, also face and speech, but are most marked on the right side. Her pulse was 100; C.R. 8; temperature 99·8; B.P. 110, flattened 140; C.D. 6 in., sounds fairly normal. She was put on digitalis, squill and nux vomica. Fluids were reduced to $1\frac{1}{2}$, and then to $1\frac{1}{4}$ pints. Ordinary diet and fruit. Three days later pulse 84; C.R. 8·5; B.P. not got; C.D. $5\frac{7}{8}$; digitalis taken off. Four days later, pulse 75. Movements diminishing; B.D. ·7; C.R. 7; B.P. 100, flattened 140. Patient has been hysterical, and five days ago had an hysterical fit in which she became semi-conscious. After this she was very hysterical for some days, but is now getting better. She was put on nux vomica and strophanthus with sulphates of iron and magnesia.

Three days later movements diminished. Pulse 70; C.D. $5\frac{3}{4}$; C.R. 7; B.P. 120, flattened 160. A week later B.D. ·8 to ·85 (*a decided improvement on the iron*). Again a week later no movements at all. Pulse 75; C.R. 7·5; C.D. $5\frac{3}{4}$ (*i.e., same as at last observation. No doubt it had been smaller between, but again enlarged slightly on getting up, as the pulse quickened from the same cause*); B.P. 130.

C.R. B.P. ratio is not yet normal, but is a good deal nearer to it than it was on admission; and we must remember that diminished fluid lowers B.P., which possibly makes up for the difference still remaining; and with normal intracranial circulation the movements are at an end. In all these cases we see signs of weak heart muscle, which pass away as the patient recovers. Chorea is a disease of girls, because they have weaker muscles, and in this it is paralleled by Raynaud's and Graves's disease, of which the etiology is very similar.

Collæmia means a defective intracranial circulation, often accompanied by dulness, stupidity, and headaches; but if this condition supervenes in a patient (girl) whose heart muscle is weak or ill developed, then the intracranial circulation becomes much more defective than with collæmia alone, and chorea may result. I have been watching for years the rise of B.P. that takes place as the choreic movements pass away. I have already referred to cases where headaches passed away as the chorea began, *i.e.*, as the heart was overpowered by its accumulating misfortunes it could no longer keep up the pressure necessary for headache; but this means that the intracranial, capillary and venous circulations had become

still more defective, and chorea resulted. R.P. was very markedly hysterical, and this was but one more sign of weak heart muscle, for collæmia with relatively weak heart muscle is the underlying cause of all nervousness and mental excitement up to hysteria and even mania, and a careful investigation of C.R. B.P. ratio, pulse rate and size of heart will demonstrate the presence of these conditions in all such cases. We have had much evidence of this influence of the circulation on mental conditions in other parts of the book. In the case of chorea I have long regarded this pathology as beyond doubt, and have here only given a few cases out of much larger numbers measured.

Chorea generally comes at a time when the heart muscle has not yet reached its full adult development, and the tendency to it, as a rule, passes away when this has been attained, unless early pregnancy, underfeeding, overwork or other conditions, leading to heart strain and weakness, tend to prolong the condition and render it recurrent. Overwork is a precipitating cause of collæmia, especially if proteids are deficient in the food (which is to-day so common among the poor). Overwork, collæmia, and deficient proteids are all causes of weak heart.

Again we see in these cases that large doses of salicylates quicken the pulse rate and increase heart weakness, while small doses have the opposite effect, and this is the result, as I have elsewhere shown, of their influence on collæmia.

We now know why we have to range chorea with nervousness, hysteria, and mental excitement, Raynaud's disease, Bright's disease of pregnancy, Graves's disease, &c., and why some of these conditions are most common in females, and are similarly related to shock. We attain also a complete explanation of the action of arsenic, and find that other heart tonics may be better and more rapid in action.

Giving a salicylate with an alkali (bicarbonate of soda) generally increases its retentive (anti-collæmic) effect, for the solvent action of salicylates is prevented by alkali, while they, in turn, prevent the solvent effect of the alkali (see "Uric Acid," p. 43, and elsewhere).

### *Neurasthenia.*

Case 1.—J. L. D., male, aged 39. Complains of general invalidism and lack of power to do anything, more or less, for eleven years. Has tried everything without benefit. Physical and mental depression, glad to be rid of life. Can neither work nor play. Went into an office, and office work broke his heart. He was treated for suppressed gout with much colchicum. Scarlet fever at four years, gastric fever later, nearly died. Rheumatic fever at eleven, and was said

to be delicate after it. Is better than he used to be and better in winter than in summer. (*There is no weakness of heart here, and so cold braces instead of adding to depression.*) Feels weak as a cat. Suffers from long hours in office and no exercise. Father gouty, and bad health, gout in family. Sleeps heavily, feels very sodden at 8 to 9 a.m. B.D. ·7 ; pulse 72 ; C.R. 6 (*on some drugs*) ; B.P. 145. First sound long ; much emphysema and polysarcia covering heart and liver. Motions slate colour when bad. Urine thick. Drinks very little, never thirsty. Is in habit of eating large amounts of salt (*salt crave, i.e., stimulant crave of collæmia*). Weight 17 st.

*Diagnosis.*—Collæmia, anæmia, polysarcia, neurasthenia, depression. An Edinburgh doctor sent him to Carlsbad. Insomnia followed and he nearly went mad and wished to kill himself. This was followed by much exhaustion. felt as if drifting under a black cloud. Then went to Switzerland and got slightly better. Much lying down while in Switzerland relieved him (*i.e., a heart over-worked by collæmia*). Chills affect him much and always fall on the liver (*i.e., they cause a fluctuation in urate excretion, retention followed by collæmia, the collæmia producing congestion of liver, stomach and duodenum*). Homœopathy did him good (*i.e., he was better for leaving off powerful drugs such as colchicum, which merely increased collæmia, heart work and depression*). Influenza once a year for last four years and has many colds (*all collæmics are liable to these things*). The prescription that did most good was nitro-hydrochloric acid and strychnia (*i.e., a retentive and heart tonic*). Disliked meat as a child but was made to eat it ; craved for fruit and sweets. Present diet includes meat twice, fish twice, egg once, tea or coffee twice, soup once and two glasses of cold water in the morning (*all as wrong as they can be*). Smokes much, chiefly cigarettes (*just as one would expect*). Has sometimes been very well in very hot weather with much perspiration.

*i.e.*, low pressure from dilated vessels and urates in fair solution from heat and alkali. It must never be forgotten that many of those who suffer much from collæmic depression in the morning hours do so largely because they had high acidity and retention in the acid-tide hours of the previous evening and night. Warm climate prevents these fluctuations and urates pass out freely, possibly in good solution (*i.e.*, solution side of collæmic point) all day long (see "Uric Acid," p. 168).

I advised this patient to go on the U.A.F. diet gradually and to diminish fluid to thirst level, and he returned some three years later, having been on correct diet most of the time. On the whole he is decidedly better or would not have kept up treatment, which he finds difficult in hotels. Has done much rest in bed, and each spring has had a bad time and several attacks of influenza, but taking last year as a whole he is immensely better and has more power. B.D. ·8 to ·85, an increase. C.R. 6; pulse 80; B.P. 125 (*all improved, but probably B.D. would have improved more if he had always taken sufficient albumins. Hotel difficulties often mean underfeeding and, of course, he cannot be yet clear of thirty-nine years of piled-up urates*). I advised him to go on, but I heard no more of him.

Case 2.—N. E., female, aged 32. Complains of nervousness, irritability, and depression. Subject to headaches for years. Had a fall when 16, and is supposed to have injured left ovary. Considerable pain in lower abdomen since, worse at monthly period. Father gouty, and has diabetes, mother violent headaches and rheumatism, and one sister similar troubles. Ten years ago "sunstroke on eyes." Eight years ago severe worry, four years ago dyspepsia (*? gastric ulcer*). On Kuhne diet for eighteen months, and under his personal care for six weeks. He did her more good than any one, and then advised her to go back to ordinary diet. Had influenza five years ago, and this was followed by anæmia and nervous troubles. B.D. ·85 ; no anæmia now ; pulse 84. Apex beat a little to left, second sound relatively loud (*i.e., plus tension, heart slightly over-*

*worked by collæmia*). Suffers a good deal from wind, always constipated, motions never natural, has to take laxatives. Stomach slightly enlarged, and splashing. Abdominal pain better when constipation is relieved. One child four years ago, parturition followed by thrombosis and fever. Case published in *Lancet*, 1893: "Self-abuse" for years; begun as a child, and worse when she has a headache.

This is evidence of chronic collæmia with high B.P., which the self-abuse relieved *pro tem.* It is interesting to note that the Kuhne cold baths are a slight stimulus to the sexual organs as the cold water is dashed against them; but their chief effect is tonic, anti-collæmic, and retentive, like cold bathing, especially if indulged in in the morning.

Has a tendency at times to take wine to excess. Present diet consists of bread, puddings, fruit, some eggs, one pint of milk, and some water early in the morning. Kuhne gave nothing but fruit at first, and the bowels began to act almost at once. Has capital appetite now, and is very hungry. Feels stronger and better on her present diet. Her nerves are better in the autumn, and worse in the spring (*i.e., vary with the causative collæmia*).

This case may be summed up as migraine, chronic collæmia with complications, slight heart failure under collæmia, nerves, depression, and stimulant cravings, with the effects of cold baths, and partial U.A.F. diet on these conditions.

I advised her to reduce her five meals to three or two, and to reduce her fluids. In two months she reported that dyspepsia (wind) was better, and abdominal pain was also better, though constipation had not diminished. Urine sp. gr. 1013, acid, trace of albumin due to leucorrhœa. She then got upset because her child was ill, and went off her food; has not been able to keep to two meals (*yet this is the only thing that would have kept her appetite good*). Her best aperient is one containing mag. sulph., sodii sulph., and lithii carb., which, no doubt, acts as a retentive; fruit would be better than this.

Case 3.—E. M., female, aged 23. Complains of nervous excitability and insomnia. Used to suffer from headaches, insomnia worse since headaches got better. Mother nervous and excitable. Headaches from childhood, one in ten days. Scarlet fever at school. Has often been anæmic, on iron and bromidia of late. B.D. ·9 (*i.e., good, no anæmia now, yet the nerves and insomnia continue*). Sleeps on going to bed but wakes at 4 a.m. Pulse 72, first sound long, second sound loud (*no doubt a collæmic heart*). Has had occasional menorrhagia, headache, not worse at the period. Urine sp. gr. 1030, acid, no albumin, no sugar, some excess of uric acid. Weight 7 st. 12 lb. in clothes, or say 7 st. 5 lb. net. Has been three weeks on U.A.F. diet, but milk seems heavy and causes flatulence. I saw this patient with Dr. Armstrong, of Buxton, and I advised her to go on two meals a day, and reduced her fluids to one pint of milk, calculating the necessary proteids and giving her the rest as cheese and breadstuffs. Six weeks later I heard from Dr. Armstrong that she had greatly improved, and was continuing the diet as ordered. (*It just happened that this case, treated twelve years ago, was put on very nearly the treatment I now make use of in similar cases, though with modern instruments and methods one can adjust things much more accurately.*)

Case 4.—M. N., male, aged 32. Complains of cough for six months. Loss of voice two or three weeks. Voice rough for some time. Morning expectoration, white. Is doing sedentary work in an office, but walks backward and forward. Previous health good. Has been a vegetarian for two and a half years. Has had frontal headache the last few weeks. Appetite good, sleeps well, except for some cough at night. B.D. ·75; pulse 100; C.R. 6·5; B.P. 120; temperature 99·2. Apex beat in left nipple line. (*? Heart of chronic collæmia, on which phthisis has supervened.*) Has all signs of phthisis in the lower lobe on the right. Expansion

and percussion impaired both back and front as low as fourth rib, bronchial breathing and numerous crepitations increased by cough over same area. Bowels open twice a day, has had diarrhœa occasionally. There is probably tubercular trouble in the larynx as well. He was put by a vegetarian doctor on a diet of whole meal bread and fruit (*in all probability this diet was deficient in albumin; for even if anyone living an active life can get enough proteid out of bread and fruit (and I have never seen anyone who could) it is quite certain that an office worker cannot do so*). He is also taking some pulses, so that his diet is not even U.A.F. During his vegetarian experiences he has been attacked by serious tubercular disease, of which there is no family history. I ordered the addition of considerable quantities of milk and cheese, and failing these he must go back to meat, which is more nourishing and not as poisonous as pulses.

I mention this as a case of vegetarian folly. It must be remembered that I am accused by some of giving too much proteid. I am certain that it is considerably safer than giving too little.

Deficient proteid often means deficient appetite, as on deficient proteid there is easy fatigue, and no power is available to deal with new food. Vegetarians often make a double error; they underfeed, and then, because appetite is poor, take poisonous stimulants. If they fed on good nourishing food such as egg white or fresh curd in sufficient quantity, appetite would come back of itself; the call for stimulants and appetizers is often due to deficient power to digest; when appetite is keen there is always good digestive power; but a poorly nourished individual is constantly tired and has little or no digestive power. It is just these conditions of deficient food and defective nutrition that lead to stimulant taking.

Case 5.—C. L., female, aged 35. General collæmia, eczema and flushings. Headaches for years, two to three in a month, worse the last five years, and now never free at all. Has much depression and worry and mental obfuscation. Eight years ago (?) Raynaud's disease in first finger of right hand. Passed off in two months, but never so well since (*i.e. Raynaud's disease a sign of heart weakness*). Went to a home and was stuffed, but was much worse afterwards. Then did Salisbury diet for six weeks; got some relief the first week but worse later on. Has had a good deal of bronchitis. Eyes bad and cannot read, Oculist said "gout." Sleeps badly, and has nightmare. Appetite poor or none. B.D. ·7 or less; pulse 96; C.R. 8; B.P. 140. First sound long, second sound loud at left base. Apex beat in mid-clavicular line (*obviously cardiac debility of chronic collæmia, defective circulation and anæmia*). Hands and feet cold and often numb, no arthritic signs. Has discomfort after eating, cramping pains in abdomen and much flatulence. Bowels open only with cascara; some piles. Some pain at the period and variable loss; headache worse after period. Weight 8 st. in clothes, has lost 2 st. in as many years. Is on five meals a day with occasional hot water between them. Has been on extra fluids (*i.e. in excess of thirst*) for some time (*this probably accounts for the increase of head pain, as it raises the B.P.*). Present diet includes meat, fowl, fish and egg once each; tea three times, and whisky and water twice a day. Likes bread, but cannot digest milk (*and probably not a few other things are badly digested on five meals a day*). Is faint and exhausted in the morning, till she has had some food (*this is mere collæmia, œdema of brain and congested stomach, which I have previously explained*). I advised a very slow change on to U.A.F. diet, leaving off useless poisons such as tea. Two weeks later pulse 88; C.R. 9·5; B.P. 145. Advised as to piles, and given ammonium chloride as a tonic. Troubled with constipation, which is increasing as she is trying to eat more

bread. Stomach is large, one finger's-breadth below umbilicus, and splashing, as one would expect with such a circulation. Takes sulphonal for headaches. Advised drop out a meal when not hungry. There is no real hunger, but only the gnawing of gastric congestion (*collæmic dyspepsia*). A year later was still on some fish and occasional fowl, but has got rid of tea almost entirely. Pulse 84 ; C.R. 9 ; B.P. 140. Cannot get enough albumins without fish and fowl. Three months later has been abroad, and had much dyspepsia and pain. Appetite very poor, and cannot get on to U.A.F. diet. Is taking no end of drugs. Pulse 88 ; C.R. 7 ; B.P. 130. I now advised a diet of small bulk, à la Cornaro, but she could not get off fluids, especially her hot water (*which relieves temporarily by diluting acid gastric fermentation products, but does harm in other directions later*). Still on five or even six meals. Pulse 92 ; C.R. 7·5 ; B.P. 130. I found it practically impossible to get my rules carried out and fluids cut down. Two months later had a bad headache just at the end of the monthly period, and took phenacetin. Had cold, cough and sore throat later. Bowels are now more regular. Stomach no splashing, but liver is pretty large still. I again tried to urge two meals so as to get more appetite. B.D. had improved to ·8, but she tries all kinds of foods, hoping to get enough in concentrated foods such as dried milk, but, like many with defective circulation, does not digest it completely. She then got urticaria from gastro-intestinal irritation of unsuitable foods, and then head got worse again. Two months later, has now read Dr. Dewey, and wants to be on two meals a day. Can do best on small quantities of fowl and fish. There is still much splashing in stomach. Still takes a little tea to revive her in the morning. On diminished bread can do with less cascara. (*Thus the way to a rational diet was blocked in all directions.*) Seven months later she was still struggling on, but unable to do right. Has been on a Keffer cure under a foreign doctor in Paris, who used stomach tube and examined contents, but found nothing abnormal. Then put on egg and rusks. Was well while in bed, but as soon as she got up abdominal pain returned ; doctor said could do no more. Returned to London, appendicitis diagnosed, surgeon said no, but bowel accumulation ; no operation but ol. ricini and injections : eggs and fish (*rank poisons for constipation*). Now gone back to cascara, which alone keeps bowels right. Fruit and fruit juices produce nettle rash. B.D. ·5 ; pulse 76 ; C.R. 7·5 ; B.P. 130. I advised increase of potatoes. She cannot manage two meals a day, finds three are better.

I give this case to show how perfectly simple conditions treated by many doctors on many plans, none of which are, I fear, properly carried out, remain incurable and keep the patient a miserable invalid. The central factor was the collæmia of which the headaches were a sign, secondary to this we have a collæmic and relatively weak heart, congestion of liver and stomach, chronic dyspepsia with constipation, piles, skin irritation and eczema, with some rheumatic bowel irritation, flatulence, and colic. Two meals a day, with diminished fluids, would soon have moved the circulation factors half-way to normal, and then a suitable form of U.A.F. diet, getting albumins chiefly from egg white and curd, and not from bread, would have done the rest, and got rid of constipation and the gout of skin and intestines. The stomach was simply a circulation stomach, and a part of the intestinal trouble was, as the surgeon said, constipation, and not appendicitis. It must take two or three years to cure such conditions, the results of thirty-five years of food poisoning, but such patients rarely keep to any treatment (even if carried out correctly) for more than two

or three months, and usually see three or four doctors a year, with the proverbial result of too many cooks. These people are living an entirely wrong, selfish, and unnatural life; only when they start at the foundations, and put these things right, is it possible to cure them. This is no mere accident, but the working of a law.

Case 6.—A. L., male, aged 26. Complains of general pains, irritation, and stiffness, and the hands feel numb. He lives in the house of a relative, and is obliged to take what is going. Cannot read long, and gets tired and stupid. Sleeps badly after excitement or exertion. Had bad dyspepsia seven years ago, and was in bed five months. Tried vegetarian diet four months ago. Digestion got better, but he ran down on it. Is thin and rather pale, often very depressed. B.D. ·8; pulse 96, soft and small. First sound followed by murmur, second sound relatively loud. No cough. Is constipated on meat, but better when a vegetarian. Varices of legs most on left. Weight 8 st. 6 lb. 12 oz., has been 9 st. While on vegetarian diet he left off meat and replaced it by egg or nothing (*i.e., under-feeding*). I calculated his quantities, and gave him a list to go by. A year later he reported that he had found it impossible to keep to the diet ordered; he is still miserable, pale, and thin. Gets dyspepsia and flatulence on milk, and this makes his head muddled (*i.e., collæmia and weak heart*). Appetite poor, is on three meals a day. Has been taking trional to get sleep. Pulse 96 (*same rate as before*). C.R. 8·5; B.P. 130. Still constipated, and takes Kutnow. Is taking weak tea, eggs, and meat.

I had given him two pints of milk, and he would have been better on one pint, and the other pint should have been taken as curd, so as to diminish fluid, but, being dependent on others, he was unable to get the curd; hence his lapse into eggs and meat, and, being still neurasthenic, he could not give up his tea. This is just an ordinary case of neurasthenia with weak heart muscle, dyspepsia, and constipation, like many others given before; but I mention it because it illustrates the dawn of the instrumental method. When he first came to me I had no instruments for measuring the circulation, but when he came a year later I was able to measure C.R. and B.P., and as pulse rate and general condition had not altered, we are thus able to see what the quick pulse, heart murmur, dyspepsia, &c., meant at the first visit.

Case 7.—P. G. B., male, aged 33 (medical). Complains of flatulent dyspepsia, irregular heart action, palpitation, mental depression, with copious deposit of urates in the urine. Worse the last twelve months, but bad for two or three years. Was full of energy and very athletic till a few years ago. Overworked of late. No bad illnesses. Mother "urate trouble." Mother's father died of gout. Depressed and much worried. Sleeps badly but has dyspepsia and wind at night. B.D. ·75; pulse 64 (*but at times palpitation*); C.R. 9; B.P. 125. Apex beat in left nipple line, first sound long, second reduplicated at left base. Has arthritic pains in fingers and toes after wine. Slight tendency to constipation. Urine urate laden, no albumin, no sugar. Stomach down to umbilicus and a slight splash. Liver dulness not increased. Weight diminishing, now 11 st. 5 lb. 6 oz. Present diet: Meat once, egg once, tea twice a day. Digestion slow, appetite poor. No smoking, no alcohol and, contrary to the rule, no desire for it.

Here again chronic collæmia with dyspepsia ending in anæmia, depression and heart failure; this latter being shown not by the pulse rate, but by the defective C.R. B.P. ratios and the occasional irregular action and palpitation. He is obviously underfeeding, and this may account for the slow pulse rate, as the pulse always slows in starvation, hence the value of two meals a day in cases of cardiac debility or morbus cordis. I think the heart condition here was merely functional, a result of dyspepsia, anæmia and debility, for such altered sounds are common in collæmia.

Case 8.—M. K., female, aged 39. Complains of rheumatics in feet for two or three months. Father at 86 suffers from chronic rheumatism. Had rheumatic fever as a child, anæmia ten years ago. Metritis seven years ago. Peritonitis four years ago. Is low and depressed at times, also very irritable. B.D. ·6; pulse 76; C.R. 9; B.P. 115. Apex beat displaced to left, sounds relatively loud. Finger joints slightly nodular. Hands go dead in the morning. Occasionally troubled with spasm and wind. Slight piles. Menstruation regular, plus loss, (*? due to anæmia*). Is puffy over metatarso-phalangeal joints. Pain on movement only. Has been taking iodides, salicylates and lithia. Present diet contains meat twice, bacon or fish once a day. Tea, strong, four cups a day. Alcohol or stout twice a day. I ordered tea to be diminished, and gave salicylic acid in cachets and salicylate of methyl to paint on. These drugs, however, did not suit the debilitated heart and the anæmia, and the pulse quickened under them. She was still losing too much at the monthly period, though the loss was diminished by ergotin.

This again was a collæmic arthritis and to do good we must stop the collæmia, but it was impossible to stop collæmia while these debilitating conditions were active. The first thing was to stop the excessive monthly loss.

I then gave her nux vomica for the heart, and iron for the anæmia, and gradually the collæmia diminished, the arthritis improved, and she got slowly on to a dry U.A.F. diet. Some fourteen months later her sister came to me for similar troubles, saying that I had done the above patient much good.

The whole point in these cases is to clear up the collæmia, and this is impossible while such things as anæmia, dyspepsia or weak heart block the way. Diet free from uric acid does good in all cases, but it must not be allowed to increase either dyspepsia or debility, or it will do harm at first. Meat diet and tonics do good by clearing up the collæmia, but there are better ways of arriving at the same result. With meat the relief can never be anything but temporary; on correct diet it is permanent, but U.A.F. diet will do harm by keeping up collæmia if it increases dyspepsia or if the patient is allowed to underfeed; but neither of these mistakes are necessary.

Case 9.—M. J., female, aged 37. Complains of rash, which has been called erythema multiforme, on face and hands for seven or eight months. It came first on hands and ears, and spread. It smarts and burns but does not itch. The irritation is worse in the evening (*i.e. due to precipitation*). It began in the

east winds of May, which seemed to catch the face. (*Again precipitation by cold*); had some joint pains also at same time. Had erysipelas of face very badly twenty years ago. Often dyspepsia and vertigo, "nerves" very bad. Has pain on top of head, which is worse of late and on some days worse than on others. Ears are very red and tender, and cannot lie on them. Suffers much from depression and low spirits, but sleeps well. B.D. ·75; pulse 92; C.R. 11; B.P. 155. Heart's action occasionally irregular and fluttering, second sound very loud. Had dyspepsia for years and some pain in left hypochondrium. Bowels act only with medicine or enema. Menstruation regular; three children, last seven years ago. Skin is worse just at the beginning of the menstrual period (*again a time of retention*).

Here we have an obviously collæmic patient with very slow C.R., high B.P., with headache, palpitation and vertigo as its signs, complaining of a constitutional skin irritation (originating in and worse under conditions of precipitation, which to some extent alternates with the collæmia, but may also be kept up during the collæmia, just as an arthritis may be when once started.

Present diet, meat once or twice, tea twice a day; used to take more of both. Both head pain and vertigo are increased by stooping (*i.e., increasing pressure*). I told her to stop tea and tried aspirin 15 gr. ter for the skin. Three weeks later no improvement, headaches continued bad and a good deal of debility (*i.e., aspirin was increasing collæmia*). So I then tried a precipitant, *i.e.*, iodide of iron and hydriodic acid, and I did not see her again for five months. She then said that when taking last medicine she had a very severe illness called influenza, followed by acute dermatitis. Temperatures 102 to 103. In bed for six weeks, during which skin and face improved, but has been getting worse again since. (*This fever would have been the time to give aspirin or an alkali*). Pulse now 88; C.R. 8·5; B.P. 150. Second sound still very loud (*the quick rate and deficient ratio still show some heart failure*). Has been taking stout to strengthen her, and her skin has been getting worse. (*Stout is a retentive and the iodide is the same and may account for part of the acute dermatitis*). Is now taking meat, eggs, bacon and tea.

Here we have a local inflammation which began in retention, increased with tonics and iodides, diminished with rest in bed and milk diet, and got worse again on feeding up on meat, eggs, bacon, tea and stout, and all this in a patient whose other troubles were obviously collæmic and who has every sign of severe and prolonged collæmia in her circulation. But this is the way one's patients treat one. Disease is a mysterious entity, only to be driven out by drugs, instead of being, as it seems to me, a sign that the one who suffers is doing something unnatural and wrong: in this case eating flesh and drinking tea and stout to keep up strength, which poisons, and poisons only, are knocking to pieces. Such a patient thinks that because a retentive drug, quite right under certain conditions, produces later on an acute dermatitis that the doctor who gave the medicine is to blame and must be ignorant, and that the proper thing to do is to change the treatment and the doctor, or only to tell him six or eight weeks afterwards, when, of course, there is nothing to be done except to regret that solvents

were not given at the right time, and that the milk diet, which did good, was not continued. So long as people are ignorant of the fact that disease is a result of doing wrong, and is only to be relieved and cured by doing right, I fear this state of things and much unnecessary suffering must continue.

Case 10.—A. J., female, 49. Complains of pains in joints and all over after an attack of influenza four months ago. Is worse in cold and wet weather. Gets very stiff on sitting. Her mother had rheumatics. No fevers. Married, had four miscarriages at first and then five children, well. Much depressed since this attack of influenza. Is kept awake by pains. B.D. ·75; pulse 88; B.P. 145. First sonnd long, or late systolic murmur; second sound loud. Finger joints slightly broadened by arthritis. Appetite poor, no dyspepsia. Bowels act two or three times a day, always have done so. Menstruation now dodging; weight 9 st. net, steady, or slightly diminishing. Present diet five meals, meat once, fish once, soup once, tea or coffee three times, whisky and soda twice a day. I advised no tea, coffee or meat soup. (*Here was a case of collæmic arthritis, associated with all signs of collæmia and some weak heart muscle, with depression as a result. I knew I should not be able to restrain the collæmia while the bowels acted three times a day*), so I gave a small dose of salicylic acid as a retentive (*see* "*Transactions of Royal Society of Medicine*," February, 1909) with a little pulv. opii co. in cachet to restrain the bowels. At first I gave rather too much opium and it made the head bad (*i.e., caused increased B.P. at times*), so I reduced the dose to that required to make the bowels act once a day only, then all went well. In a few weeks the pains had very greatly diminished and in a month or two she was quite well, and left off the drugs. Six months later her daughter came to me for nodular rheumatism and morbus cordis, and I heard that the above patient was well and going back to ordinary diet. (*She again had not understood the relation of cause and effect.*)

With regard to the etiology of mental depression or severer conditions I have the following very interesting note from Mr. W. A. Sibly, M.A., of Wycliffe College, Gloucester. He says, "I have sometimes thought it would be interesting to illustrate the workings of uric acid in history. A very good example of this seems to me to be given in Macaulay's 'Second Essay on the Earl of Chatham' (p. 5, from end). Speaking of Pitt at the time when he accepted office and an earldom from George III., he writes: 'His mind before he became First Minister had been in an unsound state, and physical and moral causes now concurred to make the derangement of his faculties complete. The gout, which had been the torment of his whole life, had been suppressed by strong remedies. For the first time since he was a boy at Oxford he passed several months without a twinge. He became melancholy, fanciful, irritable . . . month followed month and he remained sunk in the deepest dejection of spirits. . . . At length the clouds which had gathered over his mind broke and passed away. His gout returned and freed him from a more cruel malady. His nerves were newly braced, his spirits became buoyant. He woke as from

a sickly dream.'" Mr. Sibly goes on to remark: "It was during these two years of illness that his uncontrolled subordinates made the breach with the American Colonies so wide that no subsequent efforts on Chatham's part could repair it. Thus one may fairly claim that it was uric acid that lost the American Colonies, and tell a Yankee that he is a product of that toxic agent." I quite agree with my correspondent that a study of history in the light of what we now know of the workings of uric acid, could not fail to be most interesting and useful.

Case 11.—C. J. W., male, aged 66. Complains of arthritis in right wrist and fingers, less in left, slightly also in shoulders. It began in his right wrist twelve months ago, and is worse the last three or four months. Family long lived. Father married at 65, died 92, but his fingers were crippled by arthritis, so that he could not write. Has suffered from chronic bronchitis. Getting deaf for two years (*another effect of urate irritation*). B.D. ·75; pulse 84; C.R. 8·5; B.P. 145. Apex beat to left, first sound reduplicated, second sound loud. Has catarrhal sounds all over chest, expectoration chiefly white. Some enlargement of right wrist and interphalangeal joints of hands, other joints stiff and painful. Subject to dyspepsia and flatulence, used to have fits of colic (*gout of intestines*). Bowels open once a day, occasionally takes mercurial pill. Weight 10 st. 4 lb., steady. Present diet: meat two or three times, fish or eggs twice, tea or coffee twice. Whisky once a day. Hot water at bed time, cold bath every morning. Spray of vin. ipecac. relieves the bronchitis. Joints worse in the morning and better at night (*i.e., collæmic arthritis, and we have all the signs of collæmia in slow C.R. and weak heart*).

This patient did not want drugs, or iodides would have been the best treatment, as they stop collæmia, and thus both relieve the arthritis and take the work off the heart. Spacing meals and cutting down fluids would stimulate nutrition and produce similar results.

I give the case to show how intimately mixed these things are, how a retentive disease passes into a collæmic one, and *vice versa*. Thus his arthritis was probably due to retention at first, and was afterwards kept up by collæmia. His dyspepsia was at times retentive, colic. His bronchitis was retentive and his deafness probably the same. His circulation troubles are chronic collæmia, now associated with heart weakness, and this, at first functional, gradually becomes organic, and verges towards incurability.

Case 12.—J. K., male, aged 59. Complains of gout, tremors, and low spirits. Tophi in both ears, and drinks beer even now. Suffers from debility and inability to work. Has had tremors in hands and head for last month. At present suffering from vomiting and diarrhœa. Urine sp. gr. 1010, acid, no albumin. (*Has probably a granular kidney, hence the low specific gravity.*) Pulse 95. Artery tortuous. Some high B.P., apex beat to left, sounds fairly normal. Had gout in both big toes two years ago, in bed a month with it; since had it in knees, elbows, and elsewhere. He was given a mixture for his vomiting and diarrhœa, and when this was better—as he still had tremors, debility, and sleeplessness, and said that his tremor, debility, and low spirits were worse in the morning, and got better about 12 noon—he was given an acid mixture to see what that would do, and he returned in an hour with the tremor very distinctly better than was usual at that hour of the morning.

We could not see debility and depression, but we could see that his tremors were distinctly diminished, and with them, no doubt, the circulation was better because the collæmia was less; we gave a retentive drug, and cleared up several collæmic troubles.

I have since seen a number of cases in which tremor was distinctly associated with collæmia, which also caused other effects, such as headache or depression. Here I have no doubt that the tremor, worse in the morning hours, was a result of the same defective intra-cranial circulation, which accounted for the debility and depression; doubtless the heart was weak, or there would have been some headache as well; the only sign we have of it here was the pulse of 95; but we should have found all the other signs if our instruments had then been available.

I then gave him phosphate of soda, and he got into better spirits, and had less tremor; but as he got better in spirits he had some shooting pains in the toes, showing where some of the uric acid was being retained.

While patients are full of urates, you clear up a collæmic trouble, only to produce a retentive one, and *vice versa*. There was no doubt that this was gout, but as the man got older, as sleep and digestion failed, and strength ran down, the urates began to come out of the joints into the blood and produced the collæmic troubles above named. Here at 59 we got gout and collæmia alternating, just as at the other end of life we find rheumatism and chlorosis doing the same.

Case 13.—J. B., male, aged 52. Complains of being nervous and despondent, of trouble in passing water and some constipation, also of colicky pains in the abdomen; this lasts for five or six months. Mother has rheumatism, father rheumatism and gravel, one cousin has gout. Had measles twelve months ago. Carbuncle seven or eight years ago. Influenza three or four years ago. Sleeps badly and wakes early. B.D. ·85; pulse 80; R. radial (sitting) measures 1·8. Apex beat is well outside the left nipple line, first sound long, second sound loud (*collæmic heart, and chronic collæmia too*). Bowels act only with pills. Urine, sp. gr. 1023, no albumin, no sugar, urate laden; weight now 11 st.; is losing weight and worries over it. Has been on fish, fowl, rabbit, and white meat. I advised him to try U.A.F. diet, and gave full directions, giving the actual weights of milk, cheese, &c., and leaving him free to take as much bread, puddings and breadstuffs as he likes.

About five weeks later he returned, having lost 3 lb. in weight, and being very hungry from taking too little proteid. He had slavishly taken the exact amount of milk and cheese I ordered, but had forgotten all about the breadstuffs and puddings. But the result had been most satisfactory; he was much better, the bowels had acted without any pills, as he had taken three apples, an orange and two bananas every day; the pain in the abdomen had gone, and he was less nervous and despondent; and we see why he was so, for pulse was 72, and R. radial sitting only 1·4 (*a marked fall of B.P.*). There is no backache, but still a little myalgia and stiffness. Urine now has only sp. gr. 1013, no albumin, no sugar.

The rest of the case was uneventful. I give it to show the very marked effect of a little temporary starvation on the B.P. and its results; the very best treatment in such cases is often complete starvation for a few days, followed by correct U.A.F. diet, spaced meals (two meals a day) and diminished fluid. These measures lower B.P. and keep it down, and all the rest is a result of this. A fast, followed by correct diet and modes of feeding, brings it down never to rise again.

### *Neuritis and Neuralgia.*

With regard to neuralgia, I give the following for what it is worth. I have not had an exactly similar case under my own care, though I have seen crowds of minor neuralgias disappear with improved blood and circulation. Unfortunately the writer does not mention her age.

Case 1.—Her letter is dated from Stamford, Ontario, February, 1900. She begins by saying she is writing me a letter of gratitude for freeing her from tic-douloureux—"neuralgia does not seem any word for it." It began as she thought in her left eye-tooth; the dentist had filled it, and said it was a good tooth, and thought it would come all right, but it did not, and she "was just frantic with pain." A dentist was called, and did not take out the eye-tooth, but a small one next to it. This gave no relief. Then the eye-tooth was taken out some months later, but no permanent relief. Then three more teeth till the dentist said there were no more teeth that could cause trouble, and it must be due to something else. "It would wake me out of my sleep, and I would fly up and hold my temple till my sister could get me some chloroform, laudanum, or morphine; it was like dozens of needles running into my temple. It came on night after night, and nothing we could do would prevent it. At last I had a terrible attack, it lasted about three weeks. I was saturated with strychnine and hypodermic injections of morphine day and night. Last of all, my brother, being a doctor and living in the house, discovered the system was full of uric acid, and thought of the U.A.F. diet." She began diet, ready to do anything rather than have the terrible attacks, as sometimes she could not open her mouth to speak, at others had to take all her food through a glass tube. The thing she regrets most having to give up is roast chicken; she almost lived on it before. The result was that diet cured her, with occasional relapses at first, as one would expect. She also says that another brother, who is a doctor in New York State, had a similar case, and he also put her on diet with the best results. This latter patient is quoted as saying, "It is about five weeks since my face began to get better, and now I should not know it had ever troubled me. I think it is eating no meat, as I do not take any medicine; my nerves are much stronger, am quite encouraged, &c. ("*Nerves stronger*," *no doubt, means a better circulation and less collæmia.*)

We may note, with regard to the treatment of this case, that, if the trouble were due to collæmia—and the "nerves" in the second case make this probable—the morphine, though stopping collæmia for a time, would make it worse next day, and so tend to intensify and prolong the trouble, and the bad three weeks was probably due to previous morphine; but morphine, followed by salicylate, would probably have been free from this objection.

Still, all said and done, the real cure is never by drugs, but by leaving out the poisons.

Case 2.—M. H., female, aged 59. The relative of a doctor who brought her to me. Complains of chronic rheumatoid arthritis, for which she has been taking pot. iod. and sp. am. arom. (*i.e.*, *two retentives*). After she had been on the iodide for six or seven weeks she began to suffer from right supra-orbital neuralgia, affecting also the right eye, which is worse in the morning, better in the evening, and is relieved by antipyrin. The rheumatoid arthritis began four years ago with increased pain on walking; she had had slight rheumatism for years before that. She went to Bath, and got low and run down, and then got this neuralgia, and her joints got worse also (*collæmic arthritis*). Mother very rheumatic. Patient always strong and in good health. Could always walk till three years ago; now she gets very tired, and her legs ache. Skin of forehead is pigmented. Is low and depressed at times. Sleeps badly, and cannot get to sleep; whisky and water helps to send her off (*i.e.*, *lowers B.P.*). B.D, ·75; pulse 68; C.R. 7·5; B.P. 155. Heart sounds muffled by emphysema, second loud everywhere. There is some increased skin pigmentation over the right wrist. Bowels act with occasional Kutnow (*another retentive*). Urine sp. gr. 1020, no albumin, no sugar. There is creaking and crackling in the left knee, and it is tender in places and larger than the right. Weight 14 st. 11 lb. 12 oz., has been down to 14 st. 9 lb. recently. Present diet contains meat twice, fish twice, tea twice, whisky and water twice, soup once a day. I advised her to leave out soup and diminish tea, and gave iodide of sodium, nux, and cinchona, and salicylate of methyl locally for left knee, with U.A.F. diet to follow gradually later on.

Three months later she had taken my medicine, but had still had the supra-orbital neuralgia off and on, especially the last month (*i.e.*, *the iodide had done good at first, but was now failing again*). The pain is spasmodic, and not at night. The rheumatism has been decidedly better; has been diminishing her meat as well as tea and soup, and seems rather under-nourished, as she has not put enough of other things in place of the meat. Has just taken some antipyrin for the neuralgia; hence the circulation is under the influence of this. Pulse 72; C.R. 7; B.P. 120.

Antipyrin lowers B.P. partly at least by weakening the heart muscle; hence the quicker pulse and lower B.P. in relation to C.R. Before it was a little above the ratio, now it is distinctly below it. Her neuralgia is a neuritis due to collæmic high B.P., similar or identical in causation with the neuro-retinitis of morbus Brightii, *i.e.*, a sign of chronic collæmia. Iodide relieves it, so long as it hinders collæmia; but when the uric acid overflows (collæmia of the rebound), the neuralgia gets worse again, and then, as in this case, has to be relieved by antipyrin. It would be permanently removed by diminishing fluids spacing meals, and by the U.A.F. diet, as in cases given above, if continued long enough, and, apart from food poisoning and the defective circulation it has produced, would never have existed at all.

Case 3.—M. D., female, aged 55. Complains of chronic arthritis and more recently of neuritis, has pain in knees and legs, and weakness, cannot get up and down stairs, occasional soreness in hips and lower abdomen. Has numbness in tips of fingers, those of left hand are slightly numbed now. Loss of power in legs has been worse last three months. No rheumatism or gout in the family; one daughter was very ill last year and had much anxiety (*which helped*

*to precipitate second collæmic stage*). Has had headaches for years, very bad five years ago. Phenacetin relieved them (*another heart muscle depressant*). Influenza two or three times, last time about two years ago. Had eczema of fingers for some years off and on after childbirth fourteen years ago. Has headache now occasionally on waking in the morning, takes phenacetin for it. Had neuritis in left eye five years ago and got over it. Worries much over things (*collæmic or weak circulation in brain*). Sleeps well, but wakes at 6 a.m. B.D. ·75; pulse 88; C.R. 7·5; B.P. 120 (*after phenacetin*). Both sounds reduplicated; second sound loud at base. Has occasional colds in winter. Fingers show chronic eczema, enlargement of joints and creaking. There is a good deal of flatulent dyspepsia and some pain, occasional, in lower part of abdomen; menstruation has ceased. Urine sp. gr. 1027, milky with urates (*collæmic urine*), a slight trace of albumin. Both kidneys can be felt, the left seems slightly enlarged (*? hydronephrosis*); the pain and tenderness are below this in the left iliac and hypogastric regions, and seem chiefly connected with flatulence.

It is difficult to say how much of the pain is arthritis and how much neuritis. Salicylates will relieve arthritis, but increasing collæmia will make neuritis worse. We saw in the previous case that neuritis was relieved by a retentive, but got worse again when the collæmia overflowed the retentive, and was worse in the morning with more collæmia, better in the evening with less.

She has used potash and phosphorus, no good from either. Present diet: meat twice, soup twice (lentils one of them), coffee twice, eggs once a day. Drinks water now, used stout for many years. I decided to try salicylate and see what it would do with a view to diagnosis.

Five months later reported that the left side pain went suddenly away and has not returned, that she has not much flatulence. She took the medicine, but it did no good, and she still has numbness in the fingers and they swell in the cold weather. She has not altered her diet. Pulse 88; C.R. 7; B.P. 140. Often headache on rising in the morning, but it goes off after her cup of coffee at breakfast. Heart, second sound loud as before (*probably* 140 *is her more common B.P.*). I now advised her to cut down her fluids and to alter slowly on to U.A.F. diet. A previous doctor had told her to feed up, and she was doubtful about my advice as to diet, and probably did not take it; in any case I never saw saw her again.

I give the case to illustrate the circulation of neuritis, and the fact that solvents do no good; only diet and retentives, which clear up collæmia, and improve capillary circulation and the nourishment of the nerve tissue, do any good.

Case 4.—D. F., aged 47 (medical man). Complains of neuritis of left arm and occasional numbness in fingers of left hand. Also some tender spots and pain in region of right scapula. Salicylates no use (*as we should expect*). Has been on iodide and alkali for the last three or four months. Has been trying U.A.F. diet, correct except for pulses, for the last three months. Lost it for a month, and then it came back again (*effect of iodide as in previous case*). One sister has migraine and paroxysmal albuminuria. Has had creaking in the neck for some years on turning the head. Sleeps badly and wakes early. B.D. .8; pulse, 76; C.R. 7·5; B.P. 135. His home doctor has found it as high as 150. First sound long or reduplicated, second sound loud (*collæmic heart*); slight enlargement of knuckles and rheumatic pains in them. B.O. with apenta, slight irritation of anus, occasional piles and bleeding. Urine, no albumin, no sugar. Weight 12 st., is increasing on U.A.F. diet. Present diet consists of milk, cheese, and breadstuffs, but is taking beans twice a day (*of course no*

*success*). Is taking alkali and colchicum at present (*and no wonder neuritis has returned*). He also takes potassium iodide more or less in alternation with the other things. I told him that alkali and colchicum pulled in one direction (*solvents*), while iodides pulled in the other (*retentives*), and that he had better take them separately, and see which did most good. Or best of all leave drugs alone, and trust to correct U.A.F. diet; and I increased his quantity to 1,300 gr. a day, as underfeeding would increase collæmia, and antagonize the action of the iodide, the only drug likely to do any good. He must not lose weight or strength.

Eleven days after, he reported that he was taking no drugs, and already felt better; the pain in arm and shoulder was reduced to a little stiffness. Is on correct U.A.F. diet, no beans.

A month later, pain in arm quite gone, only a little stiffness in ankles and thighs on getting out of bed in the morning. Feels well in himself and has gained 3 lb. in weight. Probably he is now having enough albumin, so I advised him to use separated milk to avoid stoutness, and to try some massage for the stiffness.

## *Bright's Disease.*

Case 1.—E. B., male, aged 53. Complains of frequent micturition and a good deal of bilious vomiting at times. Albumin first found four months ago. Has been advised to take little meat. Has heavy work and it affects his nerves. Skin is puffy. B.D. ·75; pulse 100; C.R. 9; B.P. 175. Heart much covered by emphysema, first sound long, second sound loud. Slight hacking cough (*? bronchial congestion due to heart failure*). Nausea comes in attacks (*? migraine, but there is no definite history of this; ? uræmic*). Urine sp. gr. 1012, cloud of albumin and a few hyaline and granular casts. Present diet: meat once or twice; fish or egg twice; soup once; tea twice. No alcohol, smokes 2 ounces a week.

Here is a clear case of chronic Bright's disease with heart beginning to fail. B.P. 175 does not come in a day and there must have been collæmia, with or without headaches, and bilious attacks for years before the albuminuria was discovered. A result of fifty-three years of food poisoning and collæmia, ending in organic disease.

Case 2.—M. D. G., female, aged 56. Had dyspepsia all her life. Has pain and soreness in epigastrium followed by regurgitation of hot water (*water brash*) and much flatulence. Has been running down and got irregular action of the heart. Has been on fish and fowl only for six weeks and this has diminished the soreness; still much flatulence. Never strong, had rheumatic fever at 12; ten children, eight alive. Suffers much from cold feet. B.D. ·75; pulse 112; C.R. 7; B.P. 165. Artery rolls under the finger. Apex beat to left of line, first sound long, or late systolic murmur, second sound loud. Action irregular, drops or flutters every sixth beat. Pain right side and epigastrium, slight local tenderness. Bowels act only with aperients. Menstruation ceased one year ago, used to have excessive loss (*common in high B.P. cases*). Lower border of stomach considerably below umbilicus, and much splash. Liver dulness increased. Right kidney easily felt, movable, not tender. Weight steady at 7st. 6lb. Present diet game or fowl twice, fish or egg twice. Five meals, tea three times a day. Drinks extra hot water twice a day when not thirsty at all. (*Can folly go further? Dilated heart, congested stomach, and liver, and taking excess of fluids*). I did what I could to diminish fluids to thirst level, and meals to three and if possible two in a day, and she was improving when I last heard of her, and some alkaline lozenges had relieved the water-brash.

Here was a chronic collæmic dyspepsia leading to heart failure and probably Bright's disease, the result of fifty years of food

poisoning; and all that had been done for her was not to stop her poisons but to further dilate her heart and stomach with fluids in a hopeless attempt to wash out what she was still putting in.

Case 3.—P. C. B., male, aged 23. Seen with Dr. Gloster, of Kensington. Complains of sluggish liver, albuminuria and glycosuria, Albumin first found six years ago. Measles and enteric fever as a child. Fainted two months ago for five minutes. Appetite good, sleeps well. B.D. ·8; pulse 96; C.R. 8; B.P. 125. Apex beat in left nipple line, first sound long, second sound slightly reduplicated. Slight constipation, takes occasional laxatives. Micturition once in night. Urine sp. gr. 1018, acid; albumin a good cloud, sugar a trace. Microscope: uric acid and oxalates. Has been on U.A.F. diet for ten days, and the urine now brought contains neither albumin nor sugar. Stomach down to lower border of umbilicus, and gives a splash. Liver dulness decidedly increased. His previous diet of four meals a day contained meat once or twice and cocoa three times a day.

Here is a case very closely paralleling that of my son given in Chapter II. Chronic collæmic heart failure leading to sluggish and congested liver, syncope, albuminuria, and glycosuria, these latter being, as is generally the case, occasional, intermittent and easily got rid of. I have little doubt that spaced meals, diminished fluids and eventually a dry U.A.F. diet would have made short work of both albuminuria and glycosuria, and diet alone may have cured him as in the case of my son; but I heard no more of him. Meals were not spaced and fluids were not cut down, because I had not at that time got a full grasp of the etiology and pathology of these conditions.

Case 4.—J. T., male, aged 61. Complains of headache and giddiness, worse the last two weeks. Headache or sick headache nearly all his life, one every two months or so. Has rheumatics very bad. Nails reedy. Pulse 54, high tension; sleeps less well of late. Apex beat displaced to left, impulse distinct. Late systolic murmur at apex. First sound reduplicated to right of apex; second sound loud everywhere; urine sp. gr. 1008, no albumin, no sugar. (*Probably granular kidney, high tension and danger of cerebral hæmorrhage.*) I gave an acid mixture, and pil. cal. c. col. p.r.n. In a week giddiness was diminished, and he had only been giddy on one day; went on with same treatment a second week. I then gave salicylate of soda 15 gr., but it made the head worse, as one would expect if it were collæmic. I then tried quinine, but that was no better; it was evidently not neuralgic, though he had some neuralgia as well as collæmic vertigo and headache. I then blistered his joints and gave him iodides, and a week later both the joint pains and the giddiness were less, but iodide did most good for the head; thinks salicylate does most for the pains, but then it makes the head worse.

Here we have the usual alternation of arthritis and collæmia, but the most important thing in this case is the collæmic high B.P., and the danger of cerebral hæmorrhage. To-day I should make short work of this by diminishing fluids, and then U.A.F. diet would clear up the arthritis more gradually. In old times I used to ask people which they would prefer, pains or depression, whether if I cured their pains they would mind having

depression, or, if I cured their depression, whether they would mind some pains; and the great majority chose pains rather than depression, and all agree, as Macaulay remarks, that mental disease is a more cruel malady than gout. To-day we can cure both by removing the cause, and both can be easily prevented.

Case 5.—J. M., male, 49. Complains of Bright's disease and bronchitis. Has lived very freely (*and this is the result*). Father died at 80, cerebral hæmorrhage. Mother died at 79, head pain and attacks of epistaxis. Five years ago influenza and ill since; it was followed by noises in the ears and headaches. Two years ago left hemiplegia, and albuminuria was first discovered. One year ago, influenza and broncho-pneumonia and has had palpitation and bronchitis ever since. Insomnia recently. Albuminuric retinitis noted a few months ago. Headaches badly for two and a half years. Often very violent and followed by vomiting and diarrhœa. Pulse 95; temperature 99·8. Apex gives a diffused heaving impulse in left nipple line. Second sound loud everywhere and reduplicated at left base. Heart is large but covered by emphysema and the liver dulness is covered by same. Has now pain in chest and palpitation on exertion. Water passed several times in night. Urine sp. gr. 1012, acid, much albumin (3 to 4 *per* 1,000). Many hyaline, fatty and granular casts, once or twice oxalates. Some slight œdema of legs. Some crepitations at left base behind (*? pressure from enlarged heart*). Present diet: meat and fowl twice, fish once, bacon and egg once, tea twice, wine twice. (*Here things had gone too far, collæmia had passed into organic disease.*) He never recovered from the pulmonary trouble (*bronchitis and congestion*) and died ten days after I first saw him.

Here is a man originally strong, the child of hardy and long-lived parents, though they also died of food poisoning, but he doubtless inherited from them some diminished vigour on account of their own and ancestral poisonings. He starts to live freely, and ends by dying thirty years before his parents did. No doubt but for influenza he might have lasted some years longer, but then influenza practically does not touch those who live rightly. All his troubles were results of collæmia, which again is a result of food poisoning, and there are all gradations from migraine with albuminuria and retinal stasis (functional) to Bright's disease, with organic changes in kidneys, eyes, heart and lungs, as in this case.

Case 6.—M. G., female, aged 57. Complains of migraine attacks for years, and now a constant tired feeling in the head, worse the last ten years. Is now always tired. Has attacks every week and feels fagged out between them. Has attacks of shivering and goes cold all over when it is going to be wet. If she goes out in the morning is helpless for rest of day (*i.e. heart strain from morning collæmia, and that and the heat, if excessive, increase the collæmia and prolong it more or less into the day*). Mother's father had headaches and arthritis. Mother, aged 80, has occasional attacks, so heredity of migraine is not wanting. Bilious headache as a child, always inactive liver. Has pain attacks in nose, face, jaw and whole upper part of body. Also arthritic pains in legs and feet. Is pale, and skin of face is puffy (*some œdema of nerve sheaths is a cause or part cause of the pains*). Teeth good, no pain in them till last six months. Is often kept awake by pains. Pulse 72; B.D. ·75. Apex beat about two finger-breadths outside left mid-clavicular line, first sound long, or reduplicated, second sound loud (*i.e. high B.P., collæmic heart*). Bowels act only with pills. Passes water in the night. Urine sp. gr. 1014, acid, urates and red sand, trace of albumin, no sugar (*probably this means granular kidney, as shown by the low*

*specific gravity. Migraine is here merging in chronic morbus Brightii, its most common ending, so common in fact that the former is practically but the early stage of the latter*). There is very slight œdema of the ankles. Is losing weight, now 8 st. 14 lb. Present diet: meat once, fish once, egg once a day, tea or coffee twice, whisky once a day. Has been to Llandrindod for her gouty pains, but they soon returned afterwards. She often takes Carter's pills and Bishop's varalettes.

I give this case for its history and to show the conditions in a woman of this age who has suffered from migraine and collæmia all her life. The enlarged heart, granular kidney and anæmia are the most noticeable results, and beyond these the tendency to heart failure, hysteria and neurasthenia.

Case 7.—D. M., male, aged 30 (medical). Complains of pains in back, and weakness in legs, and being easily tired. Has had albuminuria for about ten years. Three years ago went to California, and, with much work and anxiety, became dyspeptic, and had œdema of the ankles, and then there was an increase of albumin. Father well except slight rheumatism. Mother died at 70 of morbus cordis. Two brothers and two sisters healthy. Scarlet fever at age of two, and albuminuria followed. Well after this till hard work and wild life as a student, and albumin was again found. Had fever in Bombay, and subject to slight malarial attacks since. Had hæmoglobinuria for seven days on his way home from California. Urine now, sp. gr. 1014 to 1015, albumin about ·5 per 1000 (*Esbach*). Is slightly depressed, and tends to get more nervous, and have less confidence in himself. Has insomnia in spells. Pulse 84, apex beat in left nipple line, first sound long, second sound loud (*i.e. collæmic heart*). Casts few, and only occasionally found. Weight 10 st. 8 lb. 10 oz., and diminishing. B.D. ·8, face somewhat puffy. Alcohol increases pain in the back, and so will a cup of strong coffee, I advised diet and occasional pil. hydrarg. as laxative and anticollæmic. Seven months later had been to India and back. Found hot weather very relaxing. Pulse 72. Had spell of headache in Bay of Bengal, Urine sp. gr. 1010, trace of albumin. Advised strict diet, and after some time in this country, albumin had fallen to ·25 per 1,000, and sp. gr. was 1014. So things went on fairly well with slight variations, no headache, and only slight pain in the back. Next year he went for another voyage, and during this was unable to keep to U.A.F. diet, as everything ran short he had to live on mutton, pea soup, biscuits and fat, and was not so well. On his return he caught cold, and had pain in his back. Pulse 68; C.R. 8; B.P. 135. First sound long, second sound decidedly loud, and the albumin was now found to have increased a little to ·5 per 1000.

This was a case of chronic Bright's disease, and I give it to show that the albumin appeared to fluctuate with the diet to some extent. The functional albuminuria of early stages fluctuates greatly with the diet, so much so that in early cases it suffices to put the patient on a milk diet to secure the disappearance of the albumin; but this is common knowledge, and has been used for insurance purposes for many years past.

Case 8.—E. F., male, aged 35, medical. Complains of morbus Brightii for seven months. Works hard and has smoked much. Had rheumatic fever fifteen years ago, and again thirteen years ago, no morbus cordis. Chronic rheumatism for five to six years. Frequent headaches as a boy (*migraine*). Three years ago influenza and bronchitis. Present illness began seven months ago with a feeling that something was wrong, flatulent dyspepsia, swelling of legs and short breath (*congestive dyspepsia, &c.*). Has some lichen on legs, for which he takes arsenic. Pulse 70 in morning, 78 in evening. Some palpitation on

exertion. Apex beat is quite in left nipple line. Pulse tracing shows some high pressure and takes 3½ oz. to develop it in spite of a rate of 85 to 90 (*weak heart muscle or virtual tension, C.R. no doubt was slow*). Second sound moderately loud. Urine sp. gr. 1015, acid, albumin 2 per 1,000, a few hyaline and granular casts. Has been on strychnia, tannic acid and cinchona without much benefit. Has been on milk diet plus a little fish or fowl. I advised him to continue diet but diminished fluids and gave iodide, chloride and nux. A month later uric acid was to urea 1 to 32 (*i.e., not much above normal*) and albumin had fallen a little to 1·5 per 1,000. Urea only 2·5 gr. per lb. He reports that albumin greatly increased one day after a dinner and some extra work.

Here we have chronic migraine, acute and chronic rheumatism and finally the natural ending of migraine, albuminuria and Bright's disease with more or less marked heart failure. And it was the failure of the heart, causing congestive dyspepsia, dyspnœa and œdema of legs, that produced the failure of combustion which has ended in albuminuria and Bright's disease. The obvious treatment in such cases is to clear the blood of poisons by diet and drugs and at the same time to keep up the nutrition and strength of the heart. This has not yet been done here, though heart tonics have been given, for he has been put on a milk diet containing excess of fluid, which is bad, and but little care has been taken to ensure sufficicnt proteid.

Case 9.—J. M., male, aged 34. In Metropolitan Hospital, complaining of enlargement of left side of abdomen. This was examined and thought at first to be a hydronephrosis. Later it was examined in consultation with my colleague, the late Mr. Walsham, and he thought it was a loculated effusion, which it proved to be at the *post mortem*. (*I give it because I estimated the excretion of uric acid from damaged kidneys and found it to be large*). Urine on admission high coloured, acid sp. gr. 1027, no blood, much albumin (Esbach 15 per 1,000 or more). Microscope: numerous hyaline casts with granules and fat on them. A twenty-four hours urine was collected, in all 26 oz., sp. gr. 1012, acid, albumin 16 per 1,000, urea 1·6 per cent. = 190 gr., uric acid ·10752 per cent. = 12·9 gr., relation 1 to 14. Total albumin 190 gr., albumin to urea 1 to 1. Four days later urine sp. gr. 1019, albumin 20 per 1,000, urea 2·1 per cent., *i.e.*, about same relation. Three days later urine sp. gr. 1022, albumin 14 per 1,000, urea 1·9 per cent., uric acid ·08064 per cent., uric acid to urea 1 to 23 (*i.e., less albumin and less uric acid*). Seven days later albumin 2·8 per cent., urea 3 per cent., *i.e.*, about same ratio. A few days later he died with slight rise of temperature and some abdominal pain. At the *post-mortem* there were omental adhesions from the right iliac fossa up to the left hypochondrium, and this was ballooned out with effusion, and there was also a little fluid in the general peritoneal cavity. The kidneys were both enlarged and pale, cortex enlarged and capsule peeling easily.

I give the case to show that here, with the early stages of large pale kidney and a very large amount of albumin, one yet gets an excretion of uric acid far above normal. I have always maintained that an excess of uric acid in the blood means an excess in the urine, save only in the condition of early acute nephritis with raised temperature, in which alone probably the alkalinity of the kidney structure is diminished and the solubility and excretion of the uric acid is thus interfered with. In all chronic conditions an excess of

uric acid in the blood means an excess in the urine, and anyone who will estimate both blood and urine will find that this is so. I regret that this case was in pre-instrumental times, and before Mr. Barker Smith's test for uric acid in blood was known, or many more points of interest could have been recorded.

Case 10.—M. H., male, aged 52. Complains of debility and loss of flesh; is a publican and there is no doubt some potus. Has psoriasis of elbows and a dry eczematous condition of palms of hands. Is depressed about himself. Is wasting and tissues getting flabby. Has some gastric catarrh and is constipated. Pulse 80, high B.P. to finger. Apex beat outside left nipple line. First sound long, second very loud everywhere. (*Virtual tension like some before given*). Temperature normal. Liver dulness, full size. Heart dulness covered by emphysema. Abdomen soft, no tenderness, micturition frequent at night. Urine sp. gr. 1012, acid, albumin ·5 per 1,000. Microscope many hyaline casts with granules and fat and degenerate epithelium (*late stage of large pale kidney*).

Here we have the ordinary sequence, chronic collæmia, heart failure assisted by potus, Bright's disease, congestion of liver and stomach, gastric catarrh, dyspepsia, loss of weight and nutrition, and no doubt death not far ahead by continuation of the same processes. It is possible to patch these cases up, but they want great care at first, and to see such a case once in consultation hardly gives one much chance. Such a case requires careful measurements and watching.

Here is a case treated in hospital where I gained in one point only to lose in another.

Case 11.—L. E., female, aged 17. Admitted into Royal Waterloo Hospital complaining of headache, which soon merged into coma and uræmic fits. Urine on admission, pale amber, turbid, slightly acid, sp. gr. 1014. Albumin 11 per 1,000; numerous hyaline and granular casts with fat and degenerate epithelium on them, *i.e.*, a rather late stage of large pale kidney. Four days later when comatose she was bled to 250 cc., and soon after this she became conscious and complained of severe headache. A day or two later she became quite well as to head, but a bronchitis gradually developed, became severe, and caused death; but she was clear in the head to the last. I extracted the blood drawn for uric acid and found ·03024 per cent. in the extract, or ·0048 per cent. in the whole quantity drawn. (*This is about ·24 gr. per lb. of the blood, and only about one-seventh or one-eighth of the quantity that may be found in it; on the other hand, it is six or seven times as much as is found in it in conditions of inflammation.*)

Case 12.—Z. T., female, aged 5. Complains of acute Bright's disease and anasarca. Had scarlet fever two years ago. Face pale and puffy. Pulse 60; temperature 99·5. First sound long, second sound loud (*collæmic heart*); a pulse tracing takes 3 oz. to develop it and shows a large first wave high up in tracing, at times rising above upstroke. Urine sp. gr. 1013, acid, obvious blood, albumin 6 per 1,000, urea 1 per cent. = 140 gr. a day, uric acid ·03360 per cent. = 4·6 gr., relatively 1 to 30 (*i.e., some increase over normal*). Many casts, much epithelium. Weight 34 lb. Urea 7 gr. per lb., which is low for her age. She was put on the iodide of mercury mixture and in three or four days albumin had fallen to 2 per 1,000 and uric acid to 1 to 35, and ten days later albumin was only a trace, while urea had risen to 375 gr. (food remaining as before) or 11 gr. per lb., which is about normal for her age. Pulse was now 120 and soft, temperature normal. The heart's first sound was less long,

and the surface skin was warm. A few days later urea had fallen somewhat; (*this is often the case, as the large rise of urea at the time of the fall of albumin represents the combustion of old accumulated nitrogenous waste products* (*kreatin, leucin, etc.*), *and this is not continued as they are cleared out and got rid of*). A month later she was up and about and albumin a mere trace. She was allowed to go out, her parents being cautioned against cold or wrong foods.

It is children like this who react best to retentives (and iodide of mercury is the most powerful one we have), as their combustion is naturally active, and takes more to depress it and keep it down than the slower combustion of an adult does. If she lives and feeds properly there should be no relapse, and in six to nine months all trace of albumin should be gone, and no one would probably believe that she had had acute Bright's disease.

Here is a case in which the same drugs quite failed, as they at once produced iodism or mercurialism.

Case 13.—G. A., male, aged 24. Suffering from Bright's disease. Urine sp. gr. 1010, and albumin 2 per 1,000. There is ascites and general anasarca. Pulse 72, first sound long or reduplicated, second sound very loud everywhere. Left radial measured 1·9 by Oliver's arteriometer. He was put on iodide of mercury mixture, but a week later he was suffering from iodism and mercurialism, with cold surface; pulse 72; left radial 2·2. The first sign of iodism was a nasal catarrh, and this was followed by a severe erythema of face, with much swelling of eyelids. The medicine was changed for phosphoric acid and strychnia, but urine did not increase. Pulse remained 72, and left radial went up to 2·5, and he had some headache, *i.e.*, due to strychnia. Strychnia left off, and as face was now bad some salicylate of soda was given to try and aid the resolution of the iodism; but four days later he was put back on strychnia and phosphoric acid. Five days later face, eyes, and ears were still much swollen and discharging. About two weeks later, being still on acid mixture, he got some general eczema, which began on face and spread to body, and cleared up first on face. I did not see him again for two months, and I then tried some iodide of sodium; but he at once got coryza and conjunctivitis, and these kinds of retentive drugs had to be given up. He went on with gradually increasing heart failure, in spite of tonics, the abdomen being frequently and the pleura occasionally tapped, till some nine months later he died owing to heart failure and and increasing dyspnœa.

Here was a case which, perhaps, might have been saved at first if iodide of mercury had done good, and acted as a retentive without causing acute symptoms in face and skin; no doubt these were the places where it retained, and the salicylate, in clearing out the retention, did good just as alkalies do good in general (non-toxic) dermatitis. What we wanted it to do was to retain, without inflammation, in such places as the liver and spleen, and to clear the blood by such retention. We might, perhaps, have done more than we did by cutting down fluids, but the poor and ignorant are not very amenable to such treatment, which they do not understand, and for the sake of which they will not put themselves to any discomfort.

Case 14.—E. G., male, aged 18. Bright's disease and anasarca. Had scarlet fever as a child. In hospital in same condition two months ago, and also one year ago. Urine sp. gr. 1020, albumin 1 or 2 per 1,000. Pulse 80; apex beat proved to be in left nipple line; it could not be felt on admission. First sound long, second sound loud. Put on iodide of mercury with nux vomica and digitalis, and later this was changed to iodide of sodium and calomel. Ten days later was given fish, and three weeks later middle diet. No changes in retinæ. Ten days later he was allowed to go out; albumin a mere trace, and urine plentiful. Was advised as to diet, *i.e.*, as much U.A.F. diet as possible. Unfortunately he was dependent on others, and had to take what he could get in the way of food. His temperature was generally subnormal, but was normal or raised on the iodide of mercury and nux vomica, *i.e.*, when they were doing good.

This is characteristic of the action of all drugs that quicken C.R. and increase combustion; with the increase of combustion and the great rise of urea, previously mentioned, there is a rise of temperature above the previous subnormal level. I generally watch temperature as well as all the circulation signs to enable me to say when the increase of combustion on retentive drugs is going to take place.

With the rise of temperature came also a diuresis, the urine rising from 9½ oz. up to 40, and later to 70 oz. in twenty-four hours; and with this the dropsy rapidly disappeared. This improvement occurred soon after a tapping of abdomen, from which 8½ pints were withdrawn.

This freed the diaphragm, heart, and lungs, and then the drugs were able to act, freeing the capillaries from collæmia, and then the fire burnt up. Such is the cure of all Bright's disease, but it is more likely to occur in a young patient.

Six months after his discharge he was again admitted with a relapse (*had he been rich, and able to control his food, there need have been no relapse*). Temperature on admission 96, and he was cold and blue, slight œdema of legs and face; there is some little fluid in abdomen also. Second sound loud, apex and base. Left radial diameter ·5 to ·6 mm. Albumin to urea 1 to 6. Three days later left radial ·4, urine increasing. Two days later there was a paracentesis, and this, as before, greatly aided the action of the drugs, and the urine increased from that date, though there was a slight increase before it. Nine days later pulse 92. Albumin reduced to a trace; left radial ·4. Eight days later pulse 84; albumin to urea 1 to 25. The slowing pulse was due to digitalis, which had been added to iodide of mercury mixture. Four or five days later it was 72, and the left radial measured 1·2 (? *effect of digitalis, i.e., a rise of B.P.*). Three days later pulse 100, after some exertion; left radial ·6, albumin a trace. Three days later there was sudden headache, with œdema of face and urine diminished. The iodide of mercury was probably causing some gastro-intestinal irritation, so it was left off and phosphoric acid, strychnia, and digitalis given in its place. Four days later pulse 76, left radial ·7, urine increasing, headache gone. Ten days later ascites going, urine greatly increased in last four days; left radial ·9 (*effect of digitalis and strych. and a retentive acid*).

The increase of the radial diameter on the heart tonics is very instructive; it would have been larger before but for heart failure. His condition on this second admission under my care was one of heart failure and virtual tension, *i.e.*, deficient capillary circula-

tion and general defective combustion, partly due to heart failure and partly to collæmia, though no doubt the heart failure itself was due to collæmia and the defective nutrition which collæmia produces in the heart as elsewhere.

When the relation of albumin to urea was 1 to 6, there were very numerous casts, hyaline and granular, with degenerate epithelium and fat on them. Ten days later he was allowed to go out, being given full directions as to diet and all hints that might help to keep it correct. His further history, how he again failed to keep to the diet and again relapsed, and how all drugs then failed to do any good, because in the meantime the condition of the heart became worse and its muscle less well nourished, and how ascites and anasarca eventually put out the fires in spite of all the drugs, tappings and diminished fluids, that had succeeded before, has been told in "Uric Acid," *q.v.*, p. 583 *et seq.*

He had several chances of life and they were all lost because he was poor. Before the last admission some ignorant but well-meaning philanthropist had sent him to a convalescent home, where for some weeks he was fed up on what is called the "fat of the land," meat, meat soups and extracts introducing a large quantity of poison, which, of course, only made matters much worse for him later on.

Case 15.—W. S. K., male, aged 60. Complains of short breath and asthma, worse when nervous or excited, better at night and in bed. Had much headache two or three years ago, no gout for ten years. Used to have rheumatic gout in toe twenty years ago, took salicin and it cleared him. General good health, hardy and strong at shooting aud mountain climbing, Influenza two years ago and once since that. Face vascular, but pale (*cardiac failure*), no headache. Pulse 95; apex beat, with forcible impulse, in anterior axillary line, first sound markedly reduplicated over septum, second sound very loud everywhere. Slight Dupuytren's contraction in some fingers. Bowels act irregularly, takes Eno's fruit salt. Liver dulness, covered by emphysema. Urine, sp. gr. 1035, acid, cloud of albumin, no sugar. No casts found. Slight œdema of ankles. Present diet: meat twice, fish once, bacon once, coffee once, tea once, whisky twice. I gave him some nux vomica with perchlorides of iron and mercury as retentives, but they caused dyspepsia and so did no good.

This is a condition in which it is most difficult to do any good; sixty years of poisoning, and the poisons still being taken. We have here gout caused by solvents, with the production of chronic collæmia and a large heart, in an athletic individual, possibly chronic nephritis, then progressive anæmia and heart failure leading to congestion of liver, stomach and kidneys, emphysema, asthma, dyspepsia, and short breath. It is easy to see how they were all produced. But such people will not diet, will not cut down fluids, and expect to be cured by drugs in spite of poisons continued. One can only feel sorry for the ignorance which expects the impossible.

Case 16.—A. P., female, aged 16. In Royal Waterloo Hospital. Had scarlet fever just before she came here. Urine contained 2 per 1,000 of albumin (Esbach); very numerous casts, hyaline, large and granular, some epithelial and some fatty. Some compound granule cells, and much renal epithelium (*post-*

*scarlatinal nephritis*). Urine 40 oz. Was given pot. iod. and nux vomica, also hot-air baths, which eventually made the urine alkaline. The albumin was supposed to have fallen a week later to 1·5 per 1,000, five days later to ·25 per 1,000.

But it appeared to me that this was not correct, as, though urine had increased to 70 oz., there was no general improvement; and I then found that by adding additional acid to the urine before the use of the picric acid solution much more albumin came down, and after this we found that it was really from 5 to 9 per 1,000, a very different result. The patient had been thought to be improving quickly on alkali, but this put quite a different aspect on the matter; the albumin had really increased, only it had been underestimated owing to the alkalinity of the urine.

So about a fortnight after admission the hot-air baths were left off, and then the temperature rose and kept nearer the normal, and the albumin fell to 5 per 1,000. It had probably been underestimated at first, and was really nearer 9 or 10 per 1,000 than 2.

This shows how an error may at times be made with the Esbach process (I believe more citric acid is now used, and so this error is less likely), and that it is not wise to believe in any improvement of combustion which is not accompanied by a rise of temperature at least to normal. This has always been my experience with hot baths of all kinds; they rather increase collæmia and do harm, whereas the drugs with which I can cure are retentives, and cure is produced by retention, and the more powerfully they act in this way the better the result. The thermometer is thus often a quite reliable index of metabolism.

Case 17.—E. R., male, aged 52. Complains of kidney trouble, six years duration. Left off work two weeks ago on account of swelling of the legs. Headache one or two weeks, appetite bad. Previously fairly healthy. Face puffy; pulse 90, regular; high B.P. to finger. Apex beat first space outside left nipple line, impulse diffused and heaving. Urine 30 to 48 oz. a day, sp. gr. 1022, acid, albumin 1·5 per 1,000, relation to urea 1 to 14; casts, numerous hyaline and granular, with much degenerate epithelium and some fat on them, a little blood. He was put on a milk diet and iodide of mercury. Four days later an extra pint of milk was added and pulse was 112 and right radial diameter 2·2 mm. Three days later urine has increased slightly and the apex beat had come in a little. The blood was examined and gave hæmoglobin 69 per cent., cells 106 per cent. = decimal ·65. Three days later urine 68 oz., sp. gr. 1012. Again three days later, right radial = 1·7 (*a marked fall of B.P.*). Four days later radial same and albumin had fallen to a trace. Eight days later he was allowed to be up and hæmoglobin was 75 per cent., cells 103 = ·72, a considerable improvement.

Here the iodide of mercury acting as a retentive had lowered B.P., increased urine, improved B.D. and put an end to the defective combustion of albumin, called Bright's disease, by putting an end to collæmia.

The iodide was now reduced to three times a day. It had been given four times for the previous two weeks. A fortnight later it was only given twice a day. (*As metabolism improves, fewer drugs are required*). A little later he was given iodide of sodium and nux, and shown how to continue correct diet at home. Six months later he brought a specimen of urine which had sp. gr. 1016 and was free from albumin. He is continuing diet and taking iodides and nux. (*If he continues diet, which will soon make severe collæmia impossible, I have no doubt that he will continue well.*)

Case 18.—S. B., female, aged 13. Complains of headache and general œdema. (*This was one of the first cases of Bright's disease I have ever cured, and it was in a child where cure is relatively easy.*) Skin is pale, puffy and dry. She is depressed and cries easily. Pulse 85. Apex beat fifth space just outside left nipple line, first sound long or reduplicated, second sound loud. There is a slight systolic murmur over sternum at fourth cartilage level. A pulse tracing took 5 oz. to develop it and showed a large first wave high up in tracing. Urine smoky, acid, sp. gr. 1022, albumin 10 per thousand, uric acid to urea 1 to 33. Casts epithelial, hyaline and granular, and numerous compound granule cells. Legs slightly œdematous. She was put on milk diet, and given mist. pot. cit. with nux vomica, also some sp. am. arom. bis and pil. cal. c. col. p. r. n. for bowels. Seven days later she was going on well and the anasarca had diminished. Urine 75 oz., still smoky (*not made alkaline by drugs*), but albumin only 1·5 per 1,000, uric acid to urea 1 to 17. Total urea 346 gr., or 4·1 gr. per lb., which is low for 13 (*year of greatest growth in girls*). Albumin to urea 1 to 4. Three days later, pulse 76. Urine 60 oz., sp. gr. 1012, acid, albumin 1·5 per 1,000. Uric acid to urea 1 to 32. Four days later albumin to urea 1 to 12. Three days later albumin had fallen to ·5 per 1,000 and she was given some fish. Pulse tracing now showed much less tension, the predicrotic notch being half-way down the upstroke. Ten days later albumin was little more than a trace and all drugs were left off to see what would happen without any. As the albumin appeared to increase again the same drugs were again put on, and a month later the pulse was still quick, but albumin had fallen to ·25 per 1,000. I found breakfast always increased the excretion of albumin per hour by about a half.

Nine months later I examined two samples of urine without finding any albumin.

About a year after this she had a slight relapse, not feeling so well (*collæmic*), and having again a trace of albumin. She had gone into service and been eating a little meat. She was given drugs for a short time, and cautioned as to her diet, and the albumin soon went. She came to see me occasionally for some years, but continued well and grew into a strong and healthy young woman, living largely, if not entirely, U.A.F., and clothed warmly in the cold season.

This was in quite old times, before I knew anything about collæmia and the action of drugs (as solvents or retentives) upon it. It may be said: "Here was a case of collæmia, and the resulting defective combustion and Bright's disease that got well on alkalies." Let us look at this point. The drugs actually given were potass. cit. gr. xx., tr. nucis vom. m. vii. ter., sp. am. aromat. dr. ss. bis, and pil. cal. c. col. sufficient to keep the bowels regular, and, as we have seen, the urine never became alkaline. And this is the important point, that till the urine becomes alkaline there is little or no solution of urate deposits; bronchitis, for instance, is not cured till the urine is made alkaline. We are left then with the fact that this pot. cit. did not act as a solvent, while the nux vomica acted as a heart tonic, and improved the interstitial circulation of the great glands, and the sp. am. aromat. acted as an acid, as it always

does, and antagonized part of the effect of the pot. cit. Sixty grains of pot. cit. were given each day, but we know that it takes at least 90 to 120 gr. a day to make the urine of a child of thirteen alkaline. Thus, partly by the retentive action of the ammonium compounds, partly by the improved heart power due to the nux vomica and the improved blood condition from the milk diet, the collæmia did clear up, the circulation and metabolism improved and the "Bright's disease" came to an end.

Case 19.—E. E., female, aged 36. Complains of vomiting and œdema of the limbs. Vomiting began two weeks ago. Ailing about a year. English cholera ten months ago. Last child three years ago. Some œdema of legs with first child, born fourteen years ago; urine sp. gr. 1012, considerable albumin, say one-sixth, and some blood, œdema of legs, no fluid in abdomen. Pulse 85. Temperature subnormal. First sound long, second sound loud. Vomiting this morning. Iodide of mercury given. Next day vomiting three times, nux vomica added to mixture. Next day vomited once. An urticarial rash appeared on forearms and neck, and the temperature began to rise. Next day sleepless, vomited slightly, and had severe headache. (*The iodide was evidently causing internal irritation as well, so it was left off*). Albumin had increased to three-eighths. The skin rash was very irritating, and there was some cough and quickened respiration. Next day a mixture of perchloride of iron was given, but the bronchitis increased, and so did the skin irritation. In a couple of days the rash on the hands had risen in bullæ, one as large as a tangerine orange. Bronchitis continued; a couple of days later it got much worse, causing great dyspnœa and lividity. Pulse 148. Temperature subnormal. She was bled to 8 oz., with some temporary relief, but, in spite of stimulants freely given, she sank and died. The day before death the albumin had increased to two-thirds. At the *post mortem* some excess of fluid was found in the pericardium, and the left ventricle was hypertrophied and dilated. Kidney large and rather tough, one or two cysts in the cortex. All normal cortical markings lost; evidently a large pale kidney becoming fibrous. Spleen large, dark, firm. Liver not nutmeg. Lungs congested and œdematous, consolidated in parts.

Here we have the final ending of a chronic Bright's disease, perhaps originating in the first pregnancy fourteen years ago. Doubtless the vomiting was uræmic. Here, we see, the iodide quite failed because it caused a violent skin irritation, which is one of the things it may do in Bright's disease, and also some gastro-intestinal irritation, or increased that already present. When this is so, it quite fails to stop collæmia. What we want it to do is to cause retention, chiefly retention in the liver and spleen, not violent retention and irritation in the skin. The proper treatment of such acute skin irritation with rise of temperature, by the way, is salicylates; it is caused by retentives, and can be cured by solvents; but I did not know this when the above case was under my care. As the collæmia was not cleared up while the dyspepsia and bronchitis continued (the bronchitis was also possibly increased by the retentives), things went from bad to worse, the albumin increasing and temperature falling.

Case 20.—M. H., female, aged 29. Admitted into the Metropolitan Hospital with chronic parenchymatous nephritis and retinitis ; suffering from some giddiness and headache ; there was also a history of fits (*? uræmic*). I had been watching her as an out-patient for the previous five months, and had many pulse tracings all showing high B.P. Her pressure was lowered and her head relieved by acids. She had also had iodides and nux vomica, or pot. cit. and nitrous æther ; quinine had also been tried, but it made her worse, and increased the fits (*quinine always increases migraine and high-pressure headache ; I conclude because it increases collæmia.*) Thinks the acids prevent the fits. She complained of bad sight and marked albuminuria ; retinitis was found. On the whole, bromides, iodides, and acids did most good. She always feels brighter in her head after taking the acid mixture. Notes taken on admission : Complains of headache, which is worse over frontal region. Face expressionless, and slightly puffy under eyes. Lips cracked, teeth foul with sordes ; breath offensive. Tongue brownish coat. Temperature 98·8. ; pulse 76, regular, high tension. Eyesight impaired, pupils equal, semi-dilated, react to light. Is very drowsy, but understands what is said. Memory bad, talks slowly, speech somewhat scanned, takes no interest in surroundings. Heart second sound loud and clanging over aortic cartilage. (*If the heart had been measured, it would undoubtedly have been found enlarged.*) Abdomen, no ascites ; legs, no œdema. Urine sp. gr. 1022, 1 per 1,000 albumin, casts granular and hyaline. A week later pulse 80, high tension, On admission she was put on milk diet, without beef tea, and given chloral and bromide p. r. n. for sleep. She was given barley water and dilute nitro-hydrochloric acid m. xx. to 1 pint. Also mixture containing tincture opii m. vi. bis die. Her head was then very bad, as she had been on alkalies (imperial drink, &c.). Albumin 1 per 1,000. Three days later she was decidedly better, pulse quicker, and sphygmogram showed less tension. Headache still present, but better and sleeps better (no bromide or chloral now.) Seven days later urine had increased and albumin fallen to a trace, and sphygmogram showed diminished tension. A week later pupils less dilated. Six days later complains of pain in left side and palpitation (*? angina*). Skin acts freely now. Second sound of heart still very lond. Thought the pain and palpitation came after the acid medicine (*? due to endocarditis*). It was left off, and there was some improvement in the symptom. Two weeks later she had some dental trouble in upper jaw, and a peridental abscess was opened and some teeth removed, and after this she was much better. Two or three days later, however, her head was again bad, and she had some faint fits. Pulse 96. The pulse on the opium increased from 76 to 80 and 90, and this was due to lowered B.P., and not to heart weakness, as the urine increased at the same time from 40 oz. a day up to 52, 60, 64 and 76 oz. Later the urine fell again (*no more water to run off*), though the pulse kept quick. After fourteen days on opium, the albumin had fallen to a trace, and the opium was continued for sixteen days after that. Pulse remained quiet, and albumin a trace for quite a fortnight after opium was left off. The acid was given up about the same time as the opium. Bread and butter pudding without eggs and two extra pints of milk were added to her food ten days after admission. (*In these days I should give curd in place of milk so as to avoid the extra fluid.*) She now went out, but I saw her several times as out-patient.

Six weeks later, she was doing well on acids and pil. saponis co. She thinks the pill prevents the fits. Urine sp. gr. 1010, albumin a mere trace. Pulse tracing shows much less tension than when first seen.

A month later she had been at work, and had more head trouble than fits ; she left off the medicines for a few days, but had to take to them again. She is also using nitro-glycerine 'tabloids,' and has been told that her fits are less severe when she is taking them. A week later the acid seemed to make her head-ache (*? brought her up to the collæmic point ; see "Uric Acid," p.* 168). No fits and otherwise well.

Here it seems that opium and acids acted very satisfactorily as retentives, lowering pressure, quickening pulse, and increasing urinary water. The chief drawback to opium is, on the one hand

that it may interfere with appetite and nutrition, but this is not much to be feared in well-nourished cases with strong hearts; and on the other, the great rebound and increase of collæmia, which is apt to follow its withdrawal. But once the fire has burnt up well this will diminish the severity of the rebound, and the whole rebound can be more or less prevented by combining or following opium with salicylates. Opium is not so powerful as iodide of mercury, but it does not produce such serious results, if it fails to do good.

Case 21.—J. F., male, aged 33. Seen with Dr. Stubbs. Complains of being rejected for insurance on account of albuminuria and retinitis. Was accepted for insurance at 21. Had influenza in the spring thirteen months ago followed by albuminuria to extent of one-third and one-half. No blood. Had œdema of legs for three months. Father rheumatism and gout. Mother bilious headache and one brother same; other brother and sister well. Had rheumatic fever at 15. No headache now, feels well except for swelling of legs, which get heavy. Skin of face puffy. Sleeps well; appetite good. B.D. ·6; pulse 84; C.R. 9; B.P. 135. Apex beat well outside left nipple line. First sound long, second sound slightly loud. C.D. 6½ in. Urine sp. gr. 1017, acid, turbid, albumin 11 or 12 per 1,000. Liver slightly enlarged. Stomach down to umbilicus, no splashing. Much soft œdema of the legs. Weight net 144 lb., is increasing (*i.e. retention of fluid, dropsy*). Present diet: no meat for seven to eight months; fish once a day, no eggs, no tea (*has evidently been eating excess of vegetables and rubbish, and taking no care to get enough proteid*). He still takes coffee, cocoa, and some pulses (beans).

It is easy to read the causation of this case. He was, like his brother, subject to bilious headaches, and often suffered from collæmia. On this condition supervened an influenza which weakened the heart; and what was possibly a paroxysmal albuminuria, confined to times of bilious headache and collæmia, became Bright's disease. Then he very foolishly altered his diet and starved himself (as to proteids); the heart got still weaker, the headaches disappeared, but general dropsy took their place, and albuminuria, from defective metabolism, increased. We find a heart which is markedly debilitated and enlarged, and a B.P. of only 135 when it should be 170 to 180. Here was a case for retentives, heart tonics and sufficient proteids, U.A.F. if possible, but in any case enough for nutrition. The paroxysmal collæmia only caused a little albumin till influenza affected a heart already touched by acute rheumatism, and then, owing to loss of driving power, collæmia and defective circulation increased, and a defective metabolism, up to this only functional and occasional, became chronic and continuous, entailing organic changes in the kidney structure, the full picture of Bright's disease.

Case 22.—J. H., male, aged 18. Complains of albuminuria, found on examination for promotion in a bank. Father died of pneumonia at 49. Mother,

brother and sister well. Had measles, varicella, and eczema capitis as an infant. Skin is very dry and inclined to be eczematous on face. Pulse 80. Apex beat slightly to left of nipple line. First sound long or reduplicated. Skin of hands dry. Bowels regular. No dyspepsia; liver dulness, full size. Urine sp. gr. 1030, acid and urates, albumin a good trace. Weight, diminishing, 8 st. 11 lb. Is fond of meat, and takes much of it. Urine of twenty-four hours 45 oz., amber, slightly turbid, sp. gr. 1030, acid, trace of albumin, urea 3 per cent. = 623 gr., uric acid, ·113 per cent. = 23·4 gr., relation 1 to 26 (*a decided collæmia*). Microscope: epithelium, urates and uric acid, also a few small oxalates. I advised a gradual change on to U.A.F. diet, including some pulses in it.

Three months later, urine 23 oz., sp. gr. 1030, and albumin had fallen to a mere trace, still some oxalates and uric acid crystals.

A month later there was no albumin, sp. gr. 1030, urea 3 per cent. = 457 gr. There were still numerous oxalates. Another specimen also gave no albumin and urea 2·8 per cent. = 529 gr.

Four months later, no albumin had been found for some time now. Urine 54 oz., sp. gr. 1026 (? no albumin), acidity 68 gr., urea 518 gr., relation 1 to 7·6. Uric acid 23·2 gr., relation to urea 1 to 23. Urea fully 4 gr. per lb., *i.e.*, rather high.

A month later there was a quite distinct trace of albumin in a sample passed about 12 noon. A month later, uric acid to urea 1 to 31, no albumin. Still a month later there was a cloud of albumin and uric acid to urea 1 to 24.

It must be remembered, with regard to this case, and the continued large excretion of uric acid, that he was taking pulses, so that the diet was not really U.A.F., and this may also have explained the relapses of the albuminuria.

Case 23.—J. T., male, aged 42. Complains of Bright's disease and heart failure. Is an engineer on a ship and his work is very hot. Two months ago he had to come on deck from his hot work, got wet through at once and owing to an emergency had to remain wet for hours. Three days later his face and legs began to swell.

Note the interval, three days; probably this was a severe collæmia by rebound from retention by cold at the time of the wetting. The collæmia caused heart failure and albuminuria and the dropsy followed as a result.

Twelve months before he had a similar wetting followed by "fever and ague." Now his face is puffy, especially the upper lids. Urine sp. gr. 1022, acid, nearly solid with albumin. Numerous casts, hyaline with granules and fat and a little epithelium. Pulse 100. Tracing shows large first wave high up. Apex beat in left nipple line. Impulse indistinct, second sound loud, first sound reduplicated over septum. Was put on milk and one egg a day and given M. pot. cit. (gr. xxx.) and tinc. nucis vom m. x. ter. A week later he felt much better; pulse 120. Had two hot baths a fortnight later, feels much better, no pain in loins, passes water freely and in increased amount. Urine sp. gr. 1022, albumin a thick cloud (*i.e., a diminution of albumin*).

Two weeks later still slight œdema of legs. No pain in back or legs. Pulse 96; digitalis m. iv. added to mist.; ten weeks later is in good spirits and feels well. Takes milk and fish only. Pulse 108, passes more urine now. Has had no medicine for some time now; meat causes pain in the back, so he takes fish instead of it.

Here was another case that improved on pot. cit., but the urine did not get alkaline and probably the nux vomica and digitalis were the things that did most good by strengthening the heart. Now

I often give heart tonics alone, and add a retentive only if I can see my way to get one that will suit and do no harm.

Case 24.—H. B., female, aged 10. Had dropsy three weeks, ill for about one week before that. Face puffy and looks renal. Mother says has not had scarlet or any fever, no signs of peeling. Urine sp. gr. 1028, acid, smoky, turbid, considerable pale brown pulverulent deposit. Albumin rather above 16 per 1,000. Casts very numerous, epithelial with much fat on them, much renal epithelium, some blood, some uric acid crystals. Pulse 85; heart: first sound long, second sound loud (*usual signs of severe collæmia*). There is a little fluid in the abdomen. Skin pale, puffy, dry and harsh. Weight 71 lb. Urea only 2·5 gr. per lb. (*At her age this is only about a quarter of what it should be.*) She was put on a milk diet with 1½ pints of milk in the day. Temperature subnormal. She was given a small dose of quinine, but she did not like it and it was soon left off. A fortnight later, urine sp. gr. 1023, acid, albumin had fallen to 8 per 1,000, but casts were still numerous. Southey's trochars had been used on the previous day to run off the fluid from the legs. Two days later she had a rigor in which the temperature ran up to 103; it became normal again at 2.30 p.m., but pulse was 96, and second sound was reduplicated at left base (*i.e., returning collæmia temporarily driven out by the fever; as the pressure rises after it the heart falters, and the second sound is reduplicated*). There was nothing in the lungs to account for the temperature, but on the right leg below the knee there is a sinus discharging pus, and this is surrounded by a blush and the lymphatics are affected nearly as far as the femoral glands. This proved to be the beginning of erysipelas of the right leg and thigh, eventually spreading to the wall of the abdomen, which proved fatal in five days. Temperature fell gradually during the last twenty-four hours of life and she had diarrhœa and vomiting and considerable pain in the head. The skin of thigh was hard and infiltrated and there were enlarged glands along the iliac vessels, but no thrombi. There was some dyspnœa towards the end, and the left lung was very œdematous and some 6 to 8 oz. of fluid in both pleuræ. Heart not much hypertrophied, valves normal. Kidneys large, pale, soft and fatty, cortex very large, structure obliterated, capsule peels easily, leaving a pale surface with veins visible.

I give this case partly to show the probable condition of the kidney in some of the cases that recovered, the urine of which was practically identical with that of this case, and partly to emphasize the danger of breaking the skin in a disease such as this: severe collæmia, in which its nutrition is so bad, and its circulation so poor. See how the microbes flourish in these sewage-sodden tissues, in which the circulation is poor, both from collæmia and defective driving power. If I could not get the fluid out of the skin by heart tonics and diminishing fluids, so far as I am concerned it should remain there, rather than run the risk of breaking the skin in a condition in which it is so liable to microbic invasion.

I noticed in a journal I was reading about this time (1886-7) a statement to the effect that scarlatinal nephritis may occasion acute dilation of the heart. This I regard as an inverted reading of the facts. The truth is that the collæmia which causes defective metabolism of albumins, and so albuminuria and Bright's disease (as the secondary irritation of the kidneys is called) increases the work of the heart greatly; and, if the heart is not in a position to respond with increased muscle power, acute dilatation may follow.

In every acute collæmia the heart must either hypertrophy or dilate, or it often does a little of each, or it at first dilates and then (given time) recovers itself and hypertrophies; but life soon comes to an end with dropsy if for any reason, *e.g.*, adherent pericardium, it cannot hypertrophy. This is not peculiar to the collæmia, which produces albuminuria and what has been called "Bright's disease"; all collæmia (as in ordinary migraine) has the same effect. Patients who have had migraine for years without albuminuria have hypertrophied hearts, but, if the heart fails and dilates, combustion and metabolism at once become much worse and they are then much more liable to have albuminuria and drift into so-called "Bright's disease." Thus the appearance of albumin in attacks of migraine is a sign of failing heart power and increasing metabolic trouble, not to be neglected.

Case 25.—R. W., male, aged 40. Complains of general dropsy. Urine sp. gr. 1020, high colour, acid, albumin 4 per 1,000. Many casts, hyaline with granules, fat and degenerate epithelium. Pulse 85, strong and high tension; tracing shows a large first wave high up. He was put on a milk diet and given M. ferri. alk. Three weeks later albumin had fallen to 2 per 1,000 and a fortnight later to 1·5 per 1000 and sp. gr. 1017. Still a large number of casts. Two weeks later had had vomiting and diarrhœa for three days. Pulse strong, second sound loud. Urine passed two or three times in night. Same medicine is being continued. A fortnight later feels better. Albumin 1 per 1,000, casts less numerous, sp. gr. 1018.

A month later going on well. Urine sp. gr. 1015, albumin only ·5 per 1,000, and still a month later the same condition continues, sp. gr. 1020.

A fortnight later the iron was left off and M. pot. cit. given in its place.

A month later he reported that he had gone wrong in his diet and had a fresh blow-up in consequence. He went out with friends and indulged in beer and spirits, and veal and ham pie. Since that, and especially last night, his urine has become scanty and he has some pain in the loins and feels generally seedy. Urine now sp. gr. 1022, acid, considerable deposit. Albumin has increased again to 1 per 1000. He was cautioned as to diet and told to keep quiet and put a poultice on the loins. Seven days later the albumin had gone down again and was now only ·25 per 1,000, and six weeks later he was going on well and seemed pleased with himself. Pulse now 72, feels somewhat high tension, and albumin is now a mere trace.

Here we had, to begin with, marked heart failure and dropsy as its result. The heart failure was only shown by the dropsy and the quick pulse, but would doubtless have been shown by all the other circulation signs, had they been measured. And as the heart gets level with its work again, and the pulse-rate drops towards normal, the albumin steadily diminishes till with a normal pulse-rate it is a mere trace; this mere trace being due to the kidney lesion allowing the passage of some serum albumin through it. There is no longer any severe interference with metabolism, no hetero-albuminæmia and no hetero-albuminuria. In six or eight months the kidney lesion will have healed up and there will be no serum

albuminuria. But this is only if present conditions are continued, and we see from this history of rule breaking how any return of collæmia by introduction will at once try the heart, not yet more than able to hold its own, producing increased interference with combustion, and at once a return of the hetero-albuminæmia and albuminuria (other than serum albumin). Doubtless this relapse of collæmia would have had still worse effects if the heart had not by this time become comparatively strong and able to take care of itself.

Case 26.—A. B., female, aged 24. Complains of general œdema and a puffy face. Pulse 85. Apex beat well outside left mid-clavicular line. First sound long and slightly reduplicated, second sound loud. Temperature subnormal. Urine pale amber, acid, sp. gr. 1012. Albumin 9 per 1,000, many casts, hyaline and granular, with much degenerate epithelium. Urine has a very persistent froth (*sign of globulinuria, i.e., hetero-albuminuria*), obviously a case of large pale kidney. Relation of albumin to urea 1 to ·8. Uric acid to urea 1 to 12.

I give these imperfect and incomplete notes simply to show that in a case of large pale kidney, with all signs of high B.P. and severe collæmia with its resulting defective combustion and a subnormal temperature, there is not enough irritation in the kidney to prevent the excess of uric acid in the blood from passing freely into the urine. Urea was low for the same reason that albumin was high, because metabolism and combustion were very defective.

Case 27.—C. J. H., male, aged 32. Another case of large pale kidney just like others given. I only notice it because on one occasion I separated the night and day urine, *i.e.*, the collæmic and the relatively collæmia-free hours. In the morning hours I found sp. gr. 1016, slightly acid, albumin 7·5 per 1,000, and in the night urine, acid, sp. gr. 1013, albumin 2·5 per 1,000.

This is the exact parallel of what occurs with the sugar in glycosuria and diabetes, and for the same reason, because combustion is poor in the hours of collæmia and better in the other hours (but I have said a great deal on this point in "Uric Acid," pp. 620, 633, 635).

Case 28.—M. O., female, aged 65. Complains of liver and kidney trouble. Had swelling of feet and epistaxis seven months ago. Had congestion of lungs eighteen years ago. Occasional bronchitis. Pains in left big toe and gout. Seldom any headache, but is very much depressed. Has noises in left ear. B.D. ·8; pulse 120; C.R. 8·5; B.P. 160; movement large, slightly irregular in force. Occasional palpitation, apex beat well outside left mid-clavicular line. First sound long or late systolic murmur most marked over septum. Second sound loud. Action quick and somewhat irregular. Cough slight and in morning only. Has abdominal weight and heaviness after food. Liver dulness full size, stomach down to umbilicus, no splashing. Bowels act with fruit salts or pills. Urine passed three or four times in night, sp. gr. 1008, acid, albumin ·2 to ·5 per 1,000, some hyaline and granular casts, *i.e.*, chronic nephritis. Weight diminishing, very thin now. Present diet of four meals, meat twice, whisky twice a day. Cannot take milk, it makes her bilious; cannot take cheese, or very little.

The collæmia of this Bright's disease came some years ago when she was younger, and the heart responded to it and worked up to a B.P. of 180 or 190. It was somewhat strained over the pneumonia eighteen years ago, and recently, under advancing age and increasing collæmia of the second collæmic stage, the nutrition and power of its muscle has been failing; hence the swelling of feet, the congestive epistaxis, the large liver and stomach and the mental depression. The heart now shows its weakness by enlargement, quick action and palpitation on exertion and defective C.R. B.P. ratio. This is a quite simple case if the treatment could be carried out. Cutting down fluids, spacing meals and diminishing poisons while giving a long course of heart tonics would save her from depression without exposing her to the risk of hæmorrhage, but she does not understand, and not seeing causation will not make the necessary effort. On the contrary, she expects a miracle to be performed by drugs; and they will do something, but not all that is here required. Such is the history of chronic Bright's disease; small red kidney as compared with the large pale.

Case 29.—M. P. G., female, aged 48. Complains of throbbing and twitching in the right eye for about four years. Is a widow and had a life of much trouble. Occasionally suffers from depression. Mother died of bronchitis. Used to have hay fever, cured by "Spirone," has also used menthol to face and affected eye; often has neuralgia. Well nourished, face vascular. Pain is of an aching character; when very bad the eye quite closes up with the twitching. The eyes are hypermetropic and she wears glasses, and the right eye is astigmatic. Pulse 72, beat long and slow; feels high B.P. Tracing shows a large first wave above the upstroke. Tracing takes 5 oz. to develop it, first sound long and second sound loud. There are slight arthritic changes in the fingers. Has had some bleeding piles the last twelve months. Menstruation regular, eyes worse at that time. Urine sp. gr. varies from 1008 to 1020 and contains at times a trace of albumin. Weight 8 st. 13 lb. 3 oz., diminishing. She was sent to see her ophthalmic surgeon again and was given new glasses, which did some good, and I gave her a tonic of acid and nux vomica.

A month later she brought a urine of lower specific gravity and free from albumin, but a pulse tracing still showed all the characters of high B.P.

Here was a case of eye-strain the symptoms of which were intensified by collæmic high B.P., and the patient had observed this herself at the time of the monthly period. Naturally with more defective circulation the nutrition of the eye muscles will be less well maintained, and then fatigue for a given exertion will be greater, just as we know to be the case for other muscles. For the rest she had chronic collæmia and high B.P.; and chronic high B.P. is Bright's disease, whether we find albumin constantly, occasionally, or not at all.

Case 30.—A. M., male, 62. Complains that his arteries are inelastic and his kidneys damaged to some extent. Has had occasional rheumatic pains in

the legs, never gout. Albuminuria, generally a trace only. Spends three weeks in year at Homburg with much benefit. Was there three weeks ago. Father died, aged 62, of apoplexy; his family mostly died of paralysis. Mother died of carcinoma. Seven years ago his eyes were tested, and "renal hæmorrhages" found. One morning, five years ago, he lost use in one arm, and could not write or brush his teeth, later lost speech. Shooting pains about head for twelve months (*neuralgia?*). Has sensations down right leg and arm. His doctor advises a quieter life. Has vertigo on going downstairs, or turning suddenly. Has had slight epistaxis this morning, and often before. Wakes any time from 2 to 5 a.m., and remains awake. Knows his B.P. is high; it has been reduced by iodide of sodium, taken for the last month. Pulse 96 (later slowed to 84). C.R. 9·5; B.P. 200. Apex beat in anterior axillary line, impulse heaving. First sound long; second sound very loud. Heart large (cor bovinum). Bowels constipated; uses liver pills, or liquorice and rhubarb. Not thirsty, drinks very little. Urine sp. gr. 1010 to 1012. Albumin a trace to a cloud. Weight 14 st. 7 lb. Weight to be nourished (*i.e., at* 25), probably 12 st. Height 5 ft. 11 in. Present diet: poultry twice, fish twice, bacon once, tea or coffee once, soup twice, cider or lemonade twice. Has taken no beef or mutton lately, only occasionally veal or lamb (*unfortunately for him the latter are more poisonous than the former*). I advised a gradual change to a dry form of U.A.F. diet and a continuance of iodides and the things necessary for the bowels. Four weeks later he was on U.A.F. diet, except for a little fish or fowl at dinner; has been trying to measure his B.P., and thinks it is lower. Iodide continued and dose increased.

In all probability this man will go the same way as his ancestors, and before long. Obviously he has a granular kidney and an enormous heart, which is just beginning to fail a little, as shown by the quickening pulse-rate. These are the people who go to spas every year till the fatal stroke comes. As to his arteries being inelastic, a strain of 200 mm. (and this, mind, was a pressure reduced by the use of drugs), along with defective circulation and nutrition, would make any vessels atheromatous and degenerate before long. This man had an original structure that should have lasted to 100 or 110: he will be more fortunate than I expect if he ever sees 70. I conclude he did not go on with the U.A.F. diet, as I did not see him again.

Case 31.—A. H. H., male, aged 70. Complains of feeling ill, depressed, and worried, has occasional attacks of dyspnœa or syncope, or a mixture of them. Seen with Dr. Creasey at Windlesham. Suffers much from chronic bronchitis and a certain amount of potus for years. Has been going downhill for some months; urine trouble for twenty years. It is a wonder he has lived so long. Eyes prominent, with folds of loose skin round and under them. Sleeps very badly, and has taken paraldehyde and sulphonal for some time, the former more regularly. Pulse 44; C.R. 10; B.P. 120. Respiration 37; temperature 99° to 100°. Heart sounds distant, and covered by rhonchi and sibili in the air tubes. First sound feeble, second sound more distinct. Heart's rate 44. Much emphysema; lungs, catarrhal sounds. Expectoration frothy. Pulse-rate was 88 and above, but lately and suddenly sank to 44. Liver enlarged, but dulness largely covered by emphysema; its lower edge can be felt all across the epigastrium. Bowels generally act once or twice a day (*i.e., congestion*). Urine, sp. gr. 1003, trace of albumin (*no doubt granular kidney*). Diet ordinary, and takes wine freely. I gave iodide, chloride, nux vomica, and strophanthus in small doses, also some small doses of blue pill night and morning, so far as the bowels would stand it without purging. Two days later temperature 99°. Pulse 46 to 48; respiration 25; B.P. 110. Heart sounds as before. Still has to take paraldehyde to get any sleep. Bowels open twice a day. Gets excited at times; best in morning, gets

worse as day goes on (*this is the rule in mental excitement cases*). I cut down fluids as much as possible, but did not dare to alter the kind of food much, as nourishment is so important.

This patient died about a year later, having been seriously ill, and having frequent attacks of mental excitement from time to time.

Nothing did any real good, and this is what we should expect. He had been uninsurable for years on account of albuminuria (chronic Bright's disease), and this I conclude was one of the perhaps less common endings of this disease, complicated by the continued excess of urine and the chronic bronchitis. I conclude that the above signs, as observed by me on two occasions, point to some fatty degeneration of the heart muscle, its great weakness accounting for the very defective ratio between C.R. and B.P. We may get a pulse like this in uræmia (*i.e.*, as to rate), but then the ratio of C.R. to B.P. is nearly normal, and all the other symptoms are those of high pressure, which may have to be relieved by venesection. Here there was nothing of this kind, and the cerebral symptoms were those of weak heart (excitement), not of uræmia with a strong heart. The heart tonics given did some little good, quickening the pulse and slowing the respiration, *i.e.*, diminishing congestion.

Case 32.—G. C., male, aged 55. Complains of epistaxis on and off for two weeks, often has an attack once or twice a day. Pulse 96; C.R. 8; B.P. 160. Apex beat half inch outside the left nipple line, Left ventricle impulse powerful, second sound loud. Arteries tortuous and rough. Temperature subnormal. Two days later, pulse 100; C.R. 10; B.P. 170. He was put on quinine and iodide; about four days later the temperature rose to normal, (*i.e., the iodide was clearing up the collæmia*); then he had to be put on senega and ammonia for cough, and bismuth for vomiting, and two days later his temperature rose to 101, and he became comatose and died of uræmia.

It seems that I unfortunately have no actual records of the circulation at the time the uræmic coma was coming on; but judging from the temperature curve the uræmia was of the nature of a rebound of collæmia after the iodide, and this is one of the dangers of giving retentives. The iodide clearly produced retention when the temperature ran up to normal; later it produced too much retention, and had to be given up for other things, and then the uræmia came on. Here we see, in contrast to the previous case, that with slow C.R. we had high B.P., with fairly normal ratio. At the *post mortem* were found chronic Bright's disease, arterial degeneration and œdema of the brain membranes, the ordinary signs of uræmia.

Case 33.—M. D. M., male, aged 43. Complains of sick headache and albuminuria; had epistaxis four months ago, now wakes with headache every morning. One year ago was postponed for insurance owing to albuminuria. Has had no

wine, spirits, or meat for four months, but still has albumin. Had had influenza once or twice, but no other fevers. Had catarrh of the nose in New York followed by headache and albuminuria. Skin puffy, eyes prominent. B.D. ·7, depressed of late. Occasional restless nights. Pulse 64; C.R. 10; B.P. 210. (*Note the slow pulse, the very high pressure and nearly normal ratio of a strong heart muscle.*) Apex beat nearly in anterior axillary line, first sound long, second sound very loud everywhere. C.D. much increased. Has a slight cough, expectoration white. Bowels act with occasional aperita, slight piles. Liver dulness increased, stomach rather low, but no splash and he said no dyspepsia. Micturition frequency increased. Urine sp. gr. 1017, acid, good cloud of albumin, no sugar. Limbs tend to be stiff and painful. Weight 12 st. 3 lb. Steady. Present diet: meat twice, fish twice, soup once, tea or coffee three times, egg or bacon once, whisky or wine twice a day. I advised him to diminish fluids as much as possible; his doctor has been increasing fluids as much as possible (*hence his very high B.P., his increase of headache, and his epistaxis*).

Three weeks later he was much better, and the stricter he was with the diet the better. Has had no headaches of late, and has slept well. Has had very little to drink, yet no thirst to complain of. Urine now sp. gr. 1018, and a good cloud of albumin still. Pulse 64; C.R. 9·5; B.P. 155.

The non-correspondence of C.R. and B.P. when on diminished fluid shows nothing; they only correspond on ordinary conditions of food and fluid, but there has been a fall of B.P. of 55, and this has sufficed to wipe out for the time being the headache and other more severe symptoms, so that he regards himself as well. He is far from being so however, only he is one of those whose head does not ache at lower pressure than 180 to 200.

Case 34.—S. A. G., female, aged 43. Complains of general aching and œdema of legs for three weeks. Has had occasional headaches. Menses absent about seven months, not pregnant. Lumbar pain eight days, water thick and scanty two weeks. Face and eyelids puffy. Aortic second sound very loud. B.P. on admission 200 (*by Riva-Rocci instrument*). Legs œdematous. Urine sp. gr. 1012, much albumin, 6 per 1,000. No sugar, no blood. Two days later, pulse 98; C.R. 8; B.P. 180. C.D. enlarged, 7½ in., first sound long, second sound loud, has been on diuretics and hot packs. Fluids were diminished to 1½ pints in day and eggs, fish and fruit were added to a milk diet. She was given iodide of potash, ammon. chlor. and strychnia, the last in small amount only, and put on two meals a day (*which is an aid to the diminution of fluids and otherwise helps to lower B.P.*) On admission there were marked twitchings of arms and angles of mouth and she was in imminent danger of uræmia. Three days later the twitchings were less, the urine had increased to 40 oz. and the albumin had begun to diminish. Two days later the dose of iodide was increased. Four days later she had stomatitis, which obliged us to increase the milk, as she was unable to take sufficient solid food. B.P. is still about 180; P. 140; temperature normal. Temperature now rose to 101°, on two nights, and then the pulse was 135 and B.P. 130. Four days later when the temperature was again normal we got pulse 110; B.P. 155. (*Here a temperature of* 101° *reduced a B.P. of* 180 *to* 130.) She was given egg in addition to her other food, as she was still taking badly, though her mouth was now improving. A week later albumin had fallen to 1 per 1,000; B.P. 145; pulse 120. She was given mist. acid phosph. c. strych. twice a day after each of her meals, the iodide and chloride being left off. A week later we got C.R. 6·5; B.P. 135; pulse 105. B.P. fell to 120 after a hot pack (*the effect of which in dilating peripheral vessels and lowering B.P. is here well shown; no doubt it also influences the solubility of uric acid, as heat is a direct solvent*). Temperature subnormal. A fortnight later B.P. 145; pulse 95; temperature normal. Albumin had fallen to ½ per 1,000. Eight days later her temperature rose to 100° on two evenings and she vomited

three times. Pulse 100; B.P. 145; C.R. 7 (*i.e., relapse of collæmia due to dyspepsia*). Next day she was put on fish, junket, egg and fruit, and the R.M.O. in error added 3 pints of milk. Tinct. digitalis m. v. was added to the mixture. Two days later she was not so well and had some headache. C.R. 7·5; pulse 125; B.P. 155. (*This was in part a result of the increased fluid, which was thus found out and taken off.*) Three days after diminution of fluid to 30 oz., C.R. 7·5; pulse 100; B.P. 145. Digitalis increased to m. x. bis. Eleven days later, C.R. 7; pulse 80; B.P. 130. Albumin a trace only. Three days later she was allowed three meals a day, as she preferred it and she was out of danger. Eleven days later, pulse 85; B.P. 130. A week later, pulse 85; C.R. 7; B.P. 130; C.D. 6¼ in., a fall of 1¼ in. since she came in. Two weeks later, pulse 82; C.R. 8; B.P. 150; C.D. 6 in. (*This slowing of pulse and fall in C.D. with rise of B.P. was due to the digitalis, which had been further increased in the last two or three weeks.*) Albumin a mere trace, almost well.

Digitalis did no harm in this case after we had lowered the pressure by cutting down the fluids and spacing the meals, yet to have given it at first would no doubt have precipitated the impending uræmia, from which she had a narrow escape, but, as we see from the R.M.O.'s unintentional but no less valuable experiment, to have put back the fluid would have raised the pressure and run her into danger (as shown by headache) at once. Like several previous cases, this patient has a chance of complete recovery if she can keep on U.A.F. foods, and she was shown how to do this.

Case 35.—H. S., female, aged 37. Complains of Bright's disease, heart failure and dropsy. Weight 9 st. Urine sp. gr. 1011, acid, albumin 8 per 1,000, urea ·8 per cent., numerous casts, granular and with degenerate epithelium much renal epithelium and a few blood-cells. Albumin to urea 1 to 1, urea per pound 1 gr. only. Urine 36 oz. Put on acid mist. with calumba and nux vomica and the urine increased, and she had some pains in her joints (*acid curing collæmia and causing arthritis*). She had suffered much from depression and I asked her which she liked best, and she said she preferred the pains to continue rather than go back to the depression. Four days later, urine sp. gr. 1013, albumin 5·5 per 1,000. Uric acid to urea 1 to 45 (*i.e., a diminished excretion of uric acid, probably the effect of the acid taken*). Three days later urine 48 oz., sp. gr. 1013, albumin as before, uric acid to urea 1 to 53.

Four days later 44 oz., sp. gr. 1013; albumin same, uric acid to urea 1 to 30, (*i.e., lessened urine with more uric acid*). Her joints are better again and she wants to get up. (*It is interesting that the joints got better as the excretion of uric acid increased, and albumin did not diminish while uric acid was high.*) A week later on no drugs for three days.

Albumin 3·7 per 1,000; uric acid to urea 1 to 45; three days later albumin 3·5 per 1,000; uric acid to urea 1 to 41; four days later albumin 6 per 1,000 (*this was an apparent result of being allowed to sit up*).

No doubt some of the low excretions of uric acid in Bright's disease are due to retention from kidney irritation, and the more chronic the disease the less likely is this to occur. In such cases an excretion of 1 to 40 or 1 to 50 in the urine would not necessarily mean absence of collæmia, and here we must go by the C.R. rate and the condition of the blood itself.

Three days later albumin 3·5 per 1,000, uric acid to urea 1 to 40.

Case 36.—R. B., male, aged 11. Complains of rheumatic pains in one wrist and one knee, also of acute nephritis with hæmaturia and slight bronchitis.

Looks pale and ill. Purpuric eruption fading on arms and legs. History of similar rash about two months ago. Urine sp. gr. 1020, slightly acid, brown red and blood-tinged. Albumin 2·8 per 1,000. Microscope shows blood, renal epithelium, many epithelial casts, a few hyaline and granular. Urine of twenty-four hours 25 oz., sp. gr. 1020, albumin 2·5 per 1,000 = 1·1 gr. per hour. Uric acid to urea 1 to 68. Pulse 65, high tension, second sound loud everywhere. Given acids and nitro-glycerine. Pulse tracing shows high pressure and takes 3½ oz. to develop it.

We have here the signs of collæmia, and yet the excretion of uric acid is low. The only explanation is sufficient kidney irritation to prevent passage of uric acid from blood into urine. He is young, and in first retention stage, and here retention is therefore more likely. A general retention would clear the blood, but a local kidney retention merely prevents its passage into the urine.

A week later it was observed that, contrary to the rule, his pulse is slower at night, 65, and quicker in the day, 75. I then took the urine in twelve-hour lots, ending at 9 p.m. and 9 a.m. respectively. The day urine gave uric acid to urea 1 to 126, and the night urine 1 to 105 (*again the reverse of the rule*). The albumin of the day was 13 per 1,000, that of night only 2·5 per 1,000; but, as usual, the acidity in the night was greater than that in the day, as 15 to 7. The total albumin of the day was 30 gr. = 2·5 per hour, of the night 17·2 gr. = 1·4 per hour. The day urine was 150 c.c., the night 450 c.c.

There was therefore more collæmia in the day than in the night; the more the collæmia the less the water, and the greater the collæmia the more the albumin. But the day collæmia does not show in the urine, because the local irritation in the kidney renders the uric acid insoluble, and prevents its passage (see "Uric Acid," pp. 73 and 699). Urea is 4 gr. per hour in the day, and 8 gr. per hour in the night, the reverse of the albumin, *i.e.*, more nitrogen is passed as albumin in the day and less in the night (*this is the rule*).

More uric acid is passed at night because the kidney irritation is less then, as the albumin (hetero-albuminæmia) is the cause of the kidney irritation, and that is most in the day (see "Uric Acid," p. 551). Acidity is higher at night because urea is higher; in both night and day, acidity to urea relation is nearly normal.

Three days later, a night urine (twelve hours) was again collected and gave uric acid to urea 1 to 67, and again about 8 gr. urea per hour. The larger amount of uric acid was possibly due to a dose (gr. 20) of pot. cit. that had been given. He was now given this dose four times a day. Six days later night and day collections were again estimated, and albumin was 2 per 1,000 in day and three in night (? effect of pot. cit.). Three days later he is noted as being better, and passing more water. The day urine now gave uric acid to urea 1 to 110, and the night urine 1 to 155, (*i.e., less at night, as in normal conditions*). Albumin per hour in day 2·1 gr., in night ·97 gr. Urea per hour in day 11·9 gr.; in night 11·6 gr. (*Urea and albumin are here moving in the same direction instead of in opposite directions.*) Uric acid was 1·3 gr. in day and ·93 gr. in night. The effect of pot. cit. has therefore been to bring things back towards normal.

Nine days later a night urine gave urea 12 gr. per hour, uric acid ·18 gr. per hour, albumin 1 gr. per hour; a day urine gave urea 10·9 gr. per hour, uric

acid ·2 gr. per hour, and albumin 1·1 gr. per hour. Relation of uric acid to urea in day 1 to 52, in night 1 to 72.

Ten days later a day urine gave albumin 3·4 gr. per hour, and thirteen days later a night urine gave albumin 2·6 gr. per hour; albumin was therefore increasing.

This has been my general experience with pot. cit. and alkalies in general: they increase uric acid and albumin, whereas retentives diminish both. I give this as an instance of the comparatively rare condition in which, along with a moderately acute nephritis, there is a very marked retention of uric acid, but this retention does not mean that the blood is cleared of it, but merely that it cannot pass from the blood into the urine on account of the kidney irritation. With less acute kidney conditions the amount in the urine would correspond more closely with the amount in the blood, the slow C.R., and other signs of collæmia it produces. As I have shown in many previous cases, the excretion of uric acid in chronic Bright's disease with subnormal temperature may be very large, greatly above the normal; in this case it was very greatly below the normal, in spite of a more or less constant excess in the blood. The administration of citrate of potash tended to increase the excretion of uric acid, and brought it back to its normal diurnal fluctuation, more in the day and less at night, but it doubtless increased still more the uric acid in the blood (solution of deposits), and with that the amount of albumin, because the albuminuria is the result of the collæmia and the hetero-albuminæmia it produces.

Case 37.—J. T., male, aged 41. Chronic large pale kidney. Urine sp. gr. 1019, acid, albumin 17 per 1,000, casts numerous, hyaline, granular and fatty, very little epithelium. Taking no drugs. A morning urine gave uric acid to urea 1 to 20 (*very different from the previous case, but we have also a different age and a different and less acute, though still severe, disease*). Pulse tracing showed high pressure and took 5 oz. to develop it, first sound reduplicated and second sound loud. This was merely a disjointed observation in the out-patient room, but I give it here just as a contrast to Case 36.

Case 38.—E. U. E., male, aged 35. Complains of a dull headache in frontal and vertical regions, every morning for six months. Dr. Baker, of Rangoon, said "uric acid." Had headaches at 12 years old, were then very violent but only one or two in a year. His mother is rheumatic and stiff. One sister had bad headaches as a girl. Often had slight rheumatism, scarlet fever when 7. Cholera ten years ago followed by measles. Influenza seven years and one year ago. Dysentery eleven years ago. Dyspepsia last year. Face puffy and pale, eyes no retinitis. Pulse 76, often slower. Left radial 1·7. First sound long, second sound loud. Urine sp. gr. 1022, acid, good cloud of albumin. Sir G. Johnson found albumin thirteen years ago, but albumin was absent seven months ago in Rangoon. Slight œdema of legs. Uses phenacetin to relieve his head now. Present diet contains meat twice, fish twice, egg once, coffee or tea twice, soup once, whisky and soda twice in day. I advised a slow change of diet and gave some iodide, ammonia and nux vomica.

Three weeks later he reported that his head had been better during the last ten days. Is having fish and meat once a day each, has had no iodism. Pulse 85; left radial 1·1, a great reduction in size and probably also in B.P. I then gave further directions as to diet and the quantity of albumin required for 134 lb., but the diet unfortunately contained some pulses, as they had not at

this time been found out, and so probably diet did little good. The above improvement was chiefly due to drugs, and he relapsed when he left them off.

Case 39.—M. A., female, aged 55. Sent to me by Dr. Crawford, of Hamilton, N.B. Complains of hæmaturia, first four months ago, and last one week ago, after a journey followed by pain in left lumbar region. Has been subject to some lumbar pain off and on for years. Occasional pain in right hypochondrium. Has had much worry nursing her husband, who died last year. Highly nervous, very active, much neuralgia. There is slight albumin, even when blood is absent. Arterial tension noted to be high, and she has suffered from epistaxis. Face vascular, conjunctivæ pale and watery. Sleeps very badly. Pulse 120; apex beat in left mid-clavicular line, second sound loud. Bowels act only with drugs. Liver dulness about normal. Right kidney can be felt, but is not tender. Urine sp. gr. 1018, acid, amber, turbid, albumin ·5 per 1,000; fairly numerous hyaline and granular casts with some fat; another specimen gave sp. gr. 1014. Neither were of twenty-four hours. I gave iodide with bromide and ammonia and some nux vomica, and ordered a gradual reduction of meat in favour of milk and cheese.

A week later a specimen of urine gave sp. gr. 1022, acid, albumin ·25 per 1,000, some hyaline and granular casts. I advised her to continue mixture for a week or two and then to report again, but three weeks later I heard from the doctor that she was dead, having had a cerebral hæmorrhage and living only three hours after the seizure. I was never able to find out whether she had unwisely left off her iodide mixture suddenly and thus suffered from a rebound, with increased B.P.

No doubt we had to do with chronic Bright's disease, of which cerebral hæmorrhage is the natural ending. If I had then had more accurate means of measuring circulation and B.P. this danger might have been better guarded against.

Case 40.—G. H., male, aged 46. Sent to me by Surgeon-Captain Armstrong. Complains of having had temporary glycosuria and albuminuria, and of being refused for insurance five months ago. He was given salicylate of soda, nux vomica, and opium, and in a week there was no sugar. The albumin also disappeared later. Urine was about five pints a day, seems less now. Has lost 2 st. in weight since he went on anti-diabetic diet. Has had chronic diarrhœa for twenty years. Had dysentery fifteen years ago. Had ringing in the ears and Bell's paralysis from exposure to cold five years ago. The noises and giddiness continue. Teeth bad for five or six years. B.D. ·75; pulse 88; B.P. 185; C.R. 8·5. Apex beat displaced to left, first sound ? short, second sound very loud everywhere. Bowels open two or three times a day. Liver dulness decidedly increased. Urine sp. gr. 1020, cloud of albumin, no sugar. Weight now 13 st. 7 lb., in clothes. Present diet: meat three times a day (total 16 oz. a day), green vegetables, water, milk, and soda. Is taking opium 4 gr. a day. I advised him to diminish meat to 8 oz., to increase milk to 2½ pints, and to slowly diminish and leave off opium.

In six weeks he reported that opium was now off altogether. Does not note much alteration. Urine as before, no sugar. Pulse 84; C.R. 7·5; B.P. 165. Bowels open only once a day now. Salicylate of soda suits him and lessens the action of the bowels while taking it. (*It possibly lowers B.P., and so lessens the congestion.*) This patient soon returned to India, and I saw no more of him. I told him to get on to U.A.F. diet as soon as possible, substituting cheese for the rest of his meat, and continuing some salicylate for the present in the form of salicylic acid.

Here was a well-marked collæmic circulation, just such as, with a little heart failure (here shown only by the quickened pulse-rate) might be expected to produce congestion of the liver and some albuminuria and glycosuria. The opium, salicylate, and nux vomica

was an extremely good prescription for the condition ; the opium helped to lower B.P., while the nux vomica strengthened the heart, and the salicylate eventually tended to diminish collæmia and improve the liver circulation, which is, I suppose, the way in which it diminishes the sugar in glycosuria and diabetes. I had no objection to drugs *pro tem.*, but a great objection to the meat diet.

Case 41.—C. S., male, aged 15. Spinal caries ending in amyloid disease. Pale, cachectic, and wasted, very thin. Bowels act many times a day, sharp diarrhœa. The liver is very large, and extends into the hypogastrium, and the spleen is also large, and extends into the left lumbar region. I have unfortunately no records of the circulation, as the case was in pre-instrumental days. There was an old Pott's curve in the dorsal region and a sinus in the interscapular region still discharging. The case was in the Metropolitan Hospital, under the care of my former colleague, Mr. S. Paget, to whom I am indebted for permission to mention it. I got two specimens of urine, one amber, slightly turbid and slightly acid, sp. gr. 1013. Albumin a trace. Urea ·8 per cent. Uric acid ·05376 per cent. = 1 to 15. Under the microscope I found epithelium and phosphates, and a few hyaline and waxy casts. A few days later I got a twenty-four hours' specimen, part of 23 oz., sp. gr. 1013, neutral. Urea 1 per cent. = 106 gr., uric acid ·06048 per cent. = 6·4 gr., relation 1 to 16.

We here see that urea is extremely low, probably owing to the diarrhœa and degeneration of all important organs, and we see that amyloid disease does not interfere in any way with a free excretion of uric acid when the presence of plenty of solvents brings it into and keeps it in solution in the blood. I have already shown that other kidney troubles do not interfere with it, unless there is local irritation, which means local high acidity, of which there was no likelihood in a case so debilitated as this. The mere destruction of normal kidney structure, whether by chronic irritation or amyloid infiltration, does not stop the outgoing of uric acid in the least ; and all the talk in the past about deficient kidney action in relation to retention is without foundation, except in the single instance of real acute and generally febrile nephritis.

Case 42.—G. C., male, aged 55 (medical). Three months ago was suddenly affected by aphasia and hemiparesis, and since that has been on half allowances of food and work. Has had migraine for eighteen years, and this has been better since above alteration of food. Appetite good, sleeps fairly, occasional insomnia. Pulse 96, has been quick for thirty years ; C.R. 8 ; B.P. 175. Apex beat to left, first sound long or late systolic murmur, second sound loud at aortic cartilage. Heart area increased. Micturition once in night. Urine sp. gr. 1012, no albumin, no sugar, but albumin was found at time of angina, and occasionally since after exertion and excitement. (*No doubt this is chronic Bright's disease with some occasional heart failure.*) He had a hæmorrhage three months ago. No œdema of ankles now, but there has been some. Present diet includes meat once, egg once, and tea as a flavouring, some whisky. I put diet right, and advised that drugs should be used as little as possible (*if you use retentives in a case like this there is constant danger of a rebound and a fresh hæmorrhage, especially if they are taken irregularly*). Four months later he reported himself as on correct diet, and doing well. He is stronger, and better able for work, and B.P. has fallen to 140. Patient then returned to his home in New Zealand, but reported, six

months later, that he had taken a new lease of life, and had not felt so well for years. Unfortunately he died suddenly in the following year, but whether from angina or a second attack of cerebral hæmorrhage I was not able to make out.

But on the whole the evidence was in favour of a return of the heart failure, as the B.P. was said to have been reduced to 120; but there is nothing to show how much of this was due to diminished collæmia, and how much to heart failure. In these days I should have diminished fluids much more so as to save a heart which had already given signs of angina, and this would have been done then to some extent, only that we had difficulty in getting sufficient albumins. I now turn a great part of the necessary milk into curd, and thus avoid excess of fluids.

Case 43.—S. H., male, 44. Complains of swelling of legs and abdomen, began two years ago when he was in Strood Hospital, and Bright's disease was diagnosed. Has since been in the London Hospital. Tongue dry with a brown coat; pulse 96; feels high B.P.; apex beat to left of nipple line, first sound reduplicated, second sound loud. Liver dulness full size in spite of emphysema. Abdomen prominent, dull, no fluid. Urine sp. gr. 1038, acid, almost solid with albumin, no blood. Legs and thighs very œdematous. For the first ten days he was put on salicylate of soda and acids, and urine was scanty, highest being 39 oz. He was then put on pot. cit. and nux vomica, and the urine had increased four days later up to 74 oz., digitalis was then added, and it went to 78 oz. Five days later I took a pulse tracing, and found quite low pressure, and a well-marked dicrotic wave. (*Now this low pressure was certainly not due to heart failure, for the pulse was slower than at first and the urine was profuse.*) On salicylates and acids the pulse was quicker and the urine scanty (*and this was due to considerable collæmia with heart failure, but unfortunately no tracing was taken then*). When the urine first began to increase it had sp. gr. 1013 on 74 oz., and gave urea 1 per cent., and uric acid ·03360 per cent., relation 1 to 30, a moderately large excretion of uric acid in spite of a much diseased kidney. Albumin 12 per 1,000, relation to urea 1·2 to 1·0. When the urine was 78 oz. it had sp. gr. 1012 and 10 per 1,000 of albumin. Three days after this pulse tracing it had fallen to 68 oz., sp. gr. 1013, albumin 12 per 1,000, urea 1 per cent. Seven days later it had sunk to 56 oz., and was alkaline, sp. gr. 1015. Albumin 13 per 1,000. Pulse 96, soft (*part of softness was due to heart failure, as the pulse was quickening and the albumin increasing; whereas on the previous occasion the pulse was slowing and the albumin diminishing*). Three or four days later he was not so well, and there was some increasing œdema and pain in the legs. Four days later, however, urine rose to 80 oz., sp. gr. 1015, but albumin was 14 per 1,000. Seven days later, pulse quickened still more, and temperature rose slightly; there was some severe diarrhœa, and urine became very scanty. Four days later he died; heart failure accelerated by diarrhœa and defective absorption. As he was a Jew, no *post-mortem* examination could be made.

The point of interest was the temporary improvement on pot. cit., nux and digitalis, following salicylate and acids. It must have been due to temporary clearance of collæmia; the concomitant symptoms showed that the low B.P. was not due to heart failure But how could pot. cit. clear up collæmia? It is a solvent, and the urine was alkaline; nux and digitalis could not do much, and, indeed, digitalis rather favours collæmia, and makes it severe when it upsets the stomach. Two explanations are possible: (1) that

the pot. cit. cleared up the collæmia by holding all the uric acid in solution; but this is not likely, seeing that collæmia increased later, in spite of the drug being continued; or (2) that there was a retention when the salicylate was left off, and this is a practically constant result of their administration; and that this retention was increased and prolonged by the alkali given in sequence to the salicylate which again I have pointed out to be the rule. No doubt the excretion of uric acid had been considerably more than 1 to 30 when on salicylate; then it fell to 1 to 30 as the urine increased, and probably considerably lower with its greatest increase, the slowing of the pulse and the slight fall of albumin. My general experience with pot. cit. in Bright's disease is that it increases collæmia and does harm, and for this reason I have given it up in favour of direct retentives; but the above case shows, perhaps, that under certain conditions and in sequence to salicylates it may do good for a time; that the blood can be cleared for a time with the usual benefit by giving salicylates, and then leaving them off, and following them with an alkali. It is easy to see in physiological conditions that this results in a temporary retention, a clearing up of collæmia and a diuresis.

Case 44.—J. H., male, aged 33. Complains of œdema of legs, cough, and shortness of breath. He also suffers from chronic dysentery, and injections of nitrate of silver were used for this last year with benefit. He previously had œdema for two months about fifteen or sixteen months ago. Eight years ago had dysentery and enlargement of the liver in India and chronic dysentery ever since. Pulse 50, and tracing shows large first wave high up (*i.e., a strong and hypertrophied heart*). First sound reduplicated, second sound loud everywhere. Breath sounds at both bases rather feeble. There is no tenderness anywhere in the abdomen. Bowels act four to six times a day; occasionally a little blood. Urine sp. gr. 1025, much albumin, no blood. He was put on salicylates and acids, as in previous case, but the pulse did not rise to 60. As I thought the dysentery was keeping up collæmia in spite of my treatment, I decided to treat it with nitrate of silver injections. After the first injection the pulse quickened to 72, and after second injection, seven days later, to 90. Urine three days after second injection 52 oz., albumin 3·2 per 1,000; but a week later the urine had sunk to 30 oz., and albumin was 10 per 1,000, giving a total of 138 gr., against 81 gr. before. The acid was now left off, but the salicylate continued. Bowels only act once or twice a day now. Nine days later urine 62 oz., albumin 3·5 per 1,000 = 97 gr., urea 1·6 per cent. = 462 gr.; relation 1 to 4·5. But nine days later urine 60 oz., albumin 6 per 1,000 = 166 gr., urea 1·3 per cent. = 360 gr.; relation 1 to 2·1, *i.e.*, worse, so salicylate was left off. Four days later urine 60 oz., albumin 4 per 1,000 = 110 gr., urea 1·4 per cent. = 388 gr., relation 1 to 3·5; an improvement when the salicylate was left off (*i.e., the retention following collæmia*). Four days later urine 72 oz., albumin 129 gr., urea 495 gr.; relation 1 to 3·9. The retention was temporary, and the improvement did not continue. Four days later, pulse 84. A retentive, iodide of sodium, was begun, but some alkali was given with it. Four days later urine 48 oz., albumin 7 per 1,000 = 150 gr., urea 2 per cent. = 443 gr.; relation 1 to 2·9, *i.e.*, an increase. The alkali was now left off, and iodide given with some nux only. Three days later urine 56 oz., urea 1·4 per cent. = 361 gr., albumin 2·5 per 1,000 = 61 gr.; relation 1 to 5·9 (*a marked improvement on retentives*). Four days later the iodide of sodium

was left off, and iodide of mercury begun ; this, however, was a mistake, as the mercury at once irritated the intestinal lesions of chronic dysentery, and the bowels acted more frequently ; *(hence the iodide of mercury in place of increasing retention increased collæmia, and did harm);* four days after the iodide of mercury was put on urine 6 oz., urea 1·7 per cent. = 471 gr., albumin 5 per 1,000 = 138 gr. ; relation 1 to 3·4. The mercury was therefore left off, and iodide of sodium substituted, and the bowels got better again. Five days after this, urine 57 oz., sp. gr. 1017, albumin 3 per 1,000 = 78 gr., urea 1·5 per cent. = 394 gr. ; relation 1 to 5 ; pulse 108. Some digitalis added to the mixture. After this he soon went out, as he was anxious to avoid losing his work, the dysentery being quiescent and the albumin relatively small in amount.

Here we see that salicylates did harm by increasing collæmia, but a little good accompanied the temporary retention from leaving them off ; that alkali did harm (as usual) by increasing collæmia ; that iodide of sodium did good by retention ; while iodide of mercury did harm, because it increased the action of the bowels and thus increased collæmia in place of diminishing it. Here we also see probably the part played by dysentery in the causation of Bright's disease. His dysentery began eight years ago, his Bright's disease less than two years ago, *i.e.*, it took some six years of chronic collæmia to produce Bright's disease in this case ; the dysentery acting all along in increasing collæmia and diminishing combustion, just as we now see it doing when every increase of bowel action increased collæmia and albuminuria. This would have been a good case for opium and iodides or any retentive that did not increase the intestinal irritation. Chronic dyspepsia often plays a quite similar part to that of the dysentery in this case, by precipitating and keeping up a collæmia, which gradually lowers combustion till a glycosuria or albuminuria is produced ; which of the two it will be, depending, in a given case, on whether the skin or the liver circulation is most affected by the collæmia. Here dysentery came at 25, at what should have been the end of the first collæmic stage of life, and it was severe enough to seriously hamper nutrition, prolonging and increasing the collæmia and hence his Bright's disease. To cure him we must first stop his dysentery, then stop his collæmia with retentives and keep it away by U.A.F. diet.

Case 45.—I. M., female, aged 46. Complains of headache, nausea and general illness. Some shortness of breath. Headache is generally occipital. Pulse 78 in evening and 60 in morning. Marked high B.P., tracing shows first wave very high up, often above up stroke, it takes 4½ oz. to develop it. Apex beat to left of mid-clavicular line, impulse increased, second sound loud. Urine about 50 oz., sp. gr. 1012, acid, some blood, albumin 2 per 1,000, hyaline casts with epithelium granules and fat on them. There was some muscular twitching and the temperature had been raised before admission, so that uræmia was not far off. She was put on iodide of potash and nux.

Four days later urine 89 oz., albumin 2 per 1,000. (*N.B.—The previously men-*

*tioned urine was not a twenty-four hours' specimen*). Still some occipital headache with occasional nausea or vomiting. Iodide of mercury given.

Four days later urine 86 oz., sp. gr. 1008. Given a little phosphoric acid well diluted as a drink.

Six days later urine 54 oz., sp. gr. 1010, pulse quicker. Some slight signs of salivation, so mercury was left off and iodide of potash and nux given in its place.

A week later urine 50 oz., sp. gr. 1010, albumin only ·5 per 1,000. Two days later pulse 85, feels lower pressure and tracing only takes 3½ oz. pressure to develop it. A week later pulse in morning 64 ; urine 48 oz. ; pulse in evening 80. Four days later urine 61 oz., sp. gr. 1010, and albumin only a trace. This condition of things continued and she was soon allowed to go out, taking some iodide and nux with her.

Here the iodide of mercury did some good, but it soon threatened to produce salivation, which it so often does in Bright's disease, and, if it had been allowed to do this, it would have upset everything, just as the dysentery did in the previous case, and have done harm in place of good. Here again retentives did good and the improvement was accompanied by a fall of B.P.

Case 46.—G. W., male, 41 (type-founder.) Complains of pain and swelling in feet, knees and right hand. Has had rheumatic fever three times before, first sixteen years ago. Has had colic about twelve times. Face pale and shows suffering. Pulse 100, artery tortuous, pressure high. Temperature 99·6. Tracing shows a first wave high up, and requires 5 oz. pressure to develop it. Urine sp. gr. 1014, trace of albumin. On admission was put on salicylate of soda gr. xx., 3$^{is}$ horis. In two days temperature normal and hardly any pain. Salicylate to be four times a day. Heart, first sound reduplicated at apex (*i.e., collæmia of the salicylate produced in curing the rheumatism*). I gave a little acid and columba ter before food. Two days later had pain over the right olecranon, no swelling. This increased for six or seven days and later was accompanied by redness and swelling in spite of 80 gr. salicylate in twenty-four hours (*but then nux vomica and belladonna had been given for the constipation and belladonna would antagonize the salicylate just as alkali does*). The salicylate was increased to 100 gr. a day and then it got better.

Here we had an arthritis due to uric acid in a man who had for years been subjected to the retentive action of lead, and had suffered much from it. He had also chronic high B.P., degenerate arteries and chronic Bright's disease. As soon as he was given an acid, to counteract part of the collæmia produced by the salicylate, he got a relapse of arthritis in one elbow.

Case 47.—C. W., female, aged 15. Complained of numbness and loss of power in right hand, has had "fainting fits." Three days ago she was quite comatose after a succession of convulsions. Face pale and eyelids puffy. She is quiet, drowsy and very slow in answering questions (*signs of œdema of the brain*). There is some œdema of the skin over the back. Pulse 66, very high pressure ; the first wave is so prominent that it can be felt after the upstroke (*pulsus bis feriens*). Apex beat a good deal to the left, first sound long or late systolic murmur, second very loud both apex and base. There were a few crepitations at both bases on admission. There is some ascites. Urine sp. gr. 1025, acid, some blood, albumin 7·1 per 1,000. The microscope showed casts with much renal epithelium and many granules. She was given some jalap for the bowels and a hot-air bath every night. Mist. pot. cit. gr. xxx., with nux. vom. 6$^{is}$ horis.

Urine three days later gave 300 gr. urea and 10·6 gr. of uric acid, relation 1 to 28.

Two days later, urine of twenty-four hours was 35 oz. in day, and 8½ oz. at night (*the small quantity at night shows the effect of the hot-air bath*), together 43½ oz., alkaline, turbid, sp. gr. 1020, yields 280 gr. urea, and 7·3 gr. uric acid, albumin 1 per 1,000, relation uric acid to urea 1 to 38. (*Here is an actually diminished excretion of uric acid on alkali preceded by a plus one, so that pot. cit. acts here, in pathology, just as it does in physiology.*) The patient has now no headache, and was allowed some milk pudding. (*She would have no headache with a uric acid excretion of* 1 to 38.) Three days later, urine gave urea 334 gr., uric acid 6·7 gr., relation 1 to 50 nearly, albumin apparently a trace. All drugs left off for three days.

As to this sudden drop in the quantity of albumin, I am inclined to think that it was an error of observation, due to the alkalinity of the urine, as explained in Case No. 16, p. 174. The pulse did not quicken, and the B.P., as shown by sphygmographic tracings, did not fall.

Three days later, when on no drugs a urine sample (*not twenty-four hours*) gave sp. gr. 1025, acid, albumin 3 per 1,000, uric acid to urea 1 to 34. Pulse was now 64, and she was put on salicylate to see if it would lower B.P. and quicken pulse (*here the salicylate followed the alkali*). A day later, urine 46 oz., sp. gr. 1019, acid, albumin 1 per 1,000, uric acid to urea 1 to 33 (*the salicylate has not begun to act much yet*).

Two days later, urine gives uric acid to urea 1 to 35, albumin ·1 per 1,000 (*this defective excretion of uric acid on salicylate was probably due to its following the alkali, which hindered its action*). Only seven days after the salicylate was put on did we get an increased excretion. Then the urine was 59 oz., sp. gr. 1017, acid, albumin ·5 per 1,000, urea 298 gr., uric acid 15·5 gr., relation 1 to 20 nearly. The pulse was now 72 in morning, and 86 in the evening, the quickening having taken place in the last three or four days; a tracing now showed decidedly diminished pressure, the predicrotic notch being often below the middle of the upstroke. As she seemed well in herself all drugs were now left off.

Three days later, however, a chance specimen gave albumin 2 per 1,000, a rise, uric acid to urea 1 to 39 (*a fall of excretion on leaving off the salicylate, but the rise of albumin might be due to the salicylate-collæmia of a few days previously*).

Two days after this she was put on the citrate of potash the same dose as before, and two days later, when the urine was just becoming alkaline, it gave albumin ·6 per 1,000.

Three days later the urine gave albumin ·5 per 1,000, and uric acid to urea 1 to 36. (*The large excretion of uric acid under alkali had here passed over; hence uric acid was now decreasing, and with this the albumin was also falling slightly.*). From this time onward pulses of 70 to 80 were the rule, and tracings showed much lower pressure and smaller first waves than when the patient was admitted. The albumin remained a trace, and eight days after the last note she was allowed to go out.

I give this case chiefly for the large number of estimations of uric acid, and the light it throws on the effect of drugs on this excretion in disease. It is evident that the drugs acted as they do in physiology, and their action was in no way interfered with by the condition of the kidney, and the near approach of uræmia. As to the exact fluctuations of albumin there is a doubt whether it was all precipitated when the urine was alkaline; I have therefore paid more attention to the pulse-rate and B.P. than to the urine. The hot-air bath at night obviously had a great effect on the excretion of water, and it may also have had a very considerable effect

on the metabolism and excretion of albumin. Heat treatments, when they increase collæmia by bringing more uric acid into solution, do harm; but when the drugs used keep the blood clear of uric acid, as evidently sometimes occurred in this case, then they might do much good. If C.R. had been available and closely observed it would have told us everything that occurred, and probably much as to causation, but at the time this case was under my care I had not learnt how to estimate and record it. The case therefore illustrates the value of C.R. by showing up our difficulties in its absence.

Case 48.—A. M., female, aged 8. Suffering from chronic Bright's disease. Pulse 68, high pressure, first wave quite on a level with top of upstroke. Urine of first twenty-four hours 18 oz., smoky, acid, sp. gr. 1018, albumin ·5 per 1,000, urea 1·8 per cent., 149 gr., uric acid ·04704 per cent., 3·9 gr., relation 1 to 38. Casts fairly numerous, mostly hyaline with granules, and a little epithelium. (*Note this patient had been put on admission on to magnesium sulphate and dilute sulphuric acid, hence part of the retention.*) I stopped these and gave mist. acid nitro. hydrochlor, and sodii. sal. gr. x. ter p.c.; magnesium sulphate p.r.n. (if bowels not open). Four days later, pulse 84, much lower tension, pre-dicrotic notch nearly half-way down the upstroke. Urine 24 oz., yesterday was 28 oz., albumin a trace, not sufficient to estimate. A week later the salicylate was left off, the pulse being 95. Three days later the urine had fallen to 18 oz., and contained a little more albumin, so salicylate was put on again and urine again increased to 24 oz.

I have long known that in physiology salicylate of soda is a diuretic, but the diuresis does not come till the uric acid falls, generally the second or third day of its action; so that we can argue from diuresis to collæmia and probable C.R. rate, *i.e.*, with diuresis there is no collæmia and C.R. is quick, and *vice versa*.

After this I tried the effect of exercise upon the excretion of albumin and I found that getting up in the morning always increased it. The rest of the case was uneventful. The albumin remained at a trace, and she got up and went out.

It thus appears that salicylates under certain conditions clear the blood of uric acid, and in so doing produce a diuresis, a fall of B.P. and a diminished excretion of albumin in Bright's disease. We now know that they may clear the blood of uric acid in two ways: (1) In small doses as direct retentives; (2) by eliminating most of the available uric acid, when a drop in excretion results and is followed by the effects above recorded. Probably in the above case they acted as direct retentives.

Case 49.—M. H., female, aged 60. Has had frequent slight gouty attacks in fingers and toes for some years. One sister suffers from headaches. Patient is not subject to headaches, but twenty years ago had aphasic attacks followed by bad headaches—very bad, she had five attacks in all. Last year her hands were very bad with gout and swelling. Feet were affected later and went dead, blue and white and got worse in hot weather, and sloughs formed on fingers and toes (*probably this was Raynaud's disease, not gout*). She is also subject to

itching attacks on skin on getting hot. Is a good sleeper unless pains are bad, or if she has pins and needles in fingers and toes. Gums spongy. B.D. ·7; pulse 92; C.R. 9; B.P. 130. First sound rather short, second sound rather loud relatively. Has slight cough and white expectoration. Fingers are puffy. Occasional hiccough and throat irritation. Bowels act only with sulphur, which she takes in milk every morning early (*a powerful retentive*). Urine pale amber, slight red sand, very acid, sp. gr. 1014, cloud of albumin, no sugar. Weight falling slightly. Last year she took iodides, iron and arsenic, the latter till her neck got the colour of mahogany, and then the arsenic was left off, and the colour and itching got better. She also had iodide, guaiacum and lithia without much effect. Is now taking nothing but sulphur in the morning. Occasional citrate of iron and quinine, as a tonic. Often takes 10 gr. of antipyrin at night to relieve pains and get sleep. Present diet of seven meals contains meat twice, meat juice or Wincarnis twice, egg once, soup occasionally, wine twice a day. Often feels she cannot get another mouthful down, can drink milk but is not fond of bread or cheese. I advised her to diminish fluids and reduce her meals to three in day, and gave small doses of nux and strophanthus.

A month later she had a sore face, and her teeth were tender and loose, appetite poor, pulse 84; C.R. 7·5; B.P. 145. I then gave her some retentives, chloride, bromide and iodide, and tried still further to diminish fluids and slops and get her on a dry, solid diet, but without much success. Eight days later she had a headache and left off the above mixture contrary to orders. (*She had been told to leave it off slowly one dose at a time.*) Pulse 75; C.R. 7·5; B.P. 165. There had been a continual slowing of pulse and a rise of B.P. (*i.e., the heart was getting stronger*). She has some pins and needles, also loss of sensation in parts of feet and hands. (*Here it is evident there was still stronger need to lower B.P., and especially to cut down fluids, or failing this to bleed.*) Two days later the pain in the head got worse, and then right hemiplegia and aphasia showed themselves, and she died comatose.

This case shows that in Bright's disease it is not wise to do anything to strengthen the heart till one has provided against any serious rise of B.P. by cutting down fluids. In this case it was not easy to cut down fluids, as milk was the form of U.A.F. nourishment which she took best.

Case 50.—J. O., female, aged 24. Complains of œdema of legs. Married five years and has three children. Legs swelled in pregnancy and was twice in London Hospital. Takes eggs, bacon and a little meat, and four to five cups of tea a day. Her mother has rheumatism. Had quinsy twice and headaches before marriage (*i.e., headaches disappeared when the heart failed in pregnancy*). Procidentia uteri three years ago, wore pessary. Pulse 90. Apex beat to left of mid-clavicular line, first sound long, second sound relatively loud. Temperature subnormal. There is tense œdema from feet right up to thighs. Urine sp. gr. 1013, 5 per 1,000 of albumin, no blood.

*Diagnosis.*—Chronic Bright's disease, cardiac failure. (*Probably the cardiac failure in pregnancy was the chief cause of the collæmia and defective circulation called Bright's disease.*) She was put on iodide of mercury (*perchloride with potassium iodide*) three times a day, and was given U.A.F. diet. About a week later albumin had diminished to 3 per 1,000 and she improved generally and was allowed to go out after a week or two. Two months later a sample of urine showed 6 per 1,000 of albumin and œdema of legs had returned to a considerable extent. She was again given the iodide, and digitalis and nux vomica were added, and albumin fell and œdema diminished. Later medicine was changed to perchloride of iron, nux, digitalis and liq. hydrarg. perchlor. and then albumin fell to 3·5 and 3·0 per 1,000, and she was presently allowed to go out again.

I mention this case to illustrate the effects of cardiac failure on the causation and continuance of Bright's disease. This was in old

times before I had appreciated the enormous effect of this cause in increasing the serious effects of collæmia. Owing to my ignorance of this factor in etiology she was given 3 to 4 pints of milk a day. Now she would be given 1 pint only and the rest in curd, and then the drugs would have had a comparatively easy task to bring the heart round, and albumin would soon have come down to a mere trace.

Case 51.—M. G., female, aged 24. Admitted into the Metropolitan Hospital in fourth month of pregnancy, having been married seven months. Fourteen days ago hæmaturia noticed; twelve days ago fainting fits, six in all, four days ago vomiting which continued up to admission; seven days ago pain in left side and back. Four days later, no vomiting since admission, urine sp. gr. 1014, alkaline, blood, albumin 4 per 1,000. Pulse 68; temperature from 98° to 100°, irregular; albumin to urea 1 to 2; left radial 1·9. Put on iodide of mercury. Two days later, pulse 72; left radial 1·7, apex beat in left mid-clavicular line, second sound loud everywhere. Four days later, pulse 72; albumin to urea 1 to 4. Two days later, pulse 84. On full doses of iodide since yesterday, left radial 1·5. Five days later, pulse 86, left radial 1·2. Eight days later, heart area has diminished, and apex beat is now just inside left mid-clavicular line. Four days later, pulse 92, radial 1·5. Four days later, pulse 96, radial 1·2, but there is some œdema of legs, apex beat has gone to left again, and liver dulness has increased. She was now given digitalis; three days later, pulse 88, radial 1·6 (*both effects of digitalis*). Four days later, the dose of iodide was increased; seven days later, pulse 72, radial 1·05. Six days later, pulse 88, radial 1·0, still slight œdema of legs, iodide of mercury left off.

Here the iodide had cleared up the collæmia, and lowered the B.P., *i.e.*, the size of the artery from 1·9 to 1·1, and yet there was no diuresis and running off of fluids because the mechanical abdominal condition (in this case natural, but not easily removable) interfered with the action of diaphragm, heart and lungs, as well as with the circulation in liver and chylopoietic viscera. In a previous case (No. 14), a diuresis only resulted with iodide when the ascites was removed, but here we did not feel justified in terminating the pregnancy.

Two weeks later, she was on no drugs, there was still considerable œdema of legs, but urine was not very scanty. Radial 1·7. Three days later, pulse 95, radial, sitting, 2·3. All this time she had been on a milk and practically U.A.F. diet, and she was now allowed to get up and go home for a little time at her own request. She returned a month later with increasing œdema of eyelids and face. She had been having some meat (rabbit), and the increased puffiness was said to have come after this. First sound of heart long and indistinct, second sound loud everywhere. Two weeks later, pulse 75, left radial 1·9. A fortnight later she was put on phosphoric acid and strychnia. A fortnight after this she had some vomiting, having been slightly upset by a purge. Pulse 72; radial 1·6; urine 46 oz. Fœtal heart is now audible. Urine 34 oz., sp. gr. 1020, smoky, turbid, acid, albumin 7 per 1000, relation to urea as before. Blood shows H.b. 37 per cent., cells 70 per cent. = B.D. ·53. Five weeks later parturition took place, a living and fairly healthy child. Urine had kept about 84 oz., but two days later she had a rigor and rise of temperature, and urine then went up to 133 oz. (*clearance of collæmia by fever, and, the visceral circulation being now clear of its obstructions, diuresis was the result*). Temperature remained irregular, and slightly raised for about three weeks. Two weeks later, pulse 110; temperature 100°; radial 1·2. A week later, radial 1·0; pulse 96. Temperature

about normal (*the fall of B.P. was due to diminished collæmia by fever running off fluids (diuresis), and freeing of the visceral circulation*). Albumin now only ·5 per 1,000. She was now again under my care, and was put on phosphoric acid and strychnia, and was soon allowed to go home, keeping on diet, and reporting from time to time. Two months later there was still considerable albumin, but patient felt cheerful, and did not wish to come in again or I should have given the iodide again to cut the albumin down to a trace.

Here we see the effect of heart failure in a first pregnancy in precipitating the worst effects of collæmia, and producing albuminuria and Bright's disease. By a milk diet we preserved her from any very serious troubles during pregnancy, but the kidney and metabolic tissue damage from eight or nine months of albuminuria was considerable, and I doubt whether she ever completely recovered.

Case 52.—J. O., female, aged 27. Complains of considerable headache and some cough. Has had large pale kidney three to four years. Urine, as in some previous cases, sp. gr. 1014, acid; albumin 6 per 1,000, and many casts. Iodide of mercury failed, causing iodism and mercurialism, so she was put on U.A.F. diet, and sent out. She has kept on diet for about three years, and is better on the whole. Has unfortunately been taking some pulses lately. She became pregnant, and aborted a year ago, and is now two months pregnant again. Face puffy; C.R. 7 to 8; pulse 108; B.P. 200. Temperature subnormal, especially in the morning. Apex beat in anterior axillary line. Both sounds reduplicated, second very loud at right base. Urine now 33 to 64 oz. per day, sp. gr. 1010; 3 per 1,000 albumin. (*Of course another pregnancy is a serious strain for this damaged combustion.*) She was given phosphoric acid and strychnia, 2 pints of milk, 2 oz. cheese, bread, biscuit, puddings and fruit. Four days after admission headaches better, temperature rising towards normal. Pulse 96; C.R. 9; B.P. 200. Three days later was only taking 1 oz. cheese; pulse 100; B.P. 190; urine, 48 oz. Four days later cheese left off, urine 42 oz., albumin 3 per 1,000; no change here. Three days later no headache even on coughing. Urine 46 oz., albumin same, milk diminished to 30 oz. in day. Four days later weight was found to have increased 2 lb. in the last week. Two days later has had some attacks of dyspnœa in the evenings, with vomiting after the first attack. Two days later pulse 112; C.R. hard to see, owing to paleness of surface; B.P. 200. (*Has now been on diminished food for nearly two weeks, but there has been no fall of albumin or of B.P.*) The last few days I got her to do what some now call a "fruit starve," (*i.e., to make the fire burn up by taking off food and fluid, which lessens the work of the heart and is good physiology).* Weight has fallen off, and she has lost the 2 lb. previously gained. Urine 42 oz., sp. gr. 1010. Albumin 3·3 per 1,000, a slight increase.

Diminishing proteid in Bright's disease does harm if it diminishes the power of the heart muscle, but it is possible to diminish the fuel for a time without affecting the heart, and to keep off collæmia by acids and fruit, and then the fire may burn up and all will go well. There is no doubt that in collæmia with defective combustion taking off fuel is good physiology. Here, however, it failed, at least so far as we tried it; so food was increased to normal again, and she was allowed to go home with a tonic to take. This was one of my first attempts in this direction some ten years ago.

Case 53.—W. M., female, aged 24 (wife of a doctor). Has often had headaches and anæmia, and the iron taken for anæmia brings on headache. Her

mother also suffers from migraine. July last conception of first child. September some dyspepsia. December to January anæmia. February urine, no albumin. April 29 got a chill on wet grass and was overworked (*? walking uphill*). May 4, sudden dyspnœa and orthopnœa; urine found to be solid with albumin. May 6, child stillborn, temperature since that varies from normal to 99·2°. Very prostrate, albumin keeps from one-third to half. Fainted on being allowed to sit up. May 18 I saw her for first time. B.D. ·75; pulse 108; C.R. 7; B.P. 115. Temperature 97°. Apex beat two fingers'-breadth outside left mid-clavicular line. First sound long or reduplicated and poor in tone; second sound relatively loud. Some œdema of legs and face. Urine high sp. gr., a few granular and hyaline casts, a few pale cells and some urate crystals, much albumin. (*The only thing that was quite clear here was the weak and dilated heart—was the kidney condition due to an infarct?*) I suggested heart tonics in small, frequent doses, watching results. Next day, May 19, she had had a bad night with abdominal pain, only to be relieved by morphine and atropine injection. Temperature to-day subnormal. Pulse 116; C.R. 7; B.P. 105. Heart sounds same as yesterday. Pupils equal, somewhat dilated, urine rather less albumin. Must be absolutely recumbent till pulse and temperature are normal. She is lethargic after the morphine. Food as dry as possible, chiefly egg. May 20, at 8·30 p.m., had a distinct convulsion affecting the left arm. Urine passed under her, and this was followed by aphasia and some loss of power in right arm. (*We had here a definite convulsion and paralysis due apparently to embolism, a similar process probably to that which produced the dyspnœa and albuminuria on 4th.*) May 21, no more convulsions, but the aphasia and paresis of right side continue. May 22 the heart tonics and dry food were steadily persisted with, and on the whole there was a little improvement and the pulse was slower; the paresis and aphasia continued. Urine at this time yielded 3·3 per cent. of urea and ·8 per cent. albumin, many lozenges of uric acid, a little epithelium, a few pale cells and no casts, urea is only about 1·9 gr. per lb. on 117 lb., albumin about 4·7 gr. per lb. (*This was evidently a local lesion of the kidney circulation, not Bright's disease.*) Fluid was kept as low as it could be without trouble from thirst. Nine days later a doctor neighbour of the patient reported that the dilatation of the heart was much less than at first. Albumin steadily diminishing. I now tried to increase the proteids in the food, always keeping it as dry as possible. Three days later she had a setback for some reason, pulse ran up to 115, and she was very restless at night; this, however, passed off in a day or so, heart tonics being continued and food increased when possible. The blood was examined at this time and showed nearly double the normal number of white cells. After this things went well and urea was increasing to nearly 3 gr. per lb.; she was getting stronger, but the pulse quickened a great deal even on sitting up. Some crepitations had been noticed at the base of the right lung, but this could not have been of much consequence, as the albumin in the urine was now little more than a trace. The apex beat of the heart is now ¾ in. inside left mid-clavicular line. I advised them to go on feeding and keeping urea at proper level, and to be guided entirely by pulse-rate as to sitting up and getting up. A fortnight later she was outside in a garden shelter and food was fairly taken, though appetite was not keen (*one could hardly expect it to be so in hot weather after such an illness and with no possibility of exercise*) Pulse averaged 85 to 106, with occasional runs to 116. It rises markedly on taking food or on sitting up, and there is occasionally some feeling of faintness. I estimated the uric acid in one sample of urine, and its relation to urea was 1 to 35, or normal (*though this was no doubt the result of the feeding up and tonics. Apart from these anyone in such a debilitated condition would be sure to be excreting excess of uric acid.*)

From this time on she slowly and gradually recovered. Four years later I saw her again and she was about and attending to her household duties with some help. She had still some minor signs of heart weakness, but was much better than I had expected to see her, and since that she has had one or two children without mishap. (*It only shows how a heart muscle may recover itself, given time and favouring conditions.*) A year or two later I had a letter from her husband about a patient, and he says at the end of it that his wife has been nursing a baby boy for eight months, the child now weighing 18 lb., and he does not think she could have done it on ordinary diet.

So this patient not only recovered from her very serious condition, but became so strong as to have children and even to nurse them successfully, a feat which many mothers on ordinary diet, who have never suffered from such serious disease, are unable to accomplish.

### *Glycosuria and Diabetes.*

Case 1.—M. M., female, aged 49. Complains of mental depression, of passing much water and being thirsty, and also of some vulval irritation which is at times severe. Has to pass water several times in the night. Pulse feels high tension, and a tracing shows a large and high first wave; rate 108. A morning urine is pale amber, clear, sp. gr. 1035, acid, trace of albumin and sugar 3·8 per cent. Had similar trouble five years ago, when it got better, and went away till she got influenza a few weeks ago, and it then began again. (*Early second collæmic stage precipitated by influenza*). Had rheumatic fever several years ago. There are no signs of morbus cordis now, only the ordinary cardiac signs of collæmia. A week later irritation was still considerable, and there was some superficial ulceration round urethral orifice, probably from scratching. Another specimen of urine gave sp. gr. 1035, and showed a fair purple with iron solution (*I had put her on salicylate of soda*), but there was still a trace of albumin, and sugar was about the same as before (*the salicylate had not begun to act yet*).

I did not see her again, probably she went to another hospital, and I give the case merely for the interesting history of rheumatism and of the onset of her trouble, which it is so easy to translate in terms of collæmia and its results.

Case 2.—J. B., female, aged 33. Complains of thirst and of passing much water. Urine pale amber, very slightly turbid, sp. gr. 1043, acid, urea ·6 per cent., sugar 10 per cent., urea to sugar 1 to 16, uric acid to urea 1 to 30 (a morning urine). A week later she reported herself as better, but urine has a sp. gr. 1045, and shows practically no change. She was told to stop nursing her nine months' old child. Possibly the trouble took origin in parturition and lactation (*i.e., heart strain plus collæmia and secondary congestion of the liver, as explained in previous cases*). She was given salicylate of soda and sp. am. aromat., and she returned in a week saying that thirst and diuresis were both less. Urine had sp. gr. 1040, but amounts were not estimated. I increased the dose of salicylate. A week later was much better, thirst and diuresis less, and feels less dull and heavy (*i.e., less collæmic; salicylates increase collæmia at first, but diminish it later, i.e., by clearing uric acid out of the system*). She passed 20 pints of urine yesterday, but that is decidedly less than it used to be a week or two ago. Urine sp. gr. 1043, sugar 8 per cent. = 13,600 gr., or nearly 2 lb. of sugar in a day. I now gave salicylate four times a day, and the urine next week had sp. gr. 1040, still very pale, sugar 8 per cent., urea ·65 per cent., relation 1 to 12, which is a decided improvement. Two weeks later she was going on well, thirst diminishing, urine yesterday estimated at only 10 pints. Specimen brought, sp. gr. 1040, urea ·9 per cent., sugar 6·6 per cent., which, on 10 pints, gives 739 gr. of urea and sugar 6,098 gr., relation about 1 to 8, or only half the sugar in relation to urea there was at first. (*Combustion had thus evidently improved greatly, for urea is a product of complete combustion, sugar of incomplete.*) She took her medicine somewhat irregularly, and had a bilious attack last week (*rebound of collæmia, effect of intermitting the salicylate*). Fourteen days later was still going on fairly, but has occasional bilious attacks. She has also occasional thirst and diuresis. I wished to take her in, and see what larger doses of salicylates would do, but she did not wish to leave her child. A fortnight later was much the same: urine 10 pints, sp. gr. 1040, urea ·8 per cent., sugar 7 per cent., relation 1 to 9 nearly. I now gave her an acid medicine, to be taken

in addition to the salicylate, whenever a bilious attack threatened. She now did not come for a month, said she had been so well she did not feel the want of any medicine. She looks fat, and has a fair colour. Urine still about 10 pints, and she keeps to diet (*i.e.*, diabetic). The acid completely relieved the bilious attacks. Urine sp. gr. 1042, sugar 6·6 per cent.

I now did not see her for five months, when she came again looking pale and feeble and having been worse without any medicine. Pulse 96, and a tracing showed a considerable first wave and took 5 oz. to develop it; obvious high B.P. of collæmia, and this quick pulse remained all through, quickening whenever she was not so well. She unfortunately brought no urine. A week later when she was decidedly better with less thirst the sample of urine brought showed 10 per cent. of sugar. She says when her thirst is bad nothing under two pints of fluid will relieve her thirst and dry mouth. Three weeks later she had been one week without medicine, is still languid and dull at times, and I gave the acid again for the dulness. Sugar is now 10 per cent. again, owing to the salicylate being taken irregularly. A week later urine gave urea 1 per cent., sugar 5·5 per cent. A week later, urea 1 per cent., sugar 5 per cent., relation 1 to 5. Sugar 4,620 gr.; urea 924 gr. A week latter was less tired and had been taking $\frac{1}{6}$ gr. morphine occasionally to help the salicylate; medicine taken regularly. Urine sp. gr. 1036, urea ·9 per cent., and sugar 5 per cent. A week later going on well, and morphine does good and relieves the tired feeling. A week later urine was only 14 pints in twenty-four hours, sp. gr. 1038, and sugar 5·5 per cent. = 3,898 gr. a day, only about one-fifth of the original quantity. A week later sugar 5 per cent., sp. gr. 1035. Is continuing salicylate and morphine. I now increased the morphine to $\frac{1}{6}$ gr. ter; it had been bis before, and in another week sugar fell to 4·5 per cent. After this she came once while I was away and was given an alkali in place of salicylate, but it did not agree and she threw it away, and on my return salicylate was repeated. Appetite good. Pulse 92, was over 100 when she first came (*but there is still no doubt considerable heart weakness, and this is the factor we probably cannot remove and which prevents complete cure*). A fortnight later the urine in the whole day was only 7 pints, and the sugar in that 3·8 per cent. She was now allowed to give up the salicylate for a time, but to continue the morphine and take some acid; but the sugar soon began to increase and reached 6 per cent. again. A week later she was worse and more tired, also passing more urine, and had lost $\frac{3}{4}$ lb. in weight. Salicylate was resumed, a fortnight later she was better and sugar moved towards a more normal percentage of 3·3 per cent. The weight lost was regained and something was added. (*When salicylate is keeping down sugar in these cases weight is generally gained.*) She now went on well for a little, and the weight touched 8 st. 2 lb. 10 oz., but then urine went up to 12 pints and sugar to 6 per cent., and I found that she had been taking the salicylate irregularly. A fortnight later she had lost 2 lb., and the only possible explanation I could find was that she was somewhat upset by a monthly period which occurred at this time and no doubt increased the collæmia. (*I have often seen it have a bad effect in cases of glycosuria.*) She continued to complain of tired feelings for some time and she was urged to be more careful about her medicine, and the morphine was given three times a day. She did not improve much, however, and I later on discovered that, as her monthly period had not come to time, she had been taking some popular abortifacient pills which had upset her. Urine now sp. gr. 1040, but little salicylate reaction and 5 per cent. of sugar. After this trouble had passed she gained weight again and sugar fell to 4 per cent. A month later the monthly period was again absent and she was being sick and was quite unable to take the salicylate mixture. Urine and sugar have increased and she has lost much weight and looks pale and ill. I gave her a mixture for the vomiting and told her to resume the salicylate if it got better. She did not come for three months and then said that she was five months pregnant; she still had vomiting and was unable to take the medicine regularly. She was looking pale and thin and had lost much weight, in fact she looked nearly as bad as when she first came to me two years previously, and at that time I did not expect her to live more than a month or two. It was all along impossible to make her understand how serious matters were, and she refused to leave her children and come into the hospital where it might have

been possible te do more for her by controlling the gastric condition and administering salicylates in other ways.

Her living so long and gaining weight was undoubtedly due to the salicylate aided by acids, morphine and calomel, and whenever she left it off or even took it irregularly she was worse. The sugar was never reduced to a trace, like the albumin in the parallel cases of Bright's disease, chiefly because the heart was so weak that, even when we got rid of most of the collæmia, circulation remained so poor that anything like complete combustion was impossible. In these days I could have made a better fight for it, especially if the patient had come into hospital; but this was twenty years ago, and one of my first experiences with salicylates in diabetes.

Case 3.—W. H. F., female, aged 8. Complains of wasting, thirst, and nocturnal urination. Temperature slightly raised on admission, fell afterwards. Liver dulness increased, edge felt on admission. Constipation. Bowels act three times a week. Pulse 88 to 100; second sound rather loud. Some fæcal masses in sigmoid flexure. Pulse tracing shows some high B.P. and takes 3½ oz. to develop it. Urine sp. gr. 1045, and 10 per cent. of sugar, no albumin, a trace of albumin was found on one or two occasions. When she was in bed and on ordinary diet a twenty-four hours' collection of urine gave 2,220 cc.; sp. gr. 1040, sugar 5·5 per cent., urea 1 per cent., uric acid ·03024 per cent. = uric acid to urea 1 to 33. Total urea 341 gr.; total sugar 1,878 gr., relation 1 to 5·4. Urea 10·3 gr. per lb. on weight of 33 lb. She was then changed gradually on to diabetic diet, and given only a little phosphoric acid. On this the sugar fell to 5 and then to 4·5 per cent. She was then given soda salicylate gr. x., sp. am. arom. m. xv. four times a day. She got some headache and nausea and went off her food, and the sugar increased. Later there was some improvement, and a twenty-four hours' collection gave 33 oz.; sp. gr. 1030, sugar 3·3 per cent., urea 4·6 gr. per lb. (*a considerable fall*), and uric acid to urea 1 to 29.

It here seemed as if sugar increased with the first rush of collæmia under salicylate; later there was no very large amount of uric acid and it diminished again. Still sugar did not decidedly diminish and she was losing weight (3 lb. since admission).

I tried salicylate in smaller dose and in different ways. Pulse is irregular and occasionally intermittent; there was often a more or less strong acetone reaction in the urine, but urea was better, 15 gr. per lb. I then gradually increased the salicylate again, but she got some diarrhœa and the sugar did not diminish, but remained about 5·5 per cent. Pulse 100, regular; temperature subnormal. Urine gives a strong acetone reaction, 48 oz.; sp. gr. 1047, sugar 6·1 per cent., urea 2·1 per cent., urea to sugar 1 to 2·9 I then tried to increase salicylate, but sugar did not fall below 5·5 per cent., and remained at the relation to urea of 1 to 2·9. At times she had slight diarrhœa, and was given a carminative with opium for it, and sugar then fell a little. Urea to sugar 1 to 2·3. As the diarrhœa tended to return I left off all drugs, and then sugar rose a little. Urea to sugar 1 to 3·3. Then she got a slight rise of temperature for a day or two and it altered to 1 to 2·2. Two days later she was found to have gained 1 lb. in weight and to be now exactly the same weight as on admission. She was again put back on opium and salicylate. Urea to sugar 1 to 3; two or three days later it had altered to 1 to 2·3. When the diarrhœa ceased I stopped the opium and gave codeina gr. ¼ ter, and continued the salicylate of soda. Relation 1 to 2·2. Later codeina was stopped and liq. morph. given in its place, and

salicylate four times a day, and we got relations of 1 to 2·2 and 1 to 2·5. But again she had some little nausea and all drugs were stopped; with this sugar again went up, sp. gr. rising from 1038 to 1042, and the urine increased from 65 to 120 oz., so salicylate and morphine were put back as soon as possible.

Three weeks later she died, while I was away for an Easter holiday, with some symptoms of diphtheria, and, unfortunately, no *post mortem* was made, so we were all left in ignorance as to the cause of the diabetes. The only physical sign was some enlargement of the liver; the frequent nausea was a possible sign of some intracranial disease, but there was nothing else to point to this.

The salicylates in this case had a very small effect; it would not be correct to say that they had none, but their effect was obviously greatly interfered with by the frequently recurring nausea and diarrhœa, which not only prevented their absorption to some extent, but also hindered their action as solvents of uric acid by bringing alkali into the circulation. Then looking at the case in the light of later knowledge I can see that I did not do as much as I might have done for the heart and circulation.

Case 4.—J. W. male, aged 47. Complains of weakness and loss of weight, also of excessive appetite and thirst. Had rheumatic fever at the age of 12 and diphtheria a month ago. He has been conscious of above symptoms for from five to seven months. Fairly nourished; complexion bright-coloured and vascular. Pulse 65 to 80. A tracing shows very distinctly high pressure, the predicrotic notch being in the upper one-third of upstroke and it took 5 oz. to develop it. The first sound is reduplicated over the septum and the second sound is loud everywhere. Urine 68 oz., sp. gr. 1040, urea 2·4 per cent., sugar 5 per cent., relation 1 to 2. Weight 8 st. 2 lb. 10 oz. Up to admission he had been taking salicylate of soda and on diabetic diet. He was now given ordinary diet with diminished bread and no potato, and drugs were suspended. With this urine increased to 170 oz., sp. gr. 1048, urea 1·2 per cent., sugar 7·1 per cent., relation 1 to 5·9. He was then given salicylate and sp. am. arom., but ordinary diet was continued. Urine then fell to 135 oz., containing urea 1·6 per cent., sugar 12 per cent., relation 1 to 7·5, and the patient said he felt better and less thirsty.

I did this because ordinary diet, with some bread, favours the best action of salicylates by keeping up acidity, just as dyspepsia hindered their action by lowering it in the last case, and I wanted to see what they would do for the sugar under these conditions.

A few days later the relation altered to 1 to 4·5, and he was going on well and the urine diminished to 112 oz. I then increased the salicylate dose from 15 to 20 gr. four times a day, and urine fell to 108 oz. and relation as before. I then added some acid and nux vomica before meals, but urine increased to 140 oz., relation to 1 to 7. Urine does not show much salicylate reaction (*is he having his medicine regularly?*). Pulse tends to quicken a little. Five days later when the dosage of medicine had been quite accurate relation had fallen to 1 to 4·5, and the urine now showed a stronger salicylate reaction. I stopped the acid and nux vomica and gave $\frac{1}{4}$ gr. morphine in pil. in place of it; but three days later morphine apparently caused vomiting and was discontinued. Pulse 72. Urine 70 oz., sp. gr. 1047, urea to sugar 1 to 5.

This relative increase is no doubt the result of the vomiting and nausea, as total urea is down considerably, owing to diminished absorption and combustion (*i.e.*, as combustion diminishes, sugar

increases—rule). Hence the importance of examining both urea and sugar.

Three days later urine 156 oz., sp. gr. 1043. Urea up again, and sugar relatively down, relation 1 to 4·2. Seven days later urine 152 oz., relation 1 to 5·5. He now wished to go out and attend as an out-patient, so my observations came to an end. His pulse remained slow on salicylates, and he gained 1 lb. 12 oz. while in hospital. Temperature steadily subnormal (*sign of defective combustion, and, no doubt, C.R. was slow*). The largest quantity of urine was 192 oz. when he was first put on ordinary diet. On salicylate the smallest was 70 oz., and the largest 188. (*Here salicylates had a fairly powerful effect, and there was no marked heart weakness, and but little dyspepsia*).

Case 5.—J. M., male, aged 40. Complains that he does not feel up to the mark, and has been told that he has sugar in his urine. Has some little pain in left lumbar region, and cannot lie on left side. Mother died of cancer, one sister of phthisis, father gouty. Large family, some gout, rheumatism, and catarrh. No diabetes. Weight 9 st. 13 lb. Tongue coated. Urine full amber, sp. gr. 1030, acid, slight red sand, no albumin, but slightly reduces bismuth, perhaps ·5 per cent. of sugar. His apex beat is in left nipple line. First sound reduplicated, second sound loud. Pulse 60. Liver dulness full size. (*No doubt a high B.P. collæmic circulation and some congestion of the liver.*) A urine passed at my house, 6.30 p.m., had sp. gr. 1024, and contained sugar to extent of 1·1 per cent. There is no excess of thirst or appetite. I advised him to go and see Dr. Pavy, which he did, and was put on a printed anti-diabetic diet and ¼ gr. of codeina, increased to ⅓ gr. at next visit, night and morning, and a mixture of potash, sp. am. aromat. and cusparia, and he soon began to feel better.

Three months later he again got me to examine his water, which at night had sp. gr. 1025, and contained ·33 per cent., and morning 1017, and contained ·25 per cent.

Two years later I again saw him. He had done well on Dr. Pavy's treatment, and was said to be cured; no drugs at all now for twenty months, but ten days ago again suffered from lassitude, and sugar was found in the water. Urine to-day sp. gr. 1033, sugar 1 per cent. Is on ordinary diet, except that he avoids bread and sugar. Two months ago he fainted three times from a slight shock. I now gave him salicylate and ammonia, as in previous cases.

A fortnight later urine sp. gr. 1032, sugar ·05 per cent. at most; he felt well, and was sleeping better on the medicine. Like many collæmics, he had suffered from insomnia.

Two years later he came, and brought a morning urine, sp. gr. 1030, sugar 4 per cent.

Fifteen months later he again came, feeling very seedy. Weight 9 st. 12 lb. Urine sp. gr. 1030, sugar ·5 per cent. Still has some pain in left lumbar region (*? due to constipation, which continues*).

This patient refused to go on U.A.F. diet, so I could do nothing permanent for him. Though he was "cured" by codeina, it was only for a time, and he relapsed, and the same on salicylate. I should not expect salicylate to do more unless followed by correct diet. It is now thirteen years since my last note, and the patient is still alive in ordinary health, neither very good nor very bad. His glycosuria has never been more than a quite slight and intermittent one. He was undoubtedly collæmic, and could have been quite cured on diet; now he will probably show from time to time other results of collæmia, even if his glycosuria does not increase.

I think that this was a true glycosuria, as I have never seen uric acid and creatinine appear to account for so much as 1 per

cent. of glucose, and personally I believe that temporary glycosuria is not uncommon in collæmic subjects, a simple result of collæmic congestion of the liver.

Case 6.—H. M., male, aged 41. Complains of thirst and much water and loss of weight, which began twelve months ago after injury to wrist in a hunting accident. Lives a regular and quiet life, some hunting and shooting. Has cramps in legs and some eczema also. Five years ago had a bad bilious headache and vomiting in the early morning. Has also injured his knee when hunting. Complexion somewhat bronzed. Is thin and has evidently lost several stone in weight. Pulse 84, artery tough and tortuous, but tracing shows considerable tension and takes at least 3 oz. to develop it. Apex beat is to left of nipple line and second sound is rather loud. Liver is much enlarged, 7 in. in nipple line; the spleen is also enlarged and the edge can be felt. Urine sp. gr. 1028, much sugar and a trace of albumin. Is 5 ft. 11 in., and only weighs 10 st. 1 lb. Has been taking salicylate but in too small doses to have much effect; is not on a very strict diet at present, and eating a fairly large amount of porridge every morning. Urine of twenty-four hours 120 oz., sp. gr. 1042. Sugar by fermentation 37 gr. per oz. He has been rather better and had fewer cramps on an increased dose of salicylate. Has gained 2 lb. in weight. I advised addition of morphine or mercury to the salicylate if necessary; and he went back to his own country, as he was only passing through. I give this case to show the kind of circulation one meets with in such cases.

Case 7.—J. P., male, aged 32. Got a severe cold three months ago, which was followed by thirst. The thirst came one month after the onset of the cold (*i.e., post-influenzal collæmia*). His mother died of diabetes, aged 50; it came after a great fright (*also a cause of collæmia and heart weakness*). Previous health good; occasional colds in winter. Is now on a diabetic diet and some pills, and keeps well while on these. Complexion clear and ruddy and tongue clear. Pulse 78, some high pressure; apex beat just to left of left nipple line; first sound long or reduplicated, second sound loud. Liver dulness full size. No cough now. Urine as brought, high coloured, acid, much deposit of urates, sp. gr. 1037. Urea 3 per cent., sugar 2·5 per cent., 1 to ·83. He lost 8 lb., but has regained it on present treatment. I advised him to continue the treatment, which was codeina, as long as his weight kept steady.

Three months later I got a specimen of urine 2,230 cc. in twenty-four hours, sp. gr. 1040, neutral, sugar 4 per cent. = 1,373 gr., urea 2·6 per cent. = 891 gr., relatively 1 to 1·5.

Five months later I again saw him, and he was now obviously very weak and shaky, and had lost weight. Urine, part of 100 oz., sp. gr. 1037, albumin a trace, sugar 3·5 per cent. = 1,600 gr., urea 1·2 per cent. = 550 gr., uric acid 30 gr., relatively 1 to 18; urea to sugar 1 to 2·9, a great increase. Acidity was very high and equal to 179 gr. of oxalic acid. Acidity to urea 1 to 3·1, or more than double the ordinary ratio. I advised no change of treatment, but an increase of food, especially in the form of milk, as urea was so low, being 400 gr. below its level at the previous examination. Two days after I last saw him he got diabetic coma and died.

So the high acidity and low urea I found are very interesting. In several cases I have been able to ward off fatal coma for a time by pushing milk so as to run up urea; but my advice came too late in this case. I did not put him on salicylates when I first saw him because I did not feel that much could be done, and did not wish to alter a treatment on which he appeared to be almost holding his own. When I saw him the second time it was too late to do anything, and he had been allowed to fall too low to stand the

salicylate. After all the utmost salicylate would have done would be to prolong life a little. I believe we shall eventually cure such cases by salicylates, diet and circulation treatment; but I had not got a grasp of all the points at this time.

Case 8.—M. J., male, aged 40 (medical). Two years ago began to suffer from depression and tendency to take stimulants, but this was cured by leaving off meat. He then unfortunately got glycosuria, which Dr. Pavy treated and cured by a meat diet. Now he has no sugar, but the crave for alcohol is returning, so he wants to know how to get away from both troubles. Is well nourished, face vascular. He says he always knew when he was passing sugar by a feeling of heat and tenderness in the region of the liver, and if sugar had been absent and came on again this feeling would accompany it. I examined the urine and found a minute trace of some reducing substance which blackened bismuth, but almost too small to estimate (·25 to ·5 per cent.).

I said that judging from present evidence there was no sugar at all, only uric acid and creatinin. I could not say what there had been in specimens I had not seen, but that it appeared probable that he had never had sugar, but only excess of uric acid from his meat diet. I said that if this was so the U.A.F. diet would remove the so-called sugar, but if it was a real glycoscuria then U.A.F. diet might increase it, and that the only course was to try and see what happened while watching the urine carefully. It was not certain that U.A.F. diet would increase the glycosuria, because undoubted cases of glycosuria have been cured by a non-flesh diet (see the late Dr. G. Keith, *Lancet*, 1902, vol. i., p. 589), but in this case of Dr. Keith's the glycoscuria came on upon a non-flesh but not completely U.A.F. diet.

He was given salicylate for a week or two, and meat was at the same time slowly reduced and left off, and I had a sample of urine to examine every week. By the time he had got to the end of his meat the reducing substance had practically disappeared, and the drugs were then left off, and it still remained absent; U.A.F. diet was adopted, and continued more or less strictly ever since (*sixteen years*). This patient is alive and well to-day, and has had no return of either of his troubles, no stimulant crave, no reducing substance in the urine nor any discomfort in the liver.

The case is a most interesting one as it gives us the correct etiology of a stimulant crave, and also of a true or false glycosuria (which I am unable to say), but fortunately as regards treatment this does not matter, as U.A.F. diet cures both: but my impression is that if it had been glucose in this case it would have increased a little on first changing diet, and only diminished and disappeared later when the circulation improved on diminishing collæmia, and when the recurrent congestion of the liver (again a most interesting history in this case) came to an end.

Case 9.—F. R., female, aged 21. Complains of passing a very large amount of water and having a large appetite. Urine 166 oz., pale amber, turbid,

sp. gr. 1038, acid, urea 1·7 per cent. = 1,302 gr., sugar 5·5 per cent. = 4,204 gr., relation 1 to 3·2. Soon after admission she got a gastric upset and went off her food, and then she became comatose and died. She had a sister who died of the same disease. Body moderately wasted, rigor present. Abdomen distended and discoloured. Brain normal. Blood fluid and distending the veins in all dependent parts. Heart small and pale and left ventricle very soft and flabby. Lungs, marked œdema of right lower lobe. No tubercle, no enlarged glands, no pleural adhesions. Liver 3 lb. 10 oz., large and tough, thumb penetrating with difficulty; veins engorged. Stomach left end and duodenum veins similarly engorged. Pancreas soft, flabby, if anything rather wasted. Kidneys slightly tough, capsule peels well and shows cortex marbled with congested veins. Pyramids dark and congested. Spleen slightly large, dark, soft and pulpy. There are several enlarged glands in the mesentery and one high up in front of spinal column just below the pancreas and corresponding to a part of the jejunum, is hard and calcareous, the size of a cobnut. The colon was full of large and hardened masses of fæces and possibly these were the cause of the final gastric upset; there were also signs of intestinal irritation in the lower iliac and cæcal regions.

Here we have everywhere signs of chronic congestion, most marked in liver, spleen and kidneys, and we see that she was in the first collæmic stage of life, when also we get anæmia and deficient nourishment of the heart muscle (as found). The rest is simple: collæmia, anæmia, weak heart, congestion of liver and all chylopoietic viscera, and diabetes is the result; on this there supervenes a gastric upset, possibly a result of constipation, we get increased collæmia, falling urea, greater heart failure, cerebral œdema, coma and death. Some might attribute the result to the cretaceous gland irritating the great abdominal nerve centres, but I think the *post mortem* as a whole is more in favour of a collæmic causation with an originally small and weak heart, and it is more likely that the sister who died in the same way had a defective heart than a similar cretaceous gland. In all cases of diabetes that I have seen, the most prominent sign *post mortem* is the congested liver, and during life the most marked signs are invariably those of collæmia and a weak heart, which explains the congested liver. It is the heart weakness which alone stands in the way of complete cure by salicylate and diet, just as it prevents the cure by retentives and diet in the parallel case of defective combustion of albumin (Bright's disease).

Case 10.—M. A. H., male, aged 57 (medical). Complains of glycosuria, debility and loss of flesh. Sugar first found some fifteen months ago, and was put on Pavy's diet. Has lost 14 lb. in fifteen months. Has been a great eater of meat three times a day. Suffers from uric acid storms, when the skin is cold and shrivelled. One brother had epileptic fits as a child (*he also suffers from uric acid storms*). Suffered with headache from 20 years of age and onwards, generally one in a month (*the fons et origo mali, migraine*). Had jaundice three years ago (*possibly catarrhal and a result of collæmia plus catarrh*). Malta fever twenty-three years ago. Influenza three years ago (*was this the precipitating cause of the chronic collæmia which ended in liver congestion, heart failure and glycosuria of second collæmic stage?*). Headaches may be hemicranial, occipital

or frontal. Eyelids slightly puffy. Has had tinnitus in left ear for three years, came after a cold. Sleeps fairly, temperature subnormal, pulse 100 (*again heart failure*). Apex beat just outside left nipple line (*effects of chronic collæmia*). First sound rather long, and second somewhat loud (*probably C.R.* 10; *B.P.* 150). Liver dulness is enlarged, and it is palpable two finger-breadths below the ribs. At first he went on codeina and diabetic diet and the sugar was soon reduced to a trace; since that no drugs. Urine sample sp. gr. 1030, acid, no albumin, sugar = 2·5 per cent. I advised him to continue present diet and to take some salicylate and an acid mixture as well. The urine I got a week later was part of 64½ oz., strongly acid, sp. gr. 1022, sugar 1 per cent. = 277 gr. per day. I now left off the acid mixture and increased the salicylate.

Seven days later urine 60 oz., sugar ·75 per cent. = 193 gr. Patient begins to feel better and stronger.

A month later, weather being very cold, urine was 80 oz., and sugar ·7 per cent., a quite small amount. Six weeks later urine 74 oz., sp. gr. 1016, sugar only ·46 per cent.; colour and appetite was good, and he was gaining weight. Diet as before, except that he is slightly diminishing the butcher's meat. I advised him to read Dr. Dewey and consider the possibility of improving combustion by going on two meals a day. Two months later urine from 43 to 66 oz., sp. gr. 1016, sugar a trace only, is continuing salicylate and taking a small dose of hydrarg. cum creta night and morning. Has increased at least 2½ lb. in weight; pulse about 90; heart, second sound less loud. Liver still palpable, but smaller. Patient has himself noted that his heart acts more slowly.

All this was thirteen years ago; such a case I should now put on two meals a day, and diminish fluids as far as might be possible, and I should not be satisfied till by these means and by heart tonics I had got the pulse rate to normal, and the heart and liver to normal size; and then U.A.F. diet would keep things right; but on ordinary diet he would be certain to relapse again, as a heart that had once failed under collæmia would be sure to dilate again if the collæmia returned.

Case 11.—A. M., male, aged 52. Complains of diabetes, worse of late, and in hot weather (*i.e., increased collæmia and heart failure*). Sugar first noted six months ago, was much worried before it began ("*much worried*" *is both a cause and effect of collæmia, and here we have the relation of worry to many diseases*). Has lived "well," and eaten much meat. Generally drinks whisky, occasionally claret. Father had rheumatic gout, and lived to 87. Mother had liver troubles and lived to 81. Always well till two years ago, when he had influenza; since that has had bilious attacks, and liver out of order, (*i.e., collæmia of second stage brought about by influenza and weak heart*). Fairly well nourished. Nose and face vascular (*signs of venous congestion*). Pulse 84, second sound relatively loud. Liver covered by emphysema, edge not felt. Has much wind at times. Bowels act only with medicine or salts. Is on codeina and diabetic diet; the former seems to be losing its effects.

All retentives do so, and that is one reason why it is more hopeful to cure with solvents (salicylates), which eliminate, as retention is only possible for a time. In Bright's disease retentives lose their effects, and if albumin is not reduced while they are acting it is rather hopeless. Salicylates are useful in Bright's disease also after the first collæmia has passed off.

Urine 55 oz., sp. gr. 1033, sugar = 3·8 per cent., weight 10 st. 5 lb. Is taking a little toast, diet otherwise strict. I gave salicylate without alteration of diet.

A week later sugar had fallen to 3·1 per cent., and I gave small doses of

calomel in addition to salicylates. The salicylate was then given four times a day, and calomel to be continued so long as it does not act on the bowels. Urine runs from 65 to 70 oz. a day. A week later, urine had fallen to 59 oz., sp. gr. 1029, containing 2 per cent. urea and 1·7 per cent. sugar, urea to sugar 1 to ·8, and urea per lb. 3·8 gr. Pulse steady at 84.

A week later, 64 oz., sp. gr. 1024, urea and sugar both 1·6 per cent. Weight 10 st. 1 lb. 8 oz., but not falling in the last week. Appetite fair only.

A week later has left off calomel by mistake, and has had some nasal catarrh. Urine 68 oz., sugar 1·6 per cent., urea 1·5 per cent. He then had a little abdominal pain, worse after meals, so the calomel was left off, and a little codeina given with the salicylate; urine 65 oz., urea 1·9, sugar 1·6 per cent. Feels better and the weight is steady.

A week later, urine 64 oz., sugar 2·1 per cent., urea 2·3 per cent., weight 10 st. 3 lb., *i.e.*, an increase. Is taking more codeina, which is causing some constipation and consequent pain in the abdomen.

A week later, urine 64 oz., sp. gr. 1026, urea 1·8 per cent., sugar 2 per cent. Bowels act more freely as result of a pill. The liver was now palpable just below the ribs; pulse 80, heart sounds as before. When calomel causes pain he takes codeina for a little. Salicylate continued.

Two weeks later, codeina was stopped, and acids and nux vomica substituted. Next week urine 68 oz., sp. gr. 1026, sugar 2 per cent., urea 1·9 per cent. I now advised him to try and substitute milk and curd for some of his meat, and to get milk without sugar. He found Koumiss digest more easily than milk. A week later, urine 57 oz., sp. gr. 1027, urea and sugar both 2·2 per cent. Find he has been taking beef tea and ordered it to be left off at once (*it was just counteracting the salicylate. It takes time to sound the depths of ignorance and folly*). He was to substitute milk curd, Koumiss and cheese for some of his flesh foods. A week later, urine 52 oz., sp. gr. 1037, urea 2·5 per cent., sugar 3·3 per cent., an increase of sugar. Has been taking too much whey with his curd. A week later, urine 56 oz., sp. gr. 1023, urea 1·5 per cent., sugar 2 per cent.

Here urea had fallen perhaps owing to deficient quantity of milk foods; it increased again however a few days later. And so he went on for some time, occasional dyspepsia diminishing urea, but urea and sugar keeping much the same relations to each other; his appetite was only poor, and he did not take to the new foods. (*He had lived too "well," and not simply enough.*)

He is still taking a little coffee twice a day. The tendency is to lose weight and he is now 10 st. Then he felt better for a little. Urine 60 oz., sp. gr. 1028, urea 2 per cent., sugar 1·6 per cent. A week later they were both 1·6 per cent., and he went to Hastings for a change. Then in the bad weather of early spring urea fell to 1·5, sugar being 2·2 per cent. Exercise deficient, appetite poor. Then he did better for a time and gained 2 lb. in weight; urea 1·5, sugar 1·8 per cent. Then he was again troubled with constipation and dyspepsia. He thought the salicylate lowered him and took less of it. A month later he got a cold and was ill with it, and then urine went up to 80 oz., urea 1·7, sugar 2·9. per cent. I then gave him some uranium nitrate for a time, but he did not like it, and went back on salicylate of his own accord. There was little change: urine 68 oz. sp. gr. 1028. Later he again tried uranium, but it appeared to cause buzzing in the head and nausea, so it was again left off in favour of acids and salicylate. About a month later urine was 64 oz., sp. gr. 1032, urea 1·7 per cent., sugar 3·5 per cent., but he said he was feeling better in himself. Then as the weather got warmer (*May*) it tended upwards to 72 oz., and sugar showed a slight relative decrease to 2·7, urea being 1·5 per cent. He began to sleep less well and talked of going to Carlsbad. Later on, however, he did not feel equal to the journey and in spite of urea keeping at 470 to 500 gr. he was getting weaker and going downhill. The last specimen I had was part of 68 oz., sp. gr. 1026, urea 1·5 per cent., sugar 2·5 per cent. He was then unable to come and see me and died in the course of a few weeks with some pneumonic trouble at the end.

Here salicylate kept down the sugar for quite a long time to the same level as urea, but he was practically never able to relax the strictness of his diet, and weight, with occasional exceptions,

tended downwards. Had I been able to alter his diet and reduce his poisons to a little meat or fish once a day he might have done better. I think he would have lasted longer if he had had salicylates from the first in place of codeina, which, when he came to me, had increased constipation and more or less destroyed appetite; as it was he only lived eleven months from the time I first saw him, and I think that as a rule cases on codeina do not live as long as those on salicylate. Of course salicylate, as this patient remarked, is a depressant and does not tend to make the heart muscle stronger, yet its depressant effect is chiefly due to its combination with uric acid, and, if uric acid could have been diminished by diet, this effect would have been less marked. Yet even at the worst salicylate is not so depressing to the general metabolism as the presence of a large amount of sugar in the blood.

Case 12.—E. R., female, aged 29. Complains of loss of weight for nine months. Abdominal pain three months. Father died of phthisis, aged 47. Mother well except for headaches and bilious attacks. Mother and one brother deaf in left ear. Patient has had bilious attacks since childhood, every three weeks. Has headache sometimes followed by hysterical fits, *i.e.*, when the heart gets tired of the collæmia. Sleeps well, pulse 92. Apex beat a little to the left, second sound slightly loud at aortic base. Abdomen distended. Pain in left inguinal region, tender all over, bowels act fairly well. Liver dulness increased, spleen dulness a little increased. Urine 100 oz. in twenty-four hours, sp. gr. 1040, much sugar. Legs no œdema. She was put on salicylate and a small dose of calomel bis, and both water and sugar diminished slightly, but there was no time to do more as patient's family were leaving London for the North, and she wished to go with them.

(*I give the case for its interesting history of migraine in both patient and her mother, and the signs of heart weakness shown by the quick pulse and the history of the hysterical fits.*)

Case 13.—F. E., male, aged 54. Complains of kidney troubles and headaches. The first symptoms were swelling of legs and feet and headaches (*just like the onset of Bright's disease*), about eight months ago. Used to have headaches occasionally before that. Mother, aged 80, has some softening of the brain (*i.e., a weak heart*). Was bilious as a young man, and up to twenty years ago. Had scarlet fever as a child; he was much debilitated before he went for his holiday last year, and then the trouble began (*i.e., heart weakness and failure under chronic collæmia of second collæmic stage*). Is pale, and skin of face is puffy and slightly erythematous in parts; B.D. ·85. Appetite fair, but has been keeping off butcher's meat of late. Sleeps fairly now, but did not till two weeks ago. Pulse 112; C.R. 10; B.P. 190. Apex well outside left nipple line, impulse diffused, first sound long, second sound loud. Has always had a sluggish liver all his life (*i.e., chronic collæmia*). Piles twelve months ago, better now. Liver probably enlarged, but covered by emphysema. Micturition generally once in the night, urine sp. gr. 1018, a cloud of albumin, and sugar 3 per cent.; weight 12 st., steady at present. (*Here we have both albumin and sugar, defective combustion of both; the obvious cause of defective combustion is collæmia and heart failure*). Present diet includes fish or fowl once, tea once, and whisky once a day; is probably underfeeding. Says he now dislikes meat, was on ordinary diet up to six months ago. Was a great smoker till this trouble began. When younger took a good deal of stimulant, chiefly whisky. I advised salicylates with iodide and some calomel night and morning; diet as at present; but to take enough proteid, and increase fish and fowl rather than starve.

Here, again, we have a marked history of chronic collæmia and headache, and we find a large heart, very slow skin circulation, and high B.P., together with the signs of failing heart and its results, defective combustion of albumin and sugar. Possibly still curable, but he did not give me a chance, and most likely went for codeina, strict diet, with excess of poisons and early destruction.

Case 14.—T. M., male, aged 63. Had diabetes in the spring of last year; then in the autumn rheumatism suddenly came on, and diabetes went or got better, and rheumatism is now his chief trouble. Pains now are worse in the morning and in bed, go away as day goes on (*collæmic arthritis*?). His father had rheumatism. Was a healthy man till late years. Had influenza, followed by gastric catarrh, and diabetes followed that (*the bearing of this on the causation of collæmic and defective combustion is obvious*). Is stout, face flushed, and vascular (*venous congestion*). Conjunctiva slight yellow tint. Sleeps fairly, or would do so if not for pains. Appetite poor, especially for breakfast. B.D. ·8; pulse 96; C.R. 7; B.P. 135. Apex beat diffused, first sound long, second sound loud. Has some flatulence, bowels act once a day, no piles. Took codeina for the diabetes. Micturition once in the night, urine passed here full amber, sp. gr. 1029, acid, albumin, ? trace, reduces bismuth, sugar not estimated. Weight 12 st. 4 lb., once was 16 st. Present diet: meat twice, soup twice (very fond of it), egg or bacon once, whisky and soda twice, cocoa once. I gave aspirin gr. xv. ter p.c., and advised him to give up soup, and to take cocoa as a mere flavouring. I then got a sample, quantity not mentioned, sp, gr. 1027, strongly acid, a trace of albumin, sugar 3·3 per cent. I increased the aspirin to four doses in twenty-four hours.

Seven months later I saw him again. He says he is well, except for a little stiffness about the ankles and knees, and some nasal and throat catarrh in the mornings. Sugar fell to 1 per cent. on the aspirin three months ago; has not been taking it regularly of late. Pulse 86; C.R. 9; B.P. 110; B.D. ·85. Has some flatulence in the morning, but is not thirsty now. Present diet: meat once, fish or bacon once, soup once. Urine passed here 10 a.m. sp. gr. 1028; full amber, clear, acid, sugar 3·3 per cent., no salicine reaction, no albumin. I advised him to go on with the aspirin regularly, as it will keep down both the rheumatism and the sugar, and to make his diet still more U.A.F. When sugar is at or below 1 per cent. may increase his breadstuffs, especially in the evening.

The case is interesting, as it appears that the sugar diminished very decidedly and ceased to cause anxiety with the onset of the arthritis: *i.e.*, the codeina caused some storage and this diminished collæmia and the glycosuria, its result.

Case 15.—M. B., female, aged 26. Complains of pain in back and stomach which is increased by food. Began to have great thirst (7 to 8 *or* 10 *pints a day*) about two years ago. Father and sister died of diabetes, one brother and one sister well. Vomited two or three round worms eight months ago. Headache now and again all her life. Had diarrhœa last summer in the heat, neuralgia and dental pain in the winter. Skin hot and dry. Lost much hair two years ago when diabetes first came on (*sign of collæmic circulation*). Is mentally irritable and very nervous, especially when tired (*signs of heart failure*). Nights bad and restless, sleep deficient, appetite poor of late, tries to make up with Plasmon biscuits. B.D. ·75; pulse 108; C.R. 10; B.P. 135. Apex beat slightly to left, second sound relatively loud, *i.e.*, first sound poor. (*She would have high B.P.* (200) *if heart were strong enough to produce it* [*virtual tension*].) Has slight cough in morning and had a bad cold three months ago. (*Probably this cold did harm, by helping to dilate right side of heart and increase venous congestion.*) Liver dulness full size, stomach down to umbilicus. There is some dulness in

left flank, probably fæcal, and this is at least a part cause of the pain and distaste for food. Micturition once in night. Menstruation irregular, missed eight months but returned last week. Urine passed 4.30 a.m., sp. gr. 1040, pale, sugar 10 per cent. Weight up and down, now 9 st. 1 lb. 10 oz., was 11 st. three years ago. When she gets worried she gets thirsty (*i.e., collæmia and its effects on brain and liver circulation, the latter producing an increase of sugar in the blood and hence thirst*). Present diet—meat twice, egg once, tea twice, beer once. Used to be very bright, not so lively now as she used to be, often depressed. Has been taking codeina and cascara. She went on milk and U.A.F. diet from April to October of last year, and she increased in weight and diabetes got better and thirst less, but her aunt made her go back. Fortunately for the aunt I did not see her. I gave aspirin and advised her to leave off tea and beer. Ten days later she said she had had a good deal of depression, and the more she drinks the more she must drink (*i.e., fluid increases congestion, and congestion of liver increases sugar in blood*). Pulse 112 : C.R. 10; B.P. 125. The abdominal and leg pain have diminished on the aspirin. I now added some phosphoric acid and strychnia for her depression and heart weakness. The urine received two days later had sp. gr. 1030, and contained 7·1 per cent. of sugar, a decided improvement. Ten days later sugar had fallen to 5·5 per cent. and the fluid now taken was only 4½ pints per day. She had lost some weight, but probably part of this was due to the diminished fluid taken. Eight days later she had some dental trouble and sore gums and was upset for a day or two. Pulse 100; B.P. 115; urine, sp. gr. 1030 to 1035, and sugar about 5 per cent. On the whole she is doing well on the aspirin and tonic, and the pulse is slowing. The sugar has diminished to about a quarter of what it was at first, as the water is only half what it was, and the percentage is also half of that at first. She is taking plenty of aspirin as the urine gives a strong salicylate reaction. Soon after this she went to see her people in Normandy and never returned. I heard that she died a month or two later; perhaps the aunt had again been altering the treatment.

Here again we had every sign, collæmia, dilated heart and stomach, congested liver, and first diet and then aspirin, which diminished the collæmia, did good. These cases all correspond with the *post mortem* given above (Case 9), and the causation in all is the same—collæmia complicated by heart failure, producing congestion of the liver and of all abdominal viscera behind it.

Case 16.—H. W., male, aged 37. Complains of having sugar in the urine, and of being put on codeina and diabetic diet for five or six months. Has some stiffness and pain in the back. Father died of typhlitis and thrombosis. Mother alcoholic, one sister an invalid, owing to weakness and dyspepsia. Had scarlet fever as a child, influenza some years ago, digestion always poor. Face flushed and vascular. Suffers from a feeling of pressure of blood in the head when he does mental work. Smokes a great deal as it helps him with his work, which is entirely literary and sedentary. Sleeps well and can do seven to ten hours, goes to bed early. C.R. 10; pulse 88; B.P. 120 (*artery difficult to get at*). Apex beat in nipple line, first sound reduplicated, second sound loud. (*Possibly his B.P. has been underestimated owing to difficulty of getting on the artery*). Is now lethargic and disinclined for all exertion (*this is the result of a C.R. of* 10 *and a quick pulse, i.e., defective intracranial circulation, of which the feeling of pressure is a sign*). Has a good deal of flatulence, bowels only act with Kutnow. Urine reported to be sp. gr. 1038, no increase in quantity, no albumin, but some sugar. Sample was full amber coloured, sp. gr. 1023, acid, no albumin, no sugar. I had nothing, therefore, but the history to go on. Weight 9 st., used to be 9st. 7 lb. Present diet: fish twice, fowl once, egg twice, coffee once, whisky twice a day. Is fond of puddings and cakes and now craves for them. Very fond of beer and smokes much still. Finding no sugar I looked on the matter as a temporary glycosuria or possibly a mere temporary excess of uric acid and extractives causing a reduction. I advised him to go slowly back to bread and send me a sample of urine every week; to diminish and leave off codeina.

Three weeks later, has eaten a little bread, urine sp. gr. 1029, sugar present, no albumin. C.R. 10; pulse 80; B.P. 115. Urine passed here turns Nylander a brownish black and Pavy's solution says 1·4 per cent. of glucose (?) Is still taking codeina. A fortnight later urine sp. gr. 1022. Sugar varies in two or three specimens from nil to ·6 or 1·2 per cent. (*There was thus no increase of sugar on taking bread.*) Three weeks later, has had a cold which ended in laryngitis, now better. Has been taking chemists' medicine and lately some quinine and iron, no codeina. Has been eating as much bread as he wants. Has no thirst. Urine sent sp. gr. 1020, acid, browns Nylander, and contains only ·7 per cent of sugar. (*So the sugar, if sugar at all, is diminishing in spite of an increase of bread.*) I advised him to go on and eat as much bread and bread-stuffs as he likes. Six weeks later he reported that he had been eating bread as freely as he ever did, that he was getting steadily better, and that his weight had gone back to normal 9 st. 7 lb.; pulse 72; C.R. 8; B.P. 125; urine sp. gr. 1020, turns Nylander a greenish brown, and shows ·6 per cent. of glucose, if glucose it is. He is still taking fish, fowl, and coffee, and I advised him to move slowly in the direction of the U.A.F. diet.

The patient thought no more of the glycosuria and kept in good health on a more or less U.A.F. diet. Five years later he died of acute intestinal strangulation. My son was called in and promptly obtained surgical aid, but he died of shock before anything could be done, and the *post-mortem* examination showed volvulus of the entire jejunum and ileum, which even on the *post-mortem* table could not be reduced until the abdomen had been almost completely cleared.

Was this a glycosuria cured by the U.A.F. diet? Against this it may be said that I made no alteration of diet except to increase the bread, which should have increased glycosuria; or was it merely an excess of uric acid causing reduction of bismuth and copper, and did the excretion of uric acid, as is probable, diminish on increasing bread as nutrition improved and acidity arose? It resembles Case 8 and had the same ending—complete cure.

Case 17.—M. A. G., female, aged 19. Complains of pain in the back and head due to sleeping in a damp bed three years ago. Sugar was found in urine after this, alternating with urates, sp. gr. 1030 to 1035. Droitwich baths no use, Weir Mitchell treatment for neurasthenia also no use. Father and mother have occasional dyspepsia, and mother is said to have glycosuria. No headaches in the family. Had a fall from a horse three years ago, but had headaches before that. Head troubles begin by being dull and heavy for two or three hours, then when the pain in the head is very great the face gets puffy, and both pain and puffiness subside together. Pain is worst in the morning and in heat. B.D. ·75; pulse 84, second sound loud; C.R. and B.P. not observed. Has occasional dyspeptic pain and flatulence. Menstruation regular, scanty, no pain. Urine sample sp. gr. 1024, acid, no albumin, reduces bismuth and copper equal to ·5 per cent. glucose at most. Microscope of pale deposit, small oxalates, epithelium and mucus. Uric acid to urea 1 to 19. (*So there is an excess of uric acid in this specimen.*) There is some tenderness at back of neck, fourth and fifth cervical spines. (*Is the pain rheumatism, neuralgia or neuritis? Neither massage nor rubbing have done any good.*) Present diet consists of some milk, eggs, fish and meat or game twice a day, and tea twice a day. She had some headache while here, so I drew some blood and estimated the uric acid granules; they were 1 to 12, which is not a great excess for a morning hour. I gave some bromide and salicylate for the head, and decided to try retentives later if necessary. I then got morning and evening samples of urine, the morning sp. gr. 1020, only slightly affects bismuth, not so much as glucose would. Evening sp. gr. 1030, rather more effect on bismuth, (*i.e., the effect was proportional to the sp. gr., whereas real sugar would probably have shown most in the morning, from which I argued that it was not glucose*). I, however, referred the question to Mr. J. E. Saul, F.I.C., who examined the urine, and thought that it showed the fraction

of a per cent. of glucose. He seemed to think that reduction of bismuth was definite evidence of sugar, but, as we have seen, the reduction was both slow and very slight. The salicylate and bromide had no effect on the pain, which is rather against its being due to uric acid; it was also rather too chronic, more like neuralgia. I then gave some iodide, but heard no more of the patient.

I mention the case because of the reducing substance in the urine, which corresponded on one occasion with a large excretion of uric acid, but failed to correspond with sugar as to relation to time of day, in which it resembled the reducing substance in some previous cases.

*High Blood-Pressure.*

Case 1.—M. C., female, aged 65. Complains of pain in feet and toes. Had gout in right great-toe two years ago; was relieved at Buxton. Is strong and able to do a great deal (*no neurasthenia here*). Varices in the legs for many years. Had paralysis (right hemiplegia), no doubt a hæmorrhage, in the winter about fifteen years ago. Was unconscious for three days. No headache or vertigo at present, but has had both at times. Tongue red, clean; B.D. ·85; pulse 88; C.R. 8·5; B.P. 175. First sound long, second sound very loud (*i.e., a strong collæmic heart with only the quick pulse to suggest any failure, as C.R. B.P. ratio is just on normal*). No dyspepsia (*very different from previous heart failure cases*). Bowels open once a day regularly, no drugs, no piles, has considerable varices in both legs. Feet very tender and painful in balls of feet and in toes. Has been on alkalies and colchicum, but not much benefit. Present diet meat, fowl or game thrice, fish twice, soup once, cider or wine twice, coffee twice (loves it), tea once a day.

Here is a fine list of poisons, and she loves coffee. There is no difficulty about cause and effect and why she has gout alternating with cerebral hæmorrhage. For such cases there is little to be done; prevention of it all sixty years ago would have been easy. We may put off the final hæmorrhage, but cannot make the arteries and other tissues normal.

Case 2.—M. L., female, aged 40. Complains of asthma, which is absent in the cold season but comes on again in the spring. Gout on both sides in parents and grandparents. Is free from asthma during pregnancy, except when there is vomiting of pregnancy, and then asthma is worse (*i.e., pregnancy stops collæmia except when there is dyspepsia and vomiting (reflex); asthma is a collæmic disease and therefore fluctuates with it*). Is stout, vascular and turgid, eyes prominent. Pulse 108 (*due to asthma*); high B.P. to finger, second sound loud. Tracing shows a large first wave high up in tracing, requires 3½ to 4 oz. to develop it. Respiration quick, breath sounds slightly rough, no râles, emphysema. Present diet: meat twice, fish, eggs or bacon twice, tea twice, soup once a day. Salicylate of soda relieves the asthma.

This is also my experience, though in the acute attacks it is not so good as retentives such as iodides and chlorides. Salicylate I suppose relieves by clearing out, or in small doses it also acts as a powerful retentive; possibly this patient had small doses, but my notes do not give the dose.

I allowed the drug to be continued, but advised a gradual change of diet. Milk is not well digested. After ten days on modified diet was feeling rather better. Six weeks later she reported that she had given up meat entirely (*pro-*

*bably this was going too fast*); was getting thinner and feeling depressed; but the asthma was better and more easy to control with drugs. Later on she was frightened by friends and worried by social difficulties, and feeling weak, gave up the attempt to diet and went back to meat.

I believe she never did take the correct quantities of proteid, and the difficulty with milk was unfortunate from this point of view. To-day one would have got over the difficulty with curd and white of egg, and lowered B.P., probably with enormous advantage, by cutting down fluids. There was here every indication for lowering B.P. and diminishing poisons, for though I could not then measure the B.P. except by the rough but conclusive method of a pulse tracing, the prominent eyes and general stoutness and distension pointed very strongly to high B.P., and this was confirmed by the subsequent history, as some fourteen years later this patient had several cerebral hæmorrhages and her B.P. was then found to be very high.

Case 3.—H. C. T., male, aged 66. Complains of wasting and irritable mucous membranes, brought on by extra meat (modified Salisbury diet). Had "gouty gastritis" and eczema of legs and back 2½ years ago. Went to Harrogate two years ago. Eczema went away, and doctor at Harrogate advised Salisbury rather than vegetarianism, and so he took extra beef and no vegetables. One doctor said "thin," another said "dilated stomach." Was sent to Plombières, and much pulled down by course there. Fever in India thirty-one years ago. Gout in toe at 26. Gouty family. Gastric attacks with diarrhœa and fainting two years ago. Any chill now brings on these attacks (*i.e., gout of stomach and intestines*). Influenza followed by dyspeptic attack six months ago. Rather better last three or four months. A non-chalky water (*Salutaris*) cures dyspepsia, but it cannot be cured while a hard water is taken (*again retention by lime, i.e., gout*). When weak, tends to get somewhat excited. Sleep variable, wakes 4 a.m. when worried; easily worried now. B.D. ·65 (*they have not done much good with meat, drugs, and spas*); pulse 68; C.R. 9·5; B.P. 115, large movement. Heart sounds fairly normal. Lungs, emphysema. Has had rheumatic pains in the shoulders for three months. Dyspepsia in attacks only, no trouble between. Bowels open twice a day; may be seven to eight times in attacks with mucus and yellow gelatinous matter. Urine acid, sp. gr. 1025, no sugar, no albumin, has occasionally been alkaline. Stomach quite down to umbilicus, but no splash at present. Weight 9 st. 9 lb.—was 10 st. 2 lb. a year ago. Doctors advised whisky and water; wants to do without meat if he can. Salisbury diet has been decidedly unsuccessful, wants to try the other thing. Present diet five meals. Meat twice or thrice, egg or fish twice, whisky twice, tea three times a day. I advised a slow change of diet, and gave salicylate and bismuth for the gastric trouble. A month later reported that he liked the diet, and felt well on it, but has not gained weight. Another month and the report was that the mucous membranes were nearly all right. Pulse 72; C.R. 7; B.P. 125; first sound long, second sound rather loud. Some rheumatoid changes in right scapulo-clavicular joint. Weight showed slight increase. Two months later, when the weather got colder, had liver upset followed by diarrhœa and pale motions. Local doctor said milk was cause, and must give it up. A month or six weeks later bowels were doing well, and he had gained 2 or 3 lb. in weight, which is now about 10 st. 10 lb. The U.A.F. diet seems to suit the bowels, and he was advised to go on with it, My next note is some eighteen months later, when he had had difficulty in taking milk in hot weather. Has been taking occasional eggs and fish and a little tea again; cannot get enough to eat. Pulse 80; C.R. 7; B.P. 140; B.D. ·9 (*i.e., considerable improvement*); weight steady, 10 st. 10 lb. A year later he had gone back to meat

once a day, as he could not manage milk and cheese, and so starved. His memory got bad, and he got anxious, and probably a little excited, and so he was put on meat and tonics. They tried bromide, but he got depressed and bad on it. Pulse 84; C.R. 8; B.P. 140. (*Here then were some signs of heart failure, defective ratio, and quickening of the pulse*). His diet now consisted of five meals. Meat twice, egg or fish twice, tea three times; the early cup in the morning "bucks him up," and he enjoys it. He still remained rather miserable with fears of loss of memory and mental power, and was given by his other doctors nux vomica and digitalis with quinine and phosphorus; his B.P. rose, and he became somewhat melancholic. His dyspepsia and diarrhœa tended to return, and he again attempted to get on to U.A.F. diet. He eats rather too much food, and brain suffers during times of digestion. Five months later a letter says he had a stroke of paralysis, which produced right hemiplegia, and he soon died of the secondary results of this; as we saw, the B.P. was rising at the last observation.

If this patient had lived rightly all his life he would have had neither gout, gastritis, nor cerebral hæmorrhage. When he first came to me he ought to have spaced his meals, and cut down his fluids. He really missed his meat and stimulant (tea) very much, though better in other ways (notably the gastro-enteritis), and needed but slight urging to go back to them, and regard the feebleness and loss of memory as results of U.A.F. diet; whereas they were at least to the extent of 50 per cent. due to the excess of poison he took in on the meat diet, and he would not have had even this if he had not stumbled over milk and cheese. After sixty-six years on a wrong diet, and with a touchy stomach, in the prevalent ignorance and superstition about foods, it is not always easy to get natural foods properly taken. Then he got into a panic about weakness and loss of memory, and, as a result, was given powerful tonics which raised the B.P., and produced the final catastrophe. Given only proper food, he might easily have lived and worked for another fifteen years.

Case 4.—M. M., female, aged 55, Left hemiplegia beginning this morning. Influenza five weeks ago, suffering from debility (*collæmia*), and not out of bed since. Arteries noted as being hard and irregular some weeks ago. Loss of power in left hand and arm, but no giddiness or loss of senses. Pulse 64; high B.P.; arteries tortuous, slightly rough and irregular. Temperature normal. Apex beat two fingers' breadths to left of left mid-clavicular line, first sound long, second sound loud, apex and base. Cannot move left arm. Urine large quantity, low sp. gr., no albumin. (*Probably granular kidney, large heart, high B.P. and cerebral hæmorrhage*). Had we been able to measure the height of the B.P., this patient would have been bled. As it was, we contented ourselves with getting the bowels free and giving iodide of mercury and diminishing fluid. (*The case is imperfect; I give it to show the position one was in in pre-instrumental days*).

Case 5.—G. S. R., male, aged 58. Complains of fits, from which he has suffered for eighteen months, and which are now becoming more frequent. Has been on U.A.F. diet for about eighteen months, and, so far, it has had no effect on frequency and severity of the fits. There is no epilepsy in his family, There is a doubtful specific history. Skin of face slightly puffy. Sleeps pretty well, better than he did twelve months ago. Never hungry. B.D. ·75; pulse 72; C.R. 8·5; B.P. 145. Apex beat slightly displaced to the left, impulse forcible,

second sound relatively loud (*high-tension heart*). No cough. Occasionally sleepy after food. Urine, no sugar, no albumin. Not thirsty. Weight 11 st. 5 lb. 8 oz. in clothing; steady. Fits only occasional, last twenty seconds, can sometimes stop them by pressing on left hand. Present diet: milk 1½ pints, cheese ½ oz., bread pudding and porridge 8 to 10 oz. Three meals a day. A good deal of fruit, is probably underfeeding. As he has high B.P., it was an obvious indication to lower the B.P., and so I told him to cut down fluids and go on to an absolutely dry diet of twice-baked bread, fruit, and nuts. On one occasion he only took half a pint of fluid in a week, *i.e.*, in addition to that in fruit, and after ten days on this his pulse was 75, and B.P. had fallen to 125; and he was decidedly of opinion that it diminished the tendency to attacks, and he kept on with it for some time of his own accord. A little later, however, there was some distinct loss of power in the left hand and arm, and he was advised to consult a surgeon, who eventually removed a glioma from the right parietal region.

I mention the case simply to show the effect of a dry diet on B.P., this being the diet I had used for years to lower the pressure and relieve the pain in migraine; and here even in the presence of organic disease it lowered B.P. and gave some temporary relief.

### *Graves's Disease.*

Case 1.—C. N., female, aged 24. Complains of Graves's disease, which she has had for two months. She is a book-folder, and has heavy work. She has pain in the head, shortness of breath, and swelling of the legs. Sleeps badly of late. Pulse 140. Apex beat a little inside left mid-clavicular line, first sound clear, second sound loud (*pre-instrumental days, unfortunately no other records of circulation*). Eyes prominent, neck measures 14 in. Menstruation has been absent since the trouble began. I advised U.A.F. diet with fluids reduced to thirst level, with occasional use of salicylate, bromide of ammonium, and nux. Three months later she reports that she began to get better one month after seeing me, and then tried to take meat again, and has been less well. Used to take tea three times a day, still has one or two cups of it. Pulse 120, neck 13 in. Is sure that the neck got smaller on no meat. (*I give this case in spite of its being imperfect, because it suggests, what other cases prove more clearly, that some of the signs of Graves's disease fluctuate with the amount of meat.*)

Case 2.—A similar case in a young woman gave an increased excretion of uric acid, *i.e.*, evidence of the presence of collæmia. She produced 23 oz. of urine, sp. gr. 1027, giving urea 2·6 per cent. = 275 gr., and uric acid ·09408 = 9·9 gr., relation 1 to 27. (*Here we have low urea and feeble nutrition, and with this Graves's disease, related to collæmia and weak heart muscle*). This patient returned later, when I made some more notes of her. Three years ago she was admitted into the Royal Waterloo Hospital, and had right lobe of thyroid removed (case referred to in "Uric Acid," p. 141), and the right eye has been less prominent since the operation, but there is otherwise no improvement. There are now distinct signs of morbus cordis, and the neck measures 13½ in. Says a younger sister at 18 has anæmia. Patient is now 26, and was 23 when I examined her urine, as above given. Pulse now 120. Apex beat well outside left mid-clavicular line. There is a rough late systolic murmur at apex, and the impulse is accompanied by a slight thrill. I had previously given her some bicarbonate of soda and citrate of potash to take every night, and she says this relieves her head in the morning (*i.e., that it diminishes morning collæmia*). Has now been on U.A.F. diet, as near as she can get to it, for one month. Menstruation is regular now, says is not worse at that time.

A month later U.A.F. diet two months. On three meals a day; I ordered two, but she found this difficult to carry out. Is continuing the alkalies at night. Her mother has been ill, and she has had to nurse her (*an additional strain*). Face looks less vascular, and eyes slightly less prominent. Pulse 92. Six weeks later still on diet, but takes too much fluid (milk two pints per day). Is taking some pulses unfortunately, or results would have been better still.

Pulse 98. Not on alkali now. Neck 13 in. Apex beat 5 in. to left of mid-sternal line. B.D. ·8; a decided improvement, was only ·5 to ·6 when first seen. Here apparently diet slowed pulse and diminished congestion of neck and eyes, when all else had failed.

Case 3.—W. G., female, aged 49. (*Why is Graves's disease chiefly in females; is it, as I have suggested, but an exaggeration of the signs of menstrual collæmia complicated by heart failure* ?) Complains of Graves's disease for about five years, also of depression and inability for work. Never was strong; no rheumatism in family. Uterine ulceration, in bed seven years with it. Head is worse after stooping, when she gets giddy. Eyes not markedly prominent now. Sleeps badly, four hours in all. B.D. ·8; pulse 120; C.R. 7. Artery pulsates visibly; B.P. 160. Apex beat to left of mid-clavicular line, impulse forcible. First sound long (? murmur). Second sound loud, systolic murmur also in neck vessels. Bowels act four or five times a day; had chronic diarrhœa for years. Often has violent attacks of vomiting. Menstruation absent since operation for ulceration. Three children, one dead. Urine, sp. gr. 1006, acid, trace of albumin (? *chronic Bright's disease*). Weight increasing now, was 7 st. 9lb. Has much pulsation in neck, not much enlargement of thyroid. Present diet three meals, meat once, soup once, fish once, tea once, whisky and soda once. Was a great tea drinker, at one time seventeen cups a day.

This may account for part of the high B.P. The case is unfortunately imperfect; she came as the friend of another patient in whose presence I could only make a hurried examination, and both came from the Far East, and went back again soon, so that I could get no farther. No doubt her diarrhœa was due to high B.P. and cardiac congestion, and the other trouble, if it were Graves's disease, had a similar origin in collæmia and heart failure.

In contrast I add a more recent case, with modern methods of measurement and treatment.

Case 4.—P. J., female, aged 28. Under my care at the Metropolitan Hospital; a Jewess. Admitted complaining of pain in left shoulder, chest and bottom of back for four weeks. Occasional nausea. Eyes prominent. Teeth very bad, mostly stumps. Neck measures 13½ in. Pulse 120; C.R. 7·5; B.P. 160, flattened 220. Respiration 24; temperature 99°. Apex beat fifth space ½ in. inside mid-clavicular line. Right border 1½ in. to right of sternum. C.D. 6⅛ in. First sound (?), systolic murmur. She vomited four times in first six days. Bowels open only with enema. Urine, sp. gr. 1010, acid, trace of albumin, no sugar (? *Bright's disease*). Slight œdema over tibiæ. She was put on two meals a day, and diminished fluids; fruit to be given in place of fluid when possible. She was given rhubarb and gentian for the dyspepsia. Eleven days after admission, there was some general improvement, but she had one or two hysterical attacks, and was inclined to cry. No vomiting for six days, but still some pain in the chest. Pulse 84; C.R. 6·5; B.P. 130; flattened 160. C.D. 5½ in., neck 13¼ in.

A very decided improvement, and much more would no doubt have followed, but the patient got nervous, imagined enough was not being done for the pain in her chest, perhaps disliked the two meals a day, and took her discharge. Her dyspepsia was probably merely congestion, as we have seen it in previous cases, and the Graves's disease itself was but another result of circulation trouble, and all improved together as B.P. was lowered, and the heart got

smaller. A course of dry U.A.F. diet would have completed the cure. So far tea and soup had alone been cut off. I have had many other cases that presented the cardinal signs of Graves's disease, together with those of headache, depression, dyspepsia, and other collæmic troubles, and in which diet continued for years, chiefly for some of the other troubles, has resulted in more or less complete disappearance of the signs of Graves's disease.

Case 5.—M. D. H., male, aged 22. Complains of palpitation after smoking, coming in attacks, feels faint in the attacks and cannot lie down. His family is subject to internal chills. Has been subject to headaches since 16 years of age.

Year of greatest growth, when the heart muscle got strong; no doubt he suffered from collæmia before that, but the pressure did not rise enough to cause headache, yet the collæmia was there and interfered with metabolism, growth and nutrition.

Headache was at its worst about two years ago.

Heart was then at its strongest and consequently the pressure was at its highest; the heart muscle has since been relaxed by smoking, hence the diminishing headaches and increasing palpitation attacks.

Neck has increased in size ½ in. lately and there is some slight prominence over the thyroid region, the eyes are also slightly prominent. Pulse 96. Apex beat just outside left nipple line, first sound reduplicated, second sound loud at right base (*no doubt the heart of chronic collæmia, now somewhat dilated*). Urine high colour, much urates and some uric acid, no albumin, no sugar. There is a slight alteration of colour with Nylander's bismuth test, due probably to uric acid. Has been taking strychnine and pepsine, with am. brom. and Hoffman's anodyne in attacks. Has been cut off tea, coffee and smoking. He went on with his work as an engineer till May of last year, then got weak and faint, and legs gave way and got pain in heart region, never unconscious. He also suffered from difficulty of mental concentration. A month later he was advised to do the Schott treatment. During the exercises he had an attack and was put to bed, next day he was given quinine, valerian and nux, which did good. He also had attacks of coldness, shivering and intense faintness, in which trinitrin was used with benefit. Then the palpitation began to get better under the above treatment and the headaches began to get worse again. He took antipyrin and caffein for the headaches and was then given effervescing salicylate of soda in their place. Then dyspepsia increased (*i.e., increase of collæmia on salicylates*), and he had to have bismuth for that. Then the headache got worse and more persistent, and croton, chloral, cannabis indica and berberine were used. Later quinine and digitalis in pill, and all this while the Schott treatment was being continued, with massage for the liver (*the poor liver would have been right in two or three days if they had only put a stop to the collæmic circulation*). Then he was given pot. bicarb. and later iron, lime, hydrobromic acid and the hypophosphites. A month later he was able to return to work. The work was hard, but he ate and slept well, and felt well except that he was a little nervous (*i.e., heart not yet very strong*). Later he was exposed to cold and snow and caught cold, and next morning was very bilious (*collæmic rebound after retention from cold*), pain in back and nausea, and had to give up work and go to bed. Three days later doctor who was called in said heart was sound, but had better get out of his damp and cold work; still his dyspeptic attack lasted

for eight to ten days more (*i.e., general collæmia, a rebound after the above named tonics and retentives*), and he had some vomiting and slight jaundice. A week later he was better, but had lost 14 lb. in weight in this attack. A few days later he again got a chill with pains in the loins. Three weeks after that he was taking strychnia and dilute hydrochloric acid and doing well on them. Then he got pain in the right hypochondrium (*poor liver again*) and the water was thick (*recurrent collæmia*); was also given nux, aloes, jalap and euonymin for the bowels (*the chemists atwqst did well out of this patient*). Then he got pains in the loins and testes, had been taking Vichy water (*solvent*) and it did harm, then he took Contrexeville (*a retentive*) and it did good. The last prescription to complete his consumption of the British Pharmacopœia contained pepsine, sodii. bicarb., sp. æther. and juniper. After this, as was not extraordinary, he got weak again, and again went in for Schott treatment, and his nurse said he was badly nourished, and gave more food; he was fed night and day, on raw beef juice, beef jelly, egg, Benger, cocoa and the whole list of poisonous stimulants. After a time they had an effect and he got stronger and in better spirits, and his urine increased from 22 oz. to 43 oz. in twentv-four hours (*i.e., collæmia again passed off, and by the aid of excess of food and poisons he was got to retain once more*). After this he went home with the intention of taking a prolonged rest and going abroad, and it was then that I saw him and found the conditions recorded. He only has headache about once a week now, and this is removed by tea (*he is completely in the habit of removing the effects of poison by more poison*). His present diet contains meat twice or three times, fish twice, soup once, tea two cups (*a fine lot of poisons for a most obvious case of uric acid poisoning*). I advised him to go abroad and rest, and later to come to me and have his diet put right. This he never did, so probably he came in for more poison stuffing and drug dosing, and then heart failure or Bright's disease, or both, for they are often synonymous, ended the matter for ever.

I give the case for the interesting history of headache alternating with heart failure, and when I saw him there was very little to distinguish his condition from that of Graves's disease, the etiology of which is also lighted up in an interesting manner. Some enlargement of thyroid, with heart failure and prominent eyes, is fairly common in female migrainers, but this is the only male in whom I have found such marked signs of its onset. If his heart gets stronger he will get granular kidney, and die of cerebral hæmorrhage; if it does not he will have Graves's disease or a more acute form of Bright's disease, and die of heart failure. Yet all that was wanted when I saw him was simply to leave off the introduction of fresh food poisons, and in two or three years there would be no trace left of any of these troubles, which on the other course were rapidly becoming dangerous to life.

Case 6.—F.B., female, 34. Complains of weakness and pains all over. Headache, anorexia, constipation, dyspepsia, anæmia and faintness. Ailing for a long time, never very strong. Has had migraine for years, very bad and always worse at the monthly periods. Had anæmia very badly at 19. Eyes are somewhat prominent, and there is some general enlargement of the thyroid. B.D. ·75; pulse 140 regular, later fell to 132; C.R. 8; B.P. 180. Her chief complaint was her headache, for which I treated her with bromide and salicylate, and got the bowels open with magnesium sulphate. Later I advised U.A.F. diet, but she belonged to that class of patient who will take any quantity of drugs and expect them to do what is impossible (*i.e., to remedy food poisoning while the poisons are being continued*), but they do not understand a change of diet, and either will not or cannot do it.

We have obviously here Graves's disease, as the sequence, I believe quite natural, to many years of uric acid poisoning, showing itself chiefly in anæmia and migraine. All the chief symptoms, the headache, prominent eyes, enlarged thyroid, the quickened pulse and high B.P. are those that occur, in a less degree only, in every meat-eating and tea-drinking woman at each monthly period. Pathology is as simple as prevention is easy.

*Miscellaneous.*

Case 1.—M. G., male, aged 42. Pernicious anæmia. Complains of catarrh of bowels and general debility for twelve months. Had much diarrhœa, with passage of bile and mucus eight months ago. Now general debility, especially of back. Has been subject to fainting attacks for some years. Father died of "old age" at 80. Mother died aged 80, "womb disease." Patient was strong till last year; over worked, perhaps. Sleep indifferent, easily upset by worry or excitement. Has had occasional vomiting for last eight months. B.D. ·7; pulse 80; C.R. 7; B.P. 120. Apex beat just inside line, first sound long.

"Dyspeptic heart," so I wrote at the time, but I should now say that this was heart failure, causing diarrhœa and dyspepsia; though, of course, the dyspepsia does not improve the nutrition and tone of the heart. The original heart failure, the cause of all the rest, was probably due to overwork and collæmia, early second collæmic stage.

Frequent pain in colon before bowels act, often some nausea then; a fright or upset will bring it on (*i.e., a strain on the weak heart similar to the causation of chorea*). When motions are formed suffers much from flatus. Urine clear, acid, sp. gr. 1021, no albumin, no sugar. Liver dulness is increased, and lower border of stomach is at least two finger-breadths below umbilicus, and there is pain and tenderness over it. Weight 10 st. 7 lb. 12 oz.; has lost 2 st. in the last eight months. (*Obviously we have here congestion of liver, stomach, and bowels due to weak heart, with collæmia and anæmia*). Present diet: chiefly bread and milk, porridge, bread and butter, tea twice a day. Was on ordinary diet till six weeks ago, *i.e.*, meat once, fish once, bacon and egg once a day. Has been worse since change of diet; (*probably he is not taking enough proteid, and his diet is too sloppy for a weak heart*). Drugs stopped diarrhœa for a few days, but all failed to stop it after that (*astringents always fail to stop diarrhœa, due to a weak heart*). His doctor has given up drugs of late as useless. I ordered a heart tonic, and that he should have any food he liked, avoiding slops. Three weeks later bowels only act two to three times a day, and are less relaxed. Abdominal pain less to none. Pulse 80; B.D. same; B.P. 80 (*this fall being due to the diminished fluids*). The diarrhœa is kept off by the nux vomica, but returns if he leaves it off. (*There were here several obvious causes of severe collæmia*). Heart, first sound reduplicated. Stomach smaller, nearer umbilicus. Weight slightly increasing. No blood or mucus passed now. I now gave iron, nux vomica, and strophanthus. A month later pulse 88; C.R. 7; B.P. 100. Temperature 98·8; B.D. ·8, a slight improvement. Two months later: has had some ups and downs, but, on the whole, is better. Weight 10 st. 11 lb. 14 oz. Diarrhœa is controlled by tonics. Pernicious anæmia not cured, as diet is not U.A.F.

I wrote to the Salvation Army, of which he was an officer, to ask as to subsequent history. I was told that he died three years after I first saw him. He got better and relapsed. He was two years away, and then broke down again after a few months of work. He then went to South Africa, and died in two months. The *post mortem* showed pernicious anæmia, and no new growth was found anywhere.

This is a most interesting case, as he had all the signs of weak heart, causing diarrhœa and internal congestion, and leading on through years of dyspepsia, with increasing collæmia and cardiac debility, to a fatal ending from severe and progressive anæmia. The heart condition was the key to the whole trouble. Heart tonics stopped the diarrhœa, and had U.A.F. diet and prevention of collæmia been possible, they would, I believe, have cured completely.

Case 2.—F. C., female, aged 47. Admitted into the Royal Waterloo Hospital complaining of gradual loss of colour and strength since a fall down stairs five years ago. The doctor, who sent her in, said she was very stout a few years ago, but had lost much weight lately. She had seen many gynæcologists. Was decidedly pale and inclined to be excited. Pulse quick, feeble, chest still well covered. Temperature normal had been raised occasionally to 101 before admission. Married, one child fifteen years ago. Urine sp. gr. 1014, no albumin, no sugar. Liver and spleen somewhat large. She was restless, anxious and talkative (*signs of weak heart*), and got gradually weaker, and five days after admission she rather suddenly became insensible and died. At the *post-mortem*, at which the doctor who sent her in, the Registrar, R.M.O. and myself were present, we found rigor slight, body not emaciated, ½ inch fat over chest still. Brain normal except for slightly watery membranes (*the cause of her neurasthenia and excitement*), heart covered with a layer of yellow fat, very soft and flabby and easily perforated by thumb, but wall of left ventricle is relatively thick (*i.e., a result of chronic collæmia*). There is some thickening and calcareous deposit in aortic cusp of mitral valve. Blood thin and watery. Blood examined before death by R.M.O., Dr. Blount, who found great excess of microcytes. Lungs, one or two nodules and adhesions at right apex (*old tubercle*). Liver large, fatty and rather pale (*greasy on section*), spleen 9 oz., normal in colour and structure. Intestines normal, stomach normal, kidneys somewhat enlarged and fibrous with relatively diminished cortex, capsule thickened and peels badly, leaving a rough surface; probably a late stage of large, pale kidney, Uterus and ovaries normal, suprarenal capsules normal.

Here we have chronic collæmia with Bright's disease and hypertrophy of left ventricle. On this there supervenes a shock (accidental), precipitating the second collæmic stage and leading to fatty degeneration of heart muscle with progressively defective circulation in, and œdema of, brain membranes, neurasthenia, nervous excitement and eventually death from heart failure, the large liver and spleen being congestive results similarly produced. Some would call it progressive pernicious anæmia; but what is this severe anæmia except a result of chronic collæmia and heart failure? In all collæmia there is anæmia, because collæmia interferes with the normal metabolism of the blood in liver, spleen and other important organs; add to this a weak and fatty heart muscle (another result of chronic collæmia, defective circulation and nutrition) and you have all the factors that produce a severe and progressive anæmia. Personally I believe that all anæmia is produced in the same way, *i.e.*, defective metabolism in the blood-forming glands, as indeed

Raynaud suggested some years ago (see "Uric Acid," p. 461); and this defective metabolism, as we can now see, is due to excess of uric acid in the blood. On this collæmia may supervene any of the great failures of combustion and metabolism, Bright's disease, diabetes, severe anæmia, according as the skin, the liver or the other great blood-forming glands are specially affected, either by the original collæmia or the secondary cardiac failure and general congestion; and all the cases we have been considering above are instances of something of this kind; all have excess of uric acid in the blood, and all, eventually, have some heart failure with addition of anæmia, anasarca, ascites, albuminuria or glycosuria, and all have, as signs of generally defective combustion, low temperature and urea.

Case 3.—M. C., female, aged 3. Gangrene of some of the toes of both feet. Urine passed last night as the gangrene was passing off under the influence of warmth and nitro-glycerine: dark amber, sp. gr. 1022, considerable flocculent deposit; it contains epithelium and mucus, the latter speckled over with urate of ammonium spherules, uric acid crystals and some amorphous urates; no albumin; urea 2 per cent; uric acid ·23521 per cent. = 1 to 8·3, a very large excess of uric acid. I got nearly this amount of uric acid even by the defective hydrochloric acid process. A urine three days later, when the attack had quite passed off, gave a relation of uric acid to urea of 1 to 20, and a day later a urine of twenty-four hours gave 1 to 22. Pulse 120, second sound of heart quite loud, first sound relatively feeble. Several tracings showed marked high tension, and took 4 oz. pressure to develop them. The urine passed after a later attack had been cured by nitroglycerine, being passed two hours after the last dose of that drug, gave a relation of 1 to 53. A later urine of twenty-four hours gave 1 to 26. The father of this child was subject to gout, and had gout in his family. Mother is well, patient has three sisters who are well but delicate. In the first attack there were pain and coldness in both feet, and on examination the right foot was seen to be blue-black, cold, and tender as far as the middle of the metatarsal bones, and the left foot had the second, third and fourth toes blue-black and cold, and the colour extended in lines a little into the sole of the foot. She had been seen as an out-patient a week before this, complaining of weakness, poor appetite, and some cough; the ribs were slightly beaded. She had had measles and whooping-cough twelve months before. Temperature on first admission was 100·2; it rose to 100 in a second attack she had when in hospital, but the rest of the time was subnormal.

This is the description of second attack, which came three days after the first. She was up and about the ward, seemed lively till 6 p.m., when she groaned, and on looking at the feet they were seen to be affected. Left foot purple and cold with a sharp line of demarcation above the ankle; there is an orange-coloured zone above the dark one. Right foot slightly discoloured only. Given tincture of opium m. ii. and nitro-glycerine gr. $\frac{1}{100}$ every half hour or so. 7.15 p.m., left foot, blueness has spread half inch further up leg. Right foot is now normal. This was just the reverse of first attack, in which the right foot was the worse. 7.35 p.m., given nitroglycerine. Pulse 112. 7.50 p.m., dose repeated, pulse 144. 8·15, p.m., repeated, pulse 132. 8.30 p.m., repeated, pulse 136. 9 p.m., repeated, pulse 128, and same at 10.10 p.m. Temperature at midnight 100.

Probably attack was now passing off, as no more nitroglycerine was given; it is after these rises of temperature that one gets hæmoglobinuria when it accompanies the attacks of Raynaud's disease. Probably the destruction of red cells (hæmoglobinæmia) occurs just

at the climax of the collæmia, when it is most intense and just before the rising acidity clears the blood, frees the circulation, and begins to remove the local gangrene. This destruction of cells really precedes the temperature, and is in part its cause, and the hæmoglobin passes into the urine at the same time, but is only noticed in the diuresis which follows the rising acidity and the temperature.

Temperature 2 a.m., 98·4; 6 a.m., 98·6. Next day (second from attack) the foot was nearly natural, some small petechiæ and a dark mark on back of leg being the only remains of the storm. The results of uric acid estimation were: first attack 1 to 8, between attacks 1 to 20; second attack 1 to 22; after all the above nitroglycerine had been given, when the signs were passing off, 1 to 53. She was given nitroglycerine and opium in the first attack also, and M. calumbæ acida and nux vomica in between. The urine of second attack was not well separated (*i.e., it corresponded to the time preceding the attack as well. We got many similar results with headache and epilepsy when separation was imperfect.* The attack in hospital was at its worst when the pulse was at its quickest, and the effect of the nitroglycerine was to slow it. (*We had severe collæmia, with more or less cardiac failure as its cause, and as usual it was in a girl with the weak girl muscles*). The pulse tracing taken the day after second attack showed marked respiratory fluctuations of pressure (*? a result of the heart failure*). Pulse 120.

Case 4.—G. K., male, aged 50. Complains of intense depression following on leaving off morphine, which he has taken for many years. At one time he used to take 12 gr. a day. Has much aching in back and legs at times. Three years ago he had influenza and began using morphine again. He first took it for neuralgia, as perhaps in Case No. 1 of "Neuritis and Neuralgia." Has had none now for nine months. Has aching in head and eyes in the morning. Appetite irregular. Sleeps fairly, but when leaving off the morphine only two hours a night (*i.e., a result of very high B.P.*). B.D. ·65; pulse 72; B.P. 110; C.R. 6·5. Apex beat to left, C.D. increased, first sound reduplicated, second sound relatively loud (*here we have signs of low pressure from weak heart, and probably the muscle is degenerate, or its rate would be quicker*). Bowels act once a day, liver dulness covered by emphysema. Stomach down to umbilicus and slightly splashing. Urine sp. gr. 1011, minute trace of albumin, no sugar. Is often unable to walk owing to neuritis. Weight 161 lb. Complains of emptiness and heat in feet and legs, feels sinking, as if going through the bed, after one or two days' excitement or extra work. Many family and business troubles. When he has the empty feelings he craves for cocktails and liquors.

Here there was no doubt chronic high B.P., probably producing the neuralgia and causing an enlarged heart. The present condition is one of cardiac debility and degeneration, following on and accounting for the mental depression, and these conditions have been increased and intensified by his having underfed himself in an attempt to change his diet; and, indeed, this may account for the slow pulse and part of the low B.P., as the pulse is generally slow in starvation. His remark about sleep when leaving off the morphine is very interesting. I give this as an instance of the circulation conditions produced by chronic collæmia and morphine.

Case 5.—G. L., male, aged 23. Complains of difficulty in passing water, especially after meals, for three months. Had gonorrhœa a year ago, but there is no stricture. Has been a great eater of meat, taking it three times a day. Had

renal colic on right side fifteen months ago. No urine was then passed for three or four hours, and he was in bed for four days. Urine now often thick, and has pain and uncertainty in passing it. Has a dull pain on right side on waking in the morning. Has been on fish, milk, and soda since the renal colic. Appetite poor now, as he is tired of fish. Sleeps well, but wakes to pass water once in the night. Pulse 72. Apex beat a little to left, first sound long, second sound moderately loud. Has occasional pain in left testis; he tries to pass water too often, and is nervous about it. Urine at time of examination, sp. gr. 1019; acid, soon became milky with urates (*i.e.*, *urine of collæmia*); no albumin. Normal weight 12 st., now 11 st. 6 lb.; has lost from enforced idleness on account of this trouble; when in best athletic condition weighs 12 st. As he had already altered his diet somewhat, I advised him to go further and get U.A.F. at least for a time, and with the view of diminishing acidity I gave a fair quantity of vegetables, potatoes, and fruit. A month later he reported that he was already much better, had got quite used to the diet, and liked it. Urine specimen sent after a hard game of football was full amber, turbid, sp. gr. 1028, acid, and gave a very minute trace of albumin. Microscope showed in the abundant sediment a fair number of large and small oxalates, a little uric acid, epithelium of passages and some mucus. This made me ask for other samples, to see if the oxalates were a constant feature, possibly accounting for the albuminuria.

Oxalates are, of course, a common result of collæmia, for a urate-laden urine + $H_2S$ means oxalates; the collæmia provides the urate-laden urine, and if vegetables containing sulphur are eaten, or if $H_2S$ is otherwise formed as an incident in flatulent dyspepsia, oxalates are the natural result. Was this the cause of his previous attack of gravel and of the urinary irritation now?

A month later a specimen was sent, sp. gr. 1028, acid, full amber, turbid, and containing as before a trace of albumin. This time there were no oxalates, only epithelium and mucus. Another specimen a month later, sp. gr. 1023, acid, and still a trace of albumin, with a good deal of uric acid and strings of mucus, but no oxalates. Has recently had a cold, which caused some difficulty in making water, but is getting better. He is better on this diet than on meat or fish.

Probably there was some little irritation in the passages, the result of acidity, and a large excretion of uric acid and urates, and the oxalates were only present when there was dyspepsia, or when certain vegetables were taken. Diet did good partly by diminishing acidity, but probably also by diminishing the total excretion of uric acid, and when he got a feverish cold, which caused retention at first, followed by increased collæmia as the cold passed off, he had increased trouble with the water.

Case 6.—To conclude this part of the subject, I will now give the notes of a *post mortem* I made at St. Bartholomew's Hospital twenty-five years ago. E. B., female, aged 56. Assistant in a furrier's shop. Admitted, complaining of coldness and numbness in left foot and leg. Seven days later she died with gangrene of both legs and lower part of the thighs, extending highest on the left, where it reached behind to the buttock and trochanter. Head normal, lungs normal. Heart, left auricle greatly enlarged, containing much rather firm clot, and with some dark, firm adherent clot in the auricular appendix. The mitral valve was contracted and in parts calcareous, admitting only the point of one finger. The chordæ were contracted into a lump, hard and fibrous. Left ventricle not enlarged. Aortic valves normal, numerous patches of atheroma close above them. Aorta much degenerated, showing extensive atheroma with fibrous and calcareous changes. About three inches above its bifurcation it was filled by

firmly adherent dark thrombus. In parts this could be washed out with water, in others it was too firmly adherent for that. The thrombus continued from this point down the vessels of both legs. In the left popliteal was a large thrombus markedly distending the vessel, and when this was washed out a smaller pale and more firmly adherent patch of clot or embolus was seen in the vessel. On both sides there was much calcareous change in the vessels, some hard patches in their walls being nearly one inch long, and extending half round the vessel walls; these were most marked on the left side, but other parts of the vessel walls showed transverse ring-like markings. Liver rather large, congested. Spleen normal, kidneys granular, hard and fibrous, capsule adherent, and cortex markedly diminished. Intestines normal, genitalia normal; joints, distinct urate deposit in left great toe, and in the corresponding part on the right side some erosion of cartilage and opacity.

The *post mortem* may be summed up as chronic morbus cordis, mitral constriction, and thrombosis in left auricular appendix, marked degeneration of aorta and large vessels, granular kidneys, gout, embolic gangrene of both legs. The whole case may now be summarized as chronic food-poisoning, of which it demonstrates most of the common and some of the uncommon results. We have rheumatism affecting the heart valves, gout affecting the toes, chronic collæmia accounting for the condition of the kidneys and arteries, and death due chiefly to a complication of the heart disease. Some day it will be completely understood that such things are dependent, first on the quantity of uric acid swallowed, secondly on the time of life as well as on the nutrition and development of the patient by whom it is swallowed, and thirdly on the organs first and most seriously affected by the poisons, in this case the heart. Had this patient lived naturally in her youth and thus escaped rheumatism and progressive morbus cordis, she might still have had gout, granular kidneys and atheromatous vessels from food poisoning later in life; her vessel walls might then have been quite as bad as we found them, even if there had been no morbus cordis. She might then have died about the same age, either from cerebral hæmorrhage if the nutrition were good and the heart strong, or from heart failure and dropsy if nutrition were bad and the heart weak.

It is evident that we now understand completely the causation of all these tissue changes and their relations to each other, to time of life and general nutrition, and could, if need be, produce either series of them in a given case. But our task is a simpler one, and we can now tell anyone, and speak with absolute confidence that our words are true, that, if they will live on the natural diet of man from the time their first teeth are in place, none of this terrible degeneration and destruction of organs and tissues will affect them, that such sorrows and sufferings will be altogether avoided, that life

will be a peaceful evolution of mind and soul, without let or hindrance from the body, which will fall asleep calmly in a serene old age, after more than a century of a natural, happy and useful life. Thus does all human sorrow and suffering become preventible, as we put our fingers on its true causes. From the ultimate outlook they appear as results of wrongdoing. It was wrong to leave our natural foods, it was a greater evil to hurt and destroy sentient animals for a food which was unnecessary, and which has proved to be poisonous. That evil and retribution are thus intimately linked in the nature of things, as cause and effect, is no small help in the endeavour, which all are still making to-day, to unravel the meaning of life.

# CHAPTER IV.

## Retention.

We have already seen in the previous chapters many local diseases of retention alternating with collæmic diseases. In the same way in this chapter we shall see not a few collæmic diseases alternating with diseases of retention. Their mixture here, as elsewhere, is affected by time of life and the strength or weakness of the patient. On the one hand too drastic treatment of retention produces collæmia, on the other hand curing collæmia may produce retention. Speaking generally, the strong and well nourished suffer from retention; the weak, dyspeptic and anæmic from collæmia. The retention of the retention periods provides the material for the collæmia of the collæmic periods; the whole matter is but a result of the solubility of uric acid, the laws governing which we see here in front of us.

### *Arthritis (Chronic).*

Case 1.—S. M. C., female, aged 38. Complains of headaches, one every month now, at the period; one day bad, two days ill after. Began after a severe operation five years ago. She had an abdominal conception with complications, thrombosis, cystitis, and abscess in groin, and the operation was for these. Never had headaches before this. No headaches in family. Mother has rheumatism and asthma. Had scarlet fever as a child. Had rheumatism till above operation, none since. "Gastric fever" as a child. Influenza once seven years ago. Is well between the headaches, but lives in dread of them. They have been less violent and less frequent since giving up meat six months ago (*i.e., modified and imperfect U.A.F. diet*). Has depression with the headache. B.D. ·75; pulse 84; C.R. 8; B.P. 140. Apex beat slightly to left. Second sound loud. Has occasional dyspepsia and flatus. Bowels act with cascara. Menstruation regular, lasts seven days, and much loss. Headache just before (*contrary to rule*), and remains two or three days on and off after last days of the period (*this is nearer the rule*). Has had enlargement of both knees from rheumatism once or twice, but they are right now. Weight 10 st. and increasing. Present diet: fish twice, soup once, tea or cocoa twice. Early hot water, and water in excess of thirst. Some milk, milk puddings, &c. Has had much phenacetin; it relieves the headache; bromide of iron and salicylate of sodium also does good. Cannot touch milk in any quantity; it causes headache, constipation, and heat spots, and cheese has same effect. I told her to leave off tea and meat soup and to diminish fluid to thirst level.

I give this case to show how a retentive disease (arthritis) goes off, and a collæmic disease (headache) comes on. The severe illness and operation brought the second retentive stage to an early end, and brought on the second collæmic stage and its diseases before their time. This patient, like many others in her condition, had been advised to take excess of fluid with the idea of washing out the poisons, but this only increased B.P. and made the headaches worse. The proper treatment, shutting off the introduction of poisons, was only imperfectly carried out, but even so it had done some good. Leaving off one kind of food and not being able to take other kinds, she was underfeeding, hence part of the debility.

Case 2.—T. E., male, aged 68. Under the late Dr. Savill in Paddington Infirmary. Reported by him in *Lancet*, 1893, vol. ii., p. 133, with a note on the urine by me, and now again referred to with his kind permission. Complains of gout, which he has had in his feet every year for thirty years (*i.e., began at 38, the middle of second retention stage*). Weight 20 st. 4¼ lb. Weighed 18 st. thirty-two years ago. Pulse 68. Tracing shows high B.P. (large first wave high up). First sound long, second sound loud, some emphysema. Rather frequent micturition at night for some years past. Urine, 116 oz., pale amber, slightly turbid, some uric acid deposit, sp. gr. 1013; urea 1·7 per cent. = 910 gr.; uric acid ·0504 = 11·4 gr.; relation 1 to 79. (*A considerable retention. His drink for many years has been four-ale, six-ale, and porter, and no doubt the gout was the result of these drinks acting on large introduction.*) Is now on 1 lb. meat, and 1 lb. fish a day for the reduction of his obesity, and this no doubt accounts for the temporary retention. Drinks tea and water to extent of 7 pints (140 oz.) a day. Urea is 3·6 gr. per lb., which, as his weight includes much adipose, is high; 1 lb. of meat and 1 lb. of fish would account for about 2,476 gr. of albumin or 825 gr. of urea, and probably the milk in the tea would account for the rest, or I may have slightly underestimated the fish and meat.

Three weeks later the urine 118 oz., 44 oz. in the day and 74 in the night (*the rule in collæmia is more at night, and this accounts in part for his increased micturition then*); has sp. gr. 1012 (*he has no doubt got granular kidneys*) and yields 817 gr. urea and 25·5 gr. uric acid, relation 1 to 32.

We are now getting a plus excretion and no longer retention, *i.e.*, the meat and fish acted as stimulants at first and caused retention, but this stimulation is now passing off and giving place to plus excretion and collæmia. But his actual turnover of uric acid is 35 gr. (23 gr. formation, and about 12 gr. introduction, calculated from the quantities in fish and meat, but not allowing anything for the tea), so that he is still really retaining about 9·5 gr. a day and considerably more at the first examination of urine. It is easy then to account for his gout, and large accumulations. But such retention as this does not and will not last for long.

Fifty-one days later, now on ordinary diet, has lost 3 st. 11¼ lb. Weight now 16 st. 7 lb. Has not been on fish and meat the whole time, as he got influenza and got low, and refused to continue the flesh diet (*depression of severe collæmia*). He is now content with his loss of weight and is going back home on ordinary diet. Urine now 34 oz. in day and 72 at night = 106 oz; sp. gr. 1010, a trace of albumin, gives urea 465 gr. and uric acid 18 gr; relation 1 to 26 nearly. His total uric acid is 13 gr. of formation and only 4 gr.

of introduction, and he is now excreting about 1 gr. a day from his previous accumulations.

I mention this case to show the excretion of uric acid in chronic gout, and the effects of a meat and fish diet in producing first retention, followed later by collæmia and a plus excretion.

No doubt he has been having similar fluctuations for many years; only in the second retention stage retention and gout would predominate, and now in the second collæmic stage collæmia would predominate, except under the stimulus of an excess of fish and meat, which increased combustion and diminished his fat for a time; and now, as we see, the stimulation is passing off and the collæmia returning.

At some of the times of retention he had gout, *i.e.*, retention in his joints; at others, as in this last one, the accumulation was in liver and spleen, &c., with no gout. Then the intercurrent collæmias have produced high pressure and Bright's disease. To have gout you must have first collæmia with plenty of uric acid in the blood followed by retention, and something to precipitate the retained uric acid on a joint, *e.g.*, cold, exercise, injury raising the local acidity at one spot.

I am inclined to think that in this case the retention in the first urine examined appeared more than it really was, being partly due to some uric acid being deposited on the collecting vessels and therefore not sent to me with the urine; but this is just what a meat and fish diet often does, as shown by the circulation; it causes a retention and stimulation at first, lasting according to the age and strength of the patient, from a few days to a week or two, and then comes collæmia and plus excretion, as we saw in this case.

During the retention there is stimulation, improved combustion (he had no albumin in the urine then) and loss of weight, later there is collæmia, deficient combustion and a tendency to gain weight again; any loss of weight in this case, after the first week or two, was simply due to the absence of fats and carbohydrates from his food, leading the body to use up its own stores, as is suggested by Dr. Savill.

During such early stimulation period a fish and flesh diet relieves collæmic troubles, such as headache and depression; later it gives place to an increasing collæmia and they return. It is quite unnecessary to examine the urine in such cases; day to day curves of C.R. and B.P. will now tell the whole tale of the early stimulant and later depressant effects of flesh and fish. The flesh and fish

he took at first were calculated to produce a little over 800 gr. of urea per day, and it is interesting to note that about this quantity was found. This alone shows that his metabolism was stimulated by them, for had it been depressed by collæmia both digestion and combustion would have been defective, and less than the estimated urea would have been obtained.

Case 3.—M. H., female, aged 62. Complains of chronic rheumatoid arthritis affecting most of the joints of the body and causing much crippling and inability to walk for six months. Her mother and her mother's mother had it before. (*How strongly inherited is the tendency to react to uric acid irritation by arthritis.*) She went to Bath a few years ago without much benefit. (*I suspect this greatly understates the truth, which was that it did much harm and accounts for a large part of the incurable condition in front of us.*) Her trouble began six years ago (*aged 56, end of second retentive or beginning of second collæmic stage*). She is always in pain, but it is worst when she is hot in bed at night. She is rather stout, weight unknown. Pulse soft, 108. Heart said to be normal. I could not examine well owing to her crippled condition. Hands and fingers are greatly deformed. Bowels act twice a day or more (*congested liver and bowels*). Urine sp. gr. 1015, acid, trace of albumin, no sugar (*no doubt granular kidney*). Toes are much deformed and there is much pain about left trochanter. She eats ordinary diet, meat twice a day; fish, eggs and milk do not agree well.

How this arthritis originated it is difficult to say; there may be urates in the joints still, or only erosions; but it is quite clear that it is a collæmic arthritis now. The other factors are chronic Bright's disease and weak heart, and the weak heart and the inability to exercise make it impossible for us to get up strength and combustion and therefore to put an end to the collæmia and to cure.

The correct line is to go for the heart and digestion, congested liver, &c., and then to feed up on correct and concentrated, highly nitrogenous but U.A.F., diet, so as to get rid of the collæmia, and then all will go well. In many such cases, however, this is much easier to talk of than to do. Possibly this was a case of acute retentive arthritis (gout or acute rheumatism) at first, and could have been cured by solvents, but when she went to Bath she got a weak heart and collæmia and came away from there with a collæmic arthritis, even if it were not collæmic before.

We must never forget, if we are to understand properly the cases in this chapter, that there are only two forms of uratic arthritis: (1) acute (gout or acute rheumatism), contemporaneous with raised temperature, quick C.R., low B.P., and little uric acid in the blood, and the treatment of which is to get the uric acid into the blood with solvents; and (2) chronic arthritis with anæmia, debility, dyspepsia, diarrhœa, congested liver and stomach, perhaps low B.P. if there is a weak heart, collæmia, slow C.R. and excess of uric acid in the blood; which excess constantly ebbing and flowing past the joints keeps up a slow, smouldering irritation. The

treatment of this is to clear the blood of uric acid by tonics, retentives, good nutrition and feeding up, and the worst possible thing is to do what had been done in the above case, to increase debility, weaken the heart, underfeed (*i.e.*, diminish meat, &c., without putting some other form of proteid in its place), and allow her to become crippled and bedridden.

I believe such cases may still be cured if the heart, which is the key of the situation, can be strengthened, and if the joints can be moved so that nutrition can be stimulated, but I did not get a chance in this case, and it occurred some years ago, before I had a full grasp of all the points in causation.

Case 4.—G. R., male, aged 59. Had gout with numerous tophi for four years. Now complains of mental depression and tremor of the hands, which are worse in the morning, and both come and go together. They both go off about 12 noon when he has his lunch. (*This reminds me of a current saying in a markedly collæmic and gouty family among my relatives, "Don't speak to me, I'm not nice till after* 12.") He had no depression four years ago, when he first had gout in his toes. It has come since with the debility and absence of gouty pains. There are tophi in both ears, his recent attacks of gout have been in knees, shoulders and elbows. At present the tremors are violent, come during rest, and are not increased by movement. Pulse 95, shows high B.P. in tracing, and feels high B.P. to finger; tracing much obscured by tremors. I gave him an immediate dose of calumba and acid and told him to come back in an hour. In ninety minutes I saw him again, and he said the depression had gone (10.50 a.m.), just as it usually did at a later hour, and he showed that his hands were now almost quite steady. I gave him the acid medicine to continue, and gave also a little phosphate of soda every night. He had slightly marked arcus senilis. Urine sp. gr. 1010, no albumin (*but probably granular kidney all the same*). His sleep is poor and he is much depressed in the morning, and there is now no gout.

A fortnight later he was sure he was decidedly better, and the acid medicine makes him very hungry, it also removed the trembling and depression. Pulse now 75, there is no sign of tremor in the tracing, and the predicrotic notch is half-way down the upstroke.

Here was a case in which gout took its departure, leaving signs behind it, and was replaced by collæmia, causing mental depression and tremor; the mental depression was due to defective cortical circulation—a result of collæmia plus weak heart—and the tremor was due to similarly defective circulation either in the cortex or motor centres. The movements in chorea, it may be remembered, are similarly related to defective intracranial circulation, and are similarly relieved by clearing up collæmia and strengthening the heart.

Case 5.—J. G., male, aged 62. Complains of vertex pain and giddiness, especially on getting up. Pulse 54; extremely high B.P. Tracing shows a large first wave, and the predicrotic notch is a little below the upper one-third of upstroke. History of gout in the toe some years ago, and "rheumatic" pains in various joints since. Left elbow is stiff. Temperature subnormal, passes very little water, constipated. Urine sp. gr. 1030, epithelium, mucus, and urates; albumin a trace.

Two days later I estimated urea and uric acid, and found a relation of 1 to 27, (*the urine in a chronic case like this with a subnormal temperature is probably a fairly good index of the quantity of uric acid in the blood*). He was given nitroglycerine and other retentives, and these relieved his head pain and vertigo.

No doubt this was another case in which the retentive stage (gout) yielded to advancing age, and changed into collæmia with excess of uric acid in the blood and urine, which produced the extra rise of B.P., accounting for his head pain and vertigo. Probably with instruments B.P. would have measured 180 to 200, and had been at 160 for some years; and the extra rise of B.P., from a rush of collæmia, produced high pressure, plus some œdema of the brain, and accounted for his symptoms.

Case 6.—H. E., male, aged 50 (medical). Complains of rheumatic pains, especially in right elbow. Has suffered badly from influenza the last two years, gave up work twelve months ago after a bad attack. Mother died of rheumatic fever at 54. One brother has rheumatism, with some enlargement of the fingers. Health otherwise good, except that twelve years ago he got inoculated with syphilis on the finger, and had an eighteen-months' course of mercury (*causing, no doubt, considerable retention*). Sleeps well, except for some rheumatic pains. B.D. ·75; pulse 74, but intermits 1 in 8 or 10; C.R. 5; B.P. 135. First sound long, second sound loud, action occasionally irregular. The fingers are slightly nodular, and the right elbow is stiff in the morning. Urine clear, sp. gr. 1025; no albumin, no sugar. Weight slightly diminishing, 8 st. 9 lb. Present diet includes meat twice, fish once or twice, egg once, tea or coffee twice, whisky twice a day. Used to drink claret or beer. I gave some salicylic acid for the elbow, and advised a slow change of diet, leaving off tea and coffee first.

A year later he was better, except for a little stiffness; had got rid of tea and coffee; diet otherwise as before. Pulse 76; C.R. 7; B.P. 140; B.D. ·75 (*i.e., same as before*).

I urged him to go further with diet, and two months later he went on to it completely.

Four months later he had got rid of his constipation, but the rheumatism was, if anything, rather worse. Had been taking acid fruits, such as prunes, also porridge and wholemeal bread, the two last being both acid and not entirely U.A.F. Weight, however, had increased 3 lb. I gave him the exact quantities, and ordered rather more milk and less bread; I also diminished his fruit and acids, and increased potatoes.

Here, again, if one has to do with collæmic arthritis potatoes may do harm; but if with a precipitation arthritis (gout), then they will do good. Looking to his age, the latter was rather to be expected in this patient. And so it proved, he did well, and has now been on the diet for six or seven years, and I hear no more of his rheumatic troubles; he has gone back to work, and treats many of his patients in the same way.

Case 7.—W. F., male, aged 58. Complains of chronic arthritis. Was quite well up to two years ago. Then he had four months in bed with arthritis in left hip. Has been subject to occasional rheumatism. Three years ago had gout in left testis. Complexion vascular, sleeps fairly of late. B.D. ·8; pulse 80; C.R. 6; B.P. 135. First sound long, second sound relatively loud (*collæmic heart*). The left wrist is now puffy and painful, the fingers are distorted and stiff with some Dupuytren's contraction. Has a good deal of flatulence (*rheumatism of bowels*). Bowels act once a day with extra hot water, night and

morning, to help them. Micturition two or three times a night. Urine, sp. gr. 1014, acid, trace of albumin (*granular kidney*). Left thigh some ¾ in. of shortening, slight œdema of ankles the last few months. Weight, steady, 12 st. 6 lb. Present diet of five meals includes meat twice or three times, fish once, eggs once. Tea twice a day. He is not thirsty, but he takes hot water by rule, and it has increased the action of the bowels. He saw the late Sir A. Garrod five months ago and was given his compound sulphur tabloids to take every night. (*This was a treatment by retention and might have done good, but that the excess of water favoured collæmia and counteracted the effect of the sulphur.*) I told him to diminish fluids and drink only when thirsty, and to alter slowly on to U.A.F. diet, making the change in four stages.

Six months later he had made the change of diet, and had increased flatulence on the new diet; it begins about 4 p.m. or 5 p.m. and lasts for hours.

This is rheumatic flatulence closely related to colic, gout of the intestines, appendicitis, &c. It comes as the acidity is rising and the uric acid is being cleared out of the blood; it is worse in rheumatic and gouty subjects, and it is increased by acids, bread, fruit, and especially by a mixture of these things.

This patient is taking the sulphur lozenges and Kutnow for the bowels, and both of these are acids or retentives; he also takes some lemon juice as a drink. Pulse 80; C.R. 6; B.P. 135. He was still taking too much fluid, also slops and sloppy puddings. Is gaining weight on the new diet.

Three months later was still troubled with flatulence, and even salicylate had not done much good (*it generally relieves rheumatic flatulence and bowel rheumatism, but he had only had a small dose*). He had some congestion of the prostate and hæmaturia from it. Pulse 68; C.R. 7; B.P. 140, but the urine I examined only contained a trace of albumin. I put him on three meals a day, and diminished fluid and fruit.

Two months later he had been having some peas, otherwise his diet had been correct. Pulse 68; C.R. 6; B.P. 145. (*The B.P. appears to be rising; probably there is a collæmia from some clearing out of the joint deposits, and one must not be surprised if they are rather worse and more painful during the process.*) He says his hip is very painful at times, and flatulence goes with it. Always has a headache on waking in the morning, effect of clearing out his joints, and hence the increase of B.P. I advised olive oil in place of Kutnow for the constipation. Urea keeps low, only 2·2 to 2·8 gr. per lb. (*and this favours collæmia and elimination of urates*).

Three months later; pains are better now at times. Still some headache in the morning. Pulse 68; C.R. 7·5; B.P. 135; no peas or beans. He is gaining weight in spite of low urea, probably fat, and he is very sedentary. Salicylate of methyl and small blisters were used locally for the painful joints and he was told to increase the potatoes.

Three months later the increase of potato had not affected the joints (*they would increase the clearing out and perhaps do harm at first, collæmic arthritis*). Flatulence, and pain in his left hip are the worst troubles now. Pulse 84; C.R. 7·5; B.P. 125. (*Here there are some signs of cardiac muscle weakness, coming probably as a result of the continued low urea, 2·4 gr. per lb.*).

Five months later the joints were still giving a great deal of trouble, and there was much flatulence. The morning headache continues. Pulse 68; C.R. 7·5; B.P. 135; B.D. ·85; some improvement, and he feels stronger and better, and has more endurance. Urea still only 2·1 gr. per lb. Pains tend to increase in the warm weather of July (*i.e., increased solution of deposits—collæmia*).

Four months later urea had got up to 2·5 gr. per lb., a slight improvement, but weight was still increasing. In the autumn he was better and the joints were more movable. Had a bronchial cold one month ago. Has now been two years on diet. Pulse 76; C.R. 6; B.P. 135. He finds that massage and electricity do more good for joints than anything.

Five months later said that everyone congratulated him on his general appearance and B.D. has improved to ·9 or ·95. I now gave some bicarbonate of soda to see if that would diminish pains and flatulence by increasing solubility.

Three months later, however, it had rather increased the pain (*just as it does in acute or chronic rheumatism, till you get enough alkali to produce complete solution and removal*). Had a fall which increased pain in one leg. Pulse 76; C.R. 6; B.P. 135. Still has morning headache. I then began to try retentives, as solvents rather made the pain worse, but they also did no good as they were unfortunately being used in the heat of July when their retention was overcome by the heat. I then gave aspirin, and this did good, especially when he was able to keep cool. Two months later he was distinctly better, but only taking aspirin occasionally. Pulse 72; C.R. 6; B.P. 140. Still some headache, still clearing out. Urea 2·5 gr. per lb.

Six months later had had a rigor and vomiting in the night (temperature 103, pulse 120), and could digest nothing for some days after. Since that was taking a little meat once a day for six weeks. His joints, however, are better, as he now walks with one stick in place of two as at first. Is beginning to walk in place of hobbling. Aspirin does most good for the joints, but tends to increase dyspepsia (*i e., collæmic dyspepsia*).

Three months later had had no more fever or rigors. Pulse 64; C.R. 6; B.P. 145 (*tends to rise*). Urea still about 2·5 gr. per lb. He is a stout man, 13 to 14 st. (*and we have possibly somewhat over-estimated his real [bone and muscle] weight, and as B.D. is improving he is probably having enough proteid, especially as there are now no signs of heart weakness*). He is now getting longer intervals without pain in his joints. Soda bicarbonate to extent of 60 gr. a day now does some good.

This is a matter of relative quantities of uric acid and solvent; the quantities of urate in the body are diminishing, and now this dose of soda can hold it in solution. The objection to increase of potatoes is that they seem to increase his weight, otherwise potato would do in place of soda.

Five months later is considerably better as to joints, but still has a good deal of flatulence (*possibly, as we shall see later, a part of this was due to organic irritation*). Pulse 72; B.P. 145; first sound long, second sound loud (*collæmic heart*).

Five months later, having now been nearly three and a half years on diet (*three years of collæmia and clearing out of deposits*), he was not feeling so well; appetite for breakfast had diminished, so he was only taking two meals a day and had lost some weight. After this, however, he improved, and urea went up to nearly 3 gr. a pound. His joints were all much better, and his chief complaint now was the flatulence. He finds bicarbonate of soda useful in the cold weather, though it makes the joints a little worse when he first takes it. My last record of him was: pulse 84; C.R. 6·5; B.P. 145. (*Was there an organic factor here also?*) B.D. ·95 (*a great improvement on its original condition*). Weight 13 st. 5 lb., steady now. I never saw him again, and he died four months later with symptoms of gall-stone colic complicated with inflammation of the bowels and pneumonia, a condition which was considered to preclude any operation; he died in twenty days from the onset of the colic. (*Evidently the rigor nearly two years before was due to gall-stone irritation, and not to mere liver chill.*)

A letter from a son telling me of his father's death ends by saying: "We are all agreed that the treatment which you advocated for my father gave him freedom from pain and lengthened his life."

Yes, it relieved the joints as the urates were slowly excreted, and the pains diminished as he began to get clear, but it caused three years of collæmia, and this may have been at least a part cause of the gall-stones by rendering the bile, like all other secretions and

excretions, scanty and thick, and hence having increased tendency to throw down mucus.

I have heard it said that milk diet is a cause of gall-stone, but this I believe to be a wrong reading of the facts. It is not so much the milk as the collæmia, the result of previous years of wrong diet, that tends to their production. The above patient used very little milk because he tended to get so stout on the diet, but he had, as our records show, three years of very marked and continuous collæmia, as his joints were being cleared out, and he had been living on poisons for 58 years before I saw him.

But it is impossible to get out of arthritis without producing collæmia, and all we can do is to spread out the collæmia and prevent it, so far as we can supervise it, from producing serious troubles such as Bright's disease, diabetes, uræmia, coma or neurasthenia; but even to do this may mean a slow and incomplete cure of the arthritis, but where life is directly threatened by the collæmia, the arthritis is the lesser of the two evils.

This merely shows how difficult, if not impossible, it may be to put right in any way the results of fifty-eight years of wrongdoing. There is, as I am accustomed to say, in Nature practically no forgiveness of sins, and her debts are always paid in full; which should make us all much more careful than we are at present not to go wrong. In another case of mine, in which some attempt was made to put gall-stone down to U.A.F. diet, as if there was not plenty of it among those who never took milk except greatly diluted in tea, my clinical notes fortunately showed that there was some enlargement of the gall-bladder at the time the patient first came to me, and of course it is possible to suffer from collæmia without any alteration of diet.

Case 8.—J. W. P., male, aged 53. Complains of pain in the back (*lumbago*) on and off for two years. Also of eczema of shins and back of ankles occasionally. The eczema was cured by boxing and wrestling (*i.e., plus exercise diminished acidity and collæmia*), but this did the back no good, nor did Bath do any good (*i.e., the back trouble, though originating in retention, was kept up by collæmia following it*). Massage did good for a time, but it relapsed again (*i.e., massage was not continued till all the urate was gone from the lumbar fascia, and so retention recommenced when it was left off*). His father had a stone in the bladder at the age of 47. Patient had "measles" at 13, and was salivated with mercury then. Teeth are now dropping out from the effects of the mercury. Sleeps well. Pulse 75. Bowels act irregularly. Urine sp. gr. 1025, high colour and some red sand, contains a trace of albumin (*? gravel*) and slightly discolours bismuth (probably *not sugar*). Weight 13 st., steady. Salicylic acid upset the stomach and did no good. (*It was badly absorbed and in upsetting the stomach it produced a condition, lowered acidity, which was unfavourable to its solvent effects.*) Has chewed tobacco since 18 years old; a chew does in place of a drink. Present diet includes meat twice, fish once, soup once, egg and bacon once, tea or coffee once, wine twice, a pint at dinner. I gave him salicylate of methyl and told him to apply it

freely to the back, and if necessary to apply pieces of lint soaked in it right across the back. Six days later he said it had done much good and decidedly relieved the pain, though it caused some little skin irritation. He is better all round as to stiffness, a general as well as a local effect. This patient, as might be expected, did not wish to alter his diet; he preferred to use drugs when in pain.

Case 9.—R. P., male, aged 53. Has had some rheumatic gout for fifteen years, and eleven years ago had very bad bronchitis and loss of voice. Has hard work in Bombay, with little exercise. For the bronchitis, which rendered him sleepless at night with orthopnœa, he took many drugs and patent medicines. The patent medicines did harm, especially for the stomach; and later he got eczema of hands, face, and neck, which was severe. This was treated with mercurial ointment, but it got worse and worse. He was cured by Professor Kaposi, of Vienna, with ol. rusci and emp. saponis (dry method of Hebra). Later on the use of a mercury ointment brought on eczema at once (*gout of skin from retention*). Had acute gout in foot two years ago. Has read my books and put himself on a U.A.F. diet, except for pulses. There is a tophus in the right ear. Professor v. Noorden advised Nauheim for his heart last year, and he has slept better since going there. B.D. ·75; pulse 104; C.R. 6; B.P. 115. First sound long, second sound slightly loud. C.D. increased both to right and left (*showing some debility of heart muscle, for which, no doubt, Nauheim was ordered*). Liver dulness full size. Urine sp. gr. 1013; occasional trace of albumin. The right ankle is still tender. Weight 150 lb., steady. Has had many drugs for his joints; salicylate of soda did the best of all, and he insisted on having it in his last attack. A month later has been on a U.A.F. diet for about seven months now. His diet before this contained four meals: meat twice, eggs once, coffee twice, fish once, peas or beans once.

Ten days later, pulse 90; B.P. 135. Pulse has fallen, and B.P. risen (*i.e., the heart is a little stronger*). Is losing weight slightly, but feels no loss of strength.

A month later he reports that he feels well, and has no attacks of arthritis; takes long walks, and feels comfortable. Had slight pains in the ankles after some acid plums. Has occasional fluttering in the throat on walking uphill (*heart muscle still weak*). Pulse 92; B.P. 115. Has increased 2 lb. in weight. After this he went on well, and returned to his work in India.

Here we have arthritis clearly due to uric acid, and plenty of it, in his food, leading on through drugs (solvents) and collæmia to weak heart and congested liver, a quite common sequence, probably the most common of all. The next stage would be Bright's disease, or diabetes, and beyond these dropsy or cerebral hæmorrhage, according as the heart muscle continues weak or recovers itself. Diet will probably let him off the worst consequences of this sequence, but, of course, it cannot put back the harm already done to joint surfaces, and to the structure or nutrition of the heart.

Case 10.—M. P., female, aged 62. Complains of chronic gout. Also gouty colds, which are severe, and last long. Suffers from nervous exhaustion between times. Mother suffered from suppressed gout (*collæmia*) and glaucoma (*a result of high B.P.*). Two years ago was said to have diabetes, and sugar to extent of 5 gr. per oz. was found (*glycosuria*). It came after a bad cold (*i.e., collæmia, heart failure, and congested liver; the cold, no doubt, strained and dilated the right side of the heart*). Is getting pale. Has suffered from gouty ophthalmia. Sleeps fairly. Is greatly depressed, and very irritable in the morning. Feels good for nothing at present (*neurasthenia*). Pulse 84. Second sound relatively loud (*no doubt collæmic heart, but this was in pre-instrumental days unfortunately*). Fingers show rheumatoid changes, and are slightly nodose. Micturition twice in night, and has some irritation of vulva and prurigo. Urine pale amber, sp. gr. 1011, very acid, no albumin, no sugar.

Probably the vulval irritation is now simply due to the high

acidity. Here is a case further advanced in collæmia than the last, rather weaker and older, and, when a catarrh dilated the right heart, increasing collæmia and congesting the liver, she got a temporary glycosuria. Her present diet contains meat twice a day, fish once, soup once, egg once, bacon once, tea twice, whisky twice a day. She does well at Homburg, and in a bracing air (*i.e.*, on retentives), just as we should expect.

Case 11.—J. G. P., female, aged 44. Complains of rheumatoid arthritis, which began in her fingers fifteen years ago during a very cold winter in Germany. Her father had gout occasionally and one brother had it. Had a bad illness nine months ago after going on to Salisbury diet, with great loss of weight. She was unconscious for two days, and this was followed by loss of memory. Her neck is getting stiff and fixed and she can hear grinding and creaking in it. Pulse 108. Second sound loud (*probably a collæmic heart that is now failing somewhat*). Menstruation regular, pains in joints are better a little after the period, worse just before it (*i.e., worse in time of retention, better in the collæmic time*). There is some creaking in the right knee. Has been at Buxton, Bath and Aix without benefit. Joints tend to get worse, especially the neck and shoulders. Swedish treatment did good, but only at first.

The pains were much better the first six weeks on Salisbury diet, but worse later; (*again better during the stimulation, worse in the collæmia and depression that followed*).

If the stimulation could have been kept up the improvement would have continued. Now the collæmia has done considerable damage, especially in weakening the heart. And this is the difficulty in all these cases; you cannot get them strong and stop the collæmia while the heart is weak.

Her present diet includes meat twice, fish once, soup once, bacon once, tea or coffee twice, whisky once a day (*plenty of poisons still*); and yet she is taking extra hot water with the idea of washing out. (*The only possible effect is to further weaken her heart and help to wash out her life*), and she has already got slight œdema of the ankles.

Case 12.—M. O. H., female, aged 35. Complains of sudden pain in the region of the bladder, with frequent micturition. This came on about two years ago after being overworked and sleeping in a damp bed. The pain is of a throbbing character, and is diminished by rest. There is no gout or rheumatism in the family, but her mother had gravel. She had influenza very badly five years ago, followed by severe anæmia. She has an antipathy for fluids and drinks very little. Sleeps well but is disturbed once by urination. B.D. ·75; pulse, 80; C.R. 7; B.P. 125. First sound long, second sound relatively loud (*a collæmic heart with somewhat weak muscle*). Has some eczema about the hands. Menstruation regular, urine trouble is worse after it (*i.e. with increase of uric acid and collæmia*). Last child twelve months ago, and nursed it for six months. The urine was better while nursing it (*probably diminished acidity*). She now passes water three times in the night. Pain and discomfort are limited to the region of the bladder; her urine has often been examined by her husband, who is in the profession, and it shows only signs of chronic catarrhal cystitis. Citrate of potash has been used; it diminishes the frequency of micturition, but increases the pain. Has also been taking Vichy water tabloids. Present diet of four meals includes meat once, eggs once, tea twice, cocoa once, some jam and fruit. Urine passed here sp. gr. 1012, slightly acid, a mere trace of albumin; contained various kinds of epithelium, a few pale cells (*mucus*) and some urates. There are no piles, no urethral caruncle or other local irritation, and uterus is said to be quite normal. (*Apparently we have chronic catarrhal cystitis originating in a chill in a patient probably collæmic and certainly eczematous.*) The discomfort

lasts all day, but there are paroxysms of pain at times. Has not tried lithia; salix nigra eases the pain, but does not cure. I gave salicylate of methyl to be painted over the hypogastric region as frequently as the skin would stand it, If necessary to try salicylates by mouth as well.

A month later she reported that salicylate of methyl did wonders, that she was much better, and some days did not feel the pain at all. She had used 1 oz. of the salicylate in five weeks. I told her to persevere with the treatment even though better, as all the urates must be got out of the tissues or there would be renewed retention.

She apparently went on well, and I heard nothing of her for a year; then she had had some lumbago and occasional pain in the bladder off and on. She had been quite free of it under the salicylate, but now had a slight spring recurrence, probably from renewed exposure to cold. She is trying to get on the U.A.F. diet, but as a rule does not take sufficient proteid, and has considerable flatulence (*with the lumbago and cystitis, another sign of retention*). She finds that brown bread, porridge, and pea soup all increase the pain in the bladder (*and all are wrong*).

A few months later she went to Germany for a holiday, and was able to eat some meat when there without harm to the bladder—she wants to know why.

The answer is that if the bladder has now been cleared of urates by the salicylate, those introduced in the meat may select some other place of deposit and let the bladder alone, but if she continues to swallow poisons she is sure to hear of it, either in the back, the skin, or the joints, at some future time.

This patient got quite well, and remains so on a more or less U.A.F. diet, by last reports.

Case 13.—M. G. J., male, aged 74. Complains of urinary irritation, chiefly due to enlargement of the prostate and recurrent vesical catarrh. Urine has to be passed pretty frequently by day, and every two hours at night. There is some pain and tenderness in the hypogastrium. Urine amber, turbid, slightly acid, sp. gr. 1013, considerable deposit of muco-pus, and a corresponding cloud of albumin. The microscope shows nothing but muco-pus and epithelium. Has been a vegetarian for one year, and has read "Diet and Food." Has been treated for cystitis and had urotropin with no benefit. Was very well in summer when living on strawberries. I told him that U.A.F. diet with milk would do good after a time, and sent him some natural oil of wintergreen to paint on the hypogastrium. In a month's time I received another specimen of urine, sp. gr. 1008, still containing albumin and pus, but a trace merely, decidedly less than before, and patient says he is decidedly better and micturition less frequent, can now pass night in comfort. He is painting on m.xx. of the oil of wintergreen three times a day.

Three months later he is better still, and only rises once in the night now in place of eight or nine times. A month later he was able to sleep the whole night, and micturition much less frequent in the day. His food is now milk, almonds, potatoes, vegetables, and oil. Is going to take strawberries presently. May take golden syrup in the morning for bowels in place of Glauber's salts (*both are retentives*). A little later he says that strawberries, milk, and almonds have done very well for some weeks. Amounts, about 6 oz. almonds, 2 pints milk, and 3 lb. of fruit, which total 1,376 gr. of albumin, an ample diet for a man of his age. In March of the following year I gave him some aspirin for a short time to help the local salicylate, and told him to diminish potatoes and increase fruit while taking it.

He continued to do well, and two years later considered himself almost quite cured, and expects the complete cure in a few weeks. He now lives on bread, cheese, almonds, vegetables, and milk, the latter to the extent of 3½ pints a day. He still uses the methyl salicylate, but less than he did. He walks two hours daily, and is always occupied when not out of doors. He has practically no trouble with the water now, and is surprised that it passes so naturally. (*Another point of interest in this case is that the artificial oil of wintergreen did*

*not act nearly so well as the natural; he got some of the former to try and save expense, but soon found his mistake.*)

Case 14.—G. J. L., male, aged 72 (medical). Complains of chronic enlargement of the prostate, now often bleeding, especially when a catheter is used. Had inflammation of the kidneys eight years ago. Skin of face somewhat puffy. Somewhat muddled in the head, wakes 4 a.m. and does not sleep again. Pulse 84; C.R. 7·5; B.P. 115. First sound short (*i.e., weak muscle*). Urine sp. gr. 1017 to 1022, contains albumin and occasionally blood and red sand, also urates and mucopus (*i.e., prostatic and vesical irritation and some slight gravel, but no sign of Bright's disease now*). Has had bleeding piles as well as prostate and bladder trouble. Put himself on a vegetarian diet five months ago, milk, cheese, breadstuffs and custard, and rather a considerable amount of fruit, occasional Benger's or Mellin's food. He remarks that after five months on this diet he still passes uric acid.

If he means red sand, that is kept up by the amount of acid he is taking; if he means excess of uric acid, his urine does not, so far as I can see, show any great excess, and of course red sand is no proof of such excess, rather the reverse; but if there were some actual excess of uric acid the age of miracles has departed and is not likely to return just yet. What does he expect? Seventy-two years of pouring in uric acid 10 to 12 gr. a day, and he is to be got clear of all this on U.A.F. diet in five months. If a doctor may even for a moment entertain such an idea, what may not a patient entirely ignorant of physiology expect? I shall be blamed directly for not curing a patient by suggestion in five minutes! Here was a patient in the second collæmic stage and having no doubt collæmia; the high blood-pressure and the urate irritation between them cause enlarged prostate and irritable bladder, and then the worry, trouble, progressive collæmia and anæmia cause heart failure, and we have the circulation conditions, œdema of ankles and brain and the muddle-headedness found.

He saw the late Dr. Illingworth a few years ago and he advised iodide of mercury (*his favourite drug*).

And this undoubtedly was good treatment, as it held the collæmia in check and combined with a heart tonic, and a correct rather dry U.A.F. diet would have done all that was possible in such a case. The iodide of mercury takes work off the heart by diminishing collæmia, and then a heart tonic given under these conditions would help the nutrition of both heart and brain.

Case 15.—M. E., female, aged 66. Friend of a previous patient with similar troubles, who is better. Suffers from chronic rheumatism of the hands, which are very stiff in the morning, so that she cannot write long. The joints of the hands have been enlarging for four or five years and are now growing crooked. Has also acute neuralgia in both arms, had great suffering with it two years ago. Had sciatica ten years ago. Occasional neuralgia in her head. Throat always delicate (*gouty*). Pulse 72; high B.P. to finger. First sound long, second sound loud (*i.e., collæmic heart*). Breath short at times; weight increasing, 12 st. now. Has pins and needles and a feeling of tightness in the fingers, which she often

has to rub. (*Collæmic neuralgia and neuritis.*) Has been to Homburg several times, but no definite good. Present diet includes meat three times, and bacon once, fish once, soup once, egg once, tea or coffee twice, wine or whisky twice. Swedish exercises and massage did some good. I advised a gradual change of diet, leaving out poisons slowly and putting in foods.

A year later she had made a feeble attempt at it, but then went to Homburg as usual, and had to give up diet. Results, of course, arthritic pains increasing.

Case 16.—A. C., female, aged 48. Complains of rheumatic gout. Fingers of right hand are worst and are nodular. Is fond of playing piano and is becoming unable to do it. Has also general rheumatic pains about the body, worse with every change of weather. These pains are worse in summer than in winter; there is also some numbness in the tips of the fingers. Her mother has rheumatic pains, and one sister has joint pains. Has had influenza slightly. She has pressure and tight feeling in the head, which is worse at her monthly period (*plus collæmia*). Worries much over things. Pulse 88. Apex beat is slightly to left of left mid-clavicular line and there is a late systolic blowing murmur there (*collæmic dilatation*). Has "sinking feelings" in epigastrium, empty dyspepsia (*collæmic dyspepsia*). Bowels only act with Carlsbad salts. Menstruation is becoming irregular. Rheumatism gets worse as it passes off (*i.e., rise of acidity after, or putting an end to the collæmia of later days of menstruation*). Urine sp. gr. 1023, cloud of albumin, no sugar. Microscope shows that it is only leucorrhœa. Present diet meat or fish twice, egg once, tea twice a day. Fruit causes acidity and increases pains, and any acid has the same effect. I ordered the usual gradual change of diet, and a month later she was better as to the feelings of pressure in the head, but the joints were rather worse, as the weather was getting warmer. There is no numbness in the fingers now. Pulse 72, so circulation is better. I told her to go on, and if her joints got any worse I would give her some drugs for a time.

Four months later I heard of her from a neighbour who came as a patient; she was said to be much better, active and nearly free from joint troubles.

Case 17.—E. N., female, aged 31. Complains of rheumatoid arthritis, worse in cold and damp weather. The left knee is the worst joint just now. Has it in the neck and it prevents movement of the head. Has headaches very bad before the monthly period, last only two or three hours. Anæmia for years. Had quinsy before the arthritis. Was married at nineteen and has no family. Headaches diminished as rheumatism increased. Skin of face puffy, eyes rather prominent. B.D. ·75; pulse 84; C.R. 8; B.P. 145; first sound long, second sound decidedly loud (*i.e., collæmic heart*). Fingers slight rheumatoid changes. Has chronic dyspepsia with much flatulence. Thyroid is slightly enlarged. Bowels act only with pills. Is in bed three days at each monthly period and loses a great deal. A gynæcologist gave ergot, but no permanent effect.

Here is some menorrhagia due to high B.P. and secondary congestion of pelvic organs; possibly in such congestion and the production of fibroids and fibrosis we see some of the ways in which a meat diet produces sterility.

Urine normal. The left knee is enlarged, especially on the inner side, and somewhat tender. Can only go upstairs one foot at a time. Weight 10 st., steady. Present diet of four meals includes meat twice, fish twice, soup once, bacon and egg once, tea twice, whisky twice a day. She was given extra hot water but did not get on well with it.

I tried aspirin, but it did no good; there was too much debility and anæmia for it to act well. Salicylates do best in the strong and well-nourished with high acidity (*e.g.*, acute rheumatism). In these cases you must first cure anæmia and debility, then use aspirin, and then U.A.F. diet to keep clear. Other methods are

slower, but if you get them clear of urates they will get well and remain so.

Case 18.—A. K., female, aged 16. Complained of having had sore throat for a week. Her tonsils were enlarged and she had some little fever. She was given m. ferri lax. followed by iron and pot. chlor., and while taking this last mixture she began to get pains in her limbs, and I then went into her history, which is interesting. She has always suffered with headaches, about twenty-four in a year. She is bilious and occasionally blind with the headaches (*obviously migraine*). Her brothers and sisters have weak throats (*rheumatic tonsillitis*). Her mother has chronic rheumatism and enlarged joints. She had some palpitation with the tonsillitis, but there was no other obvious sign of morbus cordis. Menstruation began one year ago, and has been scanty of late. She does not like meat, and takes very little of it, but to make up for this her mother gives her beef tea.

Here a meat-poisoned and rheumatic woman rides through the natural instinct of her daughter, and does infinite harm through her ignorance. Man is said to have no instincts; he has them decidedly, especially when young (and youth is the epitome of racial past history), and the pity is he does not attend to them more.

I gave her salicylates for her rheumatism, and told her to disregard her mother, and live as far as possible on milk, cheese, bread puddings, and a little egg, and promised she would soon get clear both of headaches and rheumatism if she followed her own inclinations as to foods.

Case 19.—J. C., male, aged 38 (medical). Had gouty pharyngitis and tonsillitis for many years, otherwise good health. A teetotaller for fifteen years (*not much good from that*). First attack of real gout four years ago, and was advised by Dr. S. Mackenzie to take to a vegetarian diet. He did this, using pulses very generally, and had three mild attacks of gout in the vegetarian time; he persevered, but in a half-hearted way, in consequence, and later relapsed into ordinary diet. About two and a half years ago had another gouty attack in left knee, and then read Dr. Luff's Goulstonian Lectures, and tried his rational mixed diet with his vegetable solvents, and had then only one attack in twelve months. But last year had a really bad attack again in great toe, and was much put out as to work and worried by it. He then read "Diet and Food" and "Uric Acid," and followed the diet there advised, and so far with the greatest possible satisfaction; feels well, looks well, and is able and equal to any work he has tried, and can play lawn tennis and cycle without feeling tired next day. He says: "At a little shooting a few weeks back I was able, on my porridge and milk, cheese and fruit, to walk the egg and bacon breakfasters off their feet, and to cycle home forty miles afterwards without distress." He finds his taste for tea practically gone, although he still once a week indulges in a little coffee and milk. He ends by saying: "Although 'feeding as an occupation' never in any way appealed to me, I really feel astonished to find how little hankering there is now left for the chop, although for the first few weeks the smell of the cooking certainly did require some resisting."

The above notes were written nine years ago, but I saw this doctor quite recently. He is in first-class condition, B.D. '9 at least, and gout a memory only; but as ignorance and prejudice are strong and party spirit still runs high on matters which should be viewed only in the calm light of pure science, and, as self-preservation is the first law of Nature, he has not told all his patients how he lives, and only tells those who can be trusted, and who are likely to

benefit and make good use of the information, how he got rid of his gout.

Case 20.—M. D., female, aged 48. Complains of rheumatic gout in the hands, which are nodular, also in one shoulder. Trouble began five years ago. There is much loss of power in the hands and they give way. Not much pain in them except when a joint first gets bad. Pains and troubles worse in winter and spring. Father had rheumatic fever followed by chronic rheumatism and lumbago. Mother's mother and aunt chronic arthritis, one sister has "rheumatic neuralgia." Suffers from cold feet and hands and cannot sleep at night for them. Had inflammation of lungs and pleurisy twenty years ago (*second retention stage*), congestion of the liver then (? *heart failure*). Had influenza and inflammation of the lungs five months ago. Temperature raised five days and some vomiting. Eyesight has been worse since this influenza. Takes sulphur in the spring to clear the blood (*which it does, acting as a powerful retentive*). B.D. ·7; pulse 80; C.R. 7; B.P. 130. Apex beat is a little to the left; both sounds are reduplicated in places (*collæmic heart*). Nails split and slightly reedy. Hands peeling with eczema—are like this every spring (*perhaps one of the local precipitations produced by sulphur*). Some flatulence, bowels open with aperient waters (*probably more retentives*). Menstruation irregular, no pain or excessive loss. Weight steady. Has been taking lithia and soda for three weeks, and it has done the joints good (*lithia acting probably as a retentive*). Salicylates relieve her sister's rheumatic pains. Present diet of four meals includes meat once, bacon once, cheese once, tea twice, and some extra hot water. Always feels empty before breakfast. Fond of bread pudding and vegetables. Cannot take much milk or cheese, they cause liver trouble. (*An ordinary case of chronic arthritis with some anæmia and heart weakness. I give it chiefly for the rather interesting history.*)

I am indebted for the notes of the following interesting case to my friend, Dr. J. Raglan Thomas, of Exeter, and the treatment and success are his also.

Case 21.—A. B., female, aged 30. Suffers from old heart mischief, which first showed itself when she began to go to school. Lungs much impaired by old pleurisy, pneumonia, and bronchitis, of which she seemed to have had many attacks. There is some cyanosis and dyspnœa. She is clever with brush and pencil. Family history good, except that father is highly nervous. A slight cold one autumn was followed by much depression. She was faint, and complained of numbness in right hand and arm, and face was slightly drawn, but these symptoms soon passed off. Two months later at 6.30 p.m. was standing near fire, when she felt giddy and fell, and vomited, and she was then found to have well-marked right hemiplegia and aphasia. She vomited her dinner, and bladder and bowels were emptied involuntarily. She could say "yes" and swallow fluids. After a few days control of sphincters returned. After two months leg had recovered and some speech, but arm still weak. Can draw with the left hand. There was amenorrhœa for five months after the attack, and then menstruation returned every three weeks.

Five months later when she went downstairs she had some râles and crepitations at the bases of both lungs followed by effusion, most on the right side; some eighteen days later fluid to extent of 3 pints was drawn off. There was some œdema of the feet, most on the right, and the urine was sp. gr. 1028, acid and contained albumin; soon after this she had an increase of albumin and anasærea together with increased dyspnœa and cough with most distressing attacks of palpitation, and a fresh collection of pleural fluid. Several changes of diet were made and contrary to my friend's orders she was given raw meat, peptonized foods and meat sandwiches. "She became alarmingly worse, and when apparently dying I obtained full permission to exclude all meaty foods and to restrict her to your diet, which I did. From that time she began at first slowly, and then very rapidly to improve. A week later paracentesis thoracis was again used, drawing off 3 pints of fluid; and from that time on her progress

was most satisfactory, and in a week all albumin had gone from the urine and œdema from the legs."

A week later she was up in a chair, and two weeks later began to walk again slowly. "The change I attribute entirely to the elimination from her diet of substances containing uric acid or its equivalents."

Here was an obvious case of meat and tea poisoning, rheumatism, morbus cordis and many other local retentions, and yet meat is the very last thing to be suspected, and only when everything else was failing was leave given to alter it. And even my friend might not have suspected the meat in spite of her very obvious relapse when it was increased, if he had not read my books. What an enormously interesting case this would have been if my friend had estimated all the circulation factors at every stage; we should then have seen not only that freedom from uric acid cured, but how it did it.

Case 22.—B. P., male, aged 50. Complains of gout, on and off for ten years. Had influenza two years ago with inflammation of the lungs. Also gout in the head two years ago. First had gout in the big toe ten years ago, and since that often slight gout in a joint relieved by Blair's pill, or colchicum and potash under the late Sir A. Garrod. Face vascular with large capillary veins. Tophi in left ear. Gets headache from smoking a cigar, or if he eats meat late in the day. Pulse 80, not very high B.P., but second sound is loud everywhere. Bowels act only with drugs. Micturition once in night. Urine sp. gr. 1020, high coloured, acid, pink urate deposit, no albumin, no sugar. Weight 19 st. 5 lb., steady. Present diet much modified from what it used to be; still contains meat once, egg twice, soup once and beef tea once, tea or coffee twice (*not a little poison still*). I at once cut off beef tea and soup, and diminished tea and coffee. I then gave some salicylate of soda for the gout, but it did no good (*probably because he continued to take some potash while on it, and this would upset its action*). Has had less gout of late years since he has been more abstemious. I again tried salicylate, but it again failed, as the conditions were unfavourable and he took Blair's pills and other things with it.

Two months later I got a sample of twenty-four hours urine 80 oz., sp. gr. 1018, acid, no albumin. Urea 739 gr. or 1·7 gr. per lb., and uric acid 29·7 gr., relation 1 to 24.

So that he is clearing out plenty of uric acid, excretion being 8·7 gr. above formation, and his introduction now is probably not more than 3 or 4 gr. a day; on beef tea and soup, introduction might possibly have accounted for the whole 8·7 gr.

As he was thus excreting freely I let him alone on the alkali and colchicum, which he had already had so much of, and contented myself with the attempt to stop all introduction (*thus facilitating elimination as well*), and he did well and gradually grew free from his gouty troubles. (*In such cases diet and introduction are the important points, drugs are of quite secondary importance, and often need not be taken at all*).

Case 23.—M. A., female, aged 39. Complains of rheumatoid arthritis, beginning in great toe and instep six years ago. Has been on Salisbury diet for six weeks, and was better at first, but worse later and since giving it up. (*We have seen the meaning of this in previous cases.*) Mother's father had rheumatism badly. Father's sister died with rheumatism and exhaustion. Never very strong. Headaches for ten to twelve years, worse at the monthly periods. (*The usual migraine—arthritis alternation.*) Headache begins in the front,

then goes to back of head and causes vomiting. Sleeps badly owing to rheumatic pain in shoulder. Has got broken down and tired out of late. B.D. ·75; pulse 88; C.R. 6·5; B.P. 115. Apex beat slightly to left. First sound long or reduplicated, second sound reduplicated. (*Collæmic and debilitated heart; B.P. should be* 130, *but is only* 115 *on account of muscle weakness.*) Finger joints lipped, nodular and distorted. Urine said to be all right by home doctor. Very slight œdema of ankles. Present diet includes bacon once a day, tea or cocoa three times a day, and the rest is brown bread, vegetables, fruit and cheese. She once went to hot springs in California and rested for six months, and was then better for two and a half years. (*Of course anything that weakens the heart does harm in these cases, and the condition of the heart is the key to treatment; therefore rest, heart tonics and bracing climates will do good*). I advised hot springs again, and a good long rest, to feed up on any diet (*you cannot get the heart muscle strong on deficient proteid, and she is not having enough on her present diet*), and I gave a tonic of nux, arsenic and phosphoric acid.

Nine months later. Has just come back from hot springs, has been on ordinary diet with diminished meat. Was better there for a time, but since return has been lamer than when she went. She has, however, regained power in right arm and lost her writer's cramp. Is still weak and fit for very little. She is taking a doctor's medicine to reduce deposits in the joints, and this and the mud baths at Indiana pulled her down a great deal. (*This was an absolutely wrong treatment. No weakening should have been allowed, and nothing but tonics given.*) B.D. ·8, a slight improvement. I returned to tonics and feeding up with intention to give aspirin when stronger and U.A.F. diet to complete the cure after clearing out.

Three months later she was distinctly better and stronger and could walk better. At times she has been keeping her rooms too hot for the aspirin to act well.

A month later she reports that she has done very well on aspirin since keeping cooler.

Case 24.—C. L., male, aged 49. Complains of arthritis in knees since a wetting eight months ago. Had slight rheumatism for years, not bad till this wetting. Had lumbago last year off and on for three months. Bilious as a young fellow, "grown out of it now." (*Has he? Then I know he has grown into something else instead*). Has had influenza several times, lumbago five or six years ago. Sciatica occasionally slight. Looks pale and face is puffy. Sleeps till 3 a.m., then lies awake two hours at least. (*Hours of change from retention to collæmia.*) B.D. ·7; pulse 96; C.R. 7·5.; B.P. 115. Respiration is short on exertion, not able to run. First sound slightly altered, second sound relatively loud. (*Obviously there is some heart weakness, for the B.P. should be* 150.) Has occasional bronchitis. Suffers from distension, flatulence and constipation, and takes Cockle's pills. The stomach extends two finger-breadths below the umbilicus, and there is some splash. Liver dulness is full large, but the edge cannot be felt. He is thirsty and a big drinker. Urine is thick in the morning. Height 6 ft. Weight 13 st. 11 lb. Present diet includes meat twice, fish once, bacon once, tea three times, whisky or wine three times. Champagne is poison to him and brings on rheumatism or lumbago. I gave heart tonics and ordered diminution of useless poisons such as tea. Ten days later he was better in himself and one knee was also better. Pulse 84; C.R. 7·5.; B.P. 110. I increased the dose of medicine.

Two weeks later, has taken mixture and feels decidedly stronger and better on it. Pulse 88; C.R. 5·5; B.P. 100. Appetite is now good and digestion is better with less flatulence. (*I have diminished collæmia and made the C.R. B.P. ratio nearer normal.*) B.D. nearly ·8, some improvement.

Having thus somewhat improved the general condition I then began to give salicylic acid for the arthritis. Three months later he was doing well. Pulse 76; B.P. 120, and pains generally better.

Case 25.—H. G., female, aged 72. Complains of obesity and chronic arthritis in many joints. Fingers enlarged and deformed. Is also said to have a gouty heart and has been at Nauheim several times. Hearing has been affected the last two years. Her doctor said "Fatty degeneration of heart and torpid liver." Had influenza with pneumonia four years ago. Many joints are painful and

stiff on movement. One brother has rheumatic gout and is a high liver. Is occasionally depressed from fatigue or liver. B.D. ·75; pulse 60; C.R. 6·5; B.P. 140, flattened 190. First sound indistinct and long, second sound relatively loud. Digestion slow, but no pain. Urine turbid with urates, no albumin, no sugar. Weight 138 lb. in clothes (is a small woman). Is very fond of fruit, which agrees and keeps bowels open. Present diet: fowl or meat twice, egg once, soup once, 1½ to 2 pints milk, no tea. This diet is much better than it used to be, but she is gaining weight on it and wishes to go down. Later on she gained as much as 3 lb. in a week. I now put her on to a diet of biscuits and fruit only; she was allowed to eat as much as she liked of them, but of course she did not now get nearly enough proteid, and she lost nearly 1 lb. a day, being weighed every day. Later several whites of egg were added in order to reduce the loss to ½ lb. a day, which, considering her age, was I thought enough to lose.

Three weeks later she had lost 7 lb. in weight and felt brighter and lighter. This lowered diet without fluid completely relieved her mental depression. Pulse 76; C.R. 7; B.P. 145 (*no fall*). Two weeks later her total loss was 10 lb., and her food consisted of six whites of egg, spinach, baked apples, pears and grapes, probably less than half the proteid she ought to take. When she had lost 14 lb. I added some curd cheese and some milk sufficient to bring the proteids to normal and make the weight steady. She had still a little gouty pain in hips and lumbar region, but was otherwise well, bright and active. B.D. ·85 (*a decided improvement in spite of diminished proteid of late, probably this was due to shutting out the poisons*). Pulse 80 (6 *p.m.*); C.R. 6; B.P. 120, flattened 140 (*the B.P. has now at last fallen a little, but there was no decided evidence of heart weakness. It was in my opinion simply a collæmic heart, i.e., a heart under the influence of chronic collæmia*).

Case 26.—M. F., female, aged 42. Complains of heart trouble, with which she was very bad some years ago, but got better again. Now has only got heart pain and fluttering when worried or upset. No rheumatism in family. Got wet and had rheumatic fever at 17, 22, and 25. Had influenza badly five months ago and lost much weight. Eyes slightly prominent, a card held vertically rocks over them, *i.e.*, the edge will not rest on the eye and the margins of the orbit at the same time. Is nervous and depressed at times. B.D. ·75; pulse 68; C.R. 7·5; B.P. 155. Apex slightly to left of mid-clavicular line. First sound followed by a murmur, and second sound reduplicated.

Here we have rheumatic morbus cordis and high B.P.; the heart no doubt failed a few years ago, but has now got up to its work again. There is practically always raised B.P. in morbus cordis, generally about 140, and this, when not due to the collæmia of congestion and defective nutrition, may be reflex in part. By examining the quantity of uric acid in the blood it may be possible to tell how much is due to each factor. The ratio is here practically normal, but the whole of the slowing of C.R. may not be due to uric acid.

Present diet includes meat twice, soup once, egg once, tea four times a day. Treatment here is to take work off the heart by diminishing fluids and uric acid introduction.

Case 27.—A. A., male, aged 29. Rheumatic morbus cordis treated by diet. I saw this case with Dr. Gayford, whose interesting case of gouty adenitis is recorded in "Uric Acid." Complains of pain and swelling in one ankle for five weeks, which salicylates do not relieve. In early life subject to biliousness, followed by rheumatic fever (*i.e., collæmia followed by precipitation, the invariable rule*). Had rheumatic fever three times, last a year ago. Palpitation was first noted at 18 years of age. First attack of fever at 10 or 12 (*first retention stage*), second about seven years later. Has now aortic and mitral

disease. B.D. ·8, and is pale, chest thin: pulse very quick, 108 to 120; slowed later to 88; apex beat in left nipple line, impulse visible at the apex; there was a late systolic murmur and a second sound, and the murmur was conducted some way into the axilla and is heard at the angle of the scapula. No obvious signs of aortic disease now. There is no œdema of ankles, but there are some varicose veins in legs. He is tender about the great toe from recent arthritis. Present diet: meat once or twice, egg once. Tea three or four times a day. Smokes a good deal. I advised diminished smoking, and U.A.F. diet, taking care to get enough proteid. I suggested that diet would prevent further rheumatism and an increase of valve lesions otherwise inevitable.

The failure of salicylates was due to their being taken along with alkalies or Turkish baths. Dr. Gayford thought the recent attack in the foot was gout. Well, gout is merely a name for urate precipitation, and so is rheumatism; we all mean but different stages of the same thing; everywhere it is arthritis or fibrositis due to precipitation or concentration of urates relieved by solvents. I know only of irritation of fibrous tissues either in joints or elsewhere, which are due to uric acid, or to something else. Why not call them arthritis, endocarditis or fibrositis due to uric acid? To call them gout and rheumatism merely brings in a useless and confusing etiology and pathology. I heard from Dr. Gayford six months later that this patient was improving steadily on diet and increasing in weight, and there was apparently also decided improvement in the condition of the heart.

Case 28.—M. F., female, aged 48. Complains of gout in the toes, which began seven years ago when wearing tight shoes. Got worse three years ago, and then left off meat, and has been better since. Father's family gouty, some cousins gouty. Had influenza three times. Skin slightly puffy. Things worry her more than they should, and this worry alternates with gout in the foot. B.D. ·7; pulse 92; C.R. 6; B.P. 115. Has some neuralgic pains in arms and wrists. Lithia did good for gout, but she felt low with it.

Present diet is correct except for tea (three cups, said to be weak) and porridge, but is obviously deficient in proteid, so no wonder she felt low and fit for little. Patients who put themselves on U.A.F. diet, and under-feed, and then come for help, are in worse condition than those who come to us on ordinary diet, for it is always difficult to get them strong and well-nourished again, and all my diet rules are specially framed to prevent any fall in nutrition. The thing to be done here is to give white of egg in place of fish, and curd in place of meat, but if a patient is for any reason unable to take these he must go back to meat for a time, and try diet again at some more favourable time when well nourished.

Case 29.—J. M., male, aged 40. Complains of stiffness and enlargement of the fingers, which are fusiform, and general rheumatic pains. Had scarlet fever, and rheumatism after it, about 14 years of age. Present rheumatic troubles began after a chill three or four years ago. The right shoulder has been stiff for

seven months. Pains worse in early morning. Has an occasional headache, but not with the rheumatic pains. Is inclined to be over anxious. Apex beat is just to left of left nipple line; first sound rather long there. Urine sp. gr. 1019, no sugar, no albumin. A very slight reduction of bismuth is probably not sugar. He was given salicylate of soda, iodide of potassium and sp. am. arom., and advised to reduce his meat.

Six weeks later pains in feet are better, and hands also better, but not yet cured. Is still taking meat once a day and two eggs.

Two months later in the warm weather as salicylate seemed (*as often happens at this time of the year*) to be losing its effect, pot. cit. was substituted, but this made him decidedly worse. Urine clear, but not yet alkaline (*i.e., not enough alkali; to succeed with alkali the urine must be alkaline throughout the twenty-four hours*). Twelve days later was alkaline in the morning and yet joints were worse at that time, I now gave up the attempt to get him on to alkali and returned to salicylate, giving some acid concurrently to help it. In these days I should use aspirin, but it had not been invented then.

In this case a salicylate with a retentive, iodide or acid, did best; the alkali failed or did harm; this is often the way with alkalies, which may increase arthritis until the urine has been alkaline throughout the twenty-four hours for several days.

Case 30.—B. N., male, aged 74. Subacute gout in right ankle followed by same in left wrist and hand, now getting well. Has had morphine for the pain which relieved it, but kept on the attacks. Five months ago had right sciatica very bad. Nine years ago pain in left arm and elbow. Lumbago and sciatica ten and twelve years ago. Seven years ago hepatic and splenic pain relieved by opium, and cured by healthy exercise and golf. Is fond of morphine and uses it to get to sleep. Pulse 65; C.R. 7; B.P. 145. Second sound very loud. Bowels opened with thialion every morning (*thialion is a retentive, so no wonder he is having gout*). Urine free from sugar and albumin. Present diet is ordinary, with fish, to some extent, in place of meat. Is taking a mixture containing salicylate of soda, colchicum, citrate of potash, iodide of potash and magnesium carbonate, and I was called in because it had done no good.

Now colchicum, potassium citrate and magnesium carbonate are alkaline solvents, salicylate of soda is a solvent with acids, and iodide is a retentive. The salicylate and iodide would do together, as the small dose of iodide would not prevent the solvent action of salicylate, but the alkalies and colchicum would just upset the salicylate and their action would also be upset by it.

I tried salicylate with iodide and sp. am. arom., but it did not do much good (*probably thialion was still there preventing its action*). I also used salicylate of methyl locally, and probably this was not pushed enough. Is fond of meat, and his old diet used to include a good deal of it, and a glass of port twice a day. While on salicylate I told him to continue ordinary diet.

Two months later he was in much the same condition and had still a good deal of trouble in the left arm. He had now gone on a diet of meat and hot water. Pulse 72; C.R. 7·5; B.P. 145. Is very hungry and sleeps better on this meat diet (*i.e., it is acting as a stimulant*). The left arm now shows chronic œdema and stiffness, no acute gout. I stopped the salicylate and used massage and local treatment, and occasionally at night, if pain increased, salicylic acid and pulv. opii co.

Three months later the arm was much better, and massage had done much good. Now complains of gnawing pain in right side of chest above liver; it is relieved by eating, and he would like to eat ravenously. (*Probably this is due to hyperacidity and stimulation by the meat.*) Bowels kept regular by cascara. Pulse 68; C.R. 9; B.P. 140. First sound reduplicated, there is a systolic

murmur over lower sternum and to left. Second sound loud everywhere. Liver dulness not obviously increased and it is not tender.

Three months later he had been to Aix and done the cure, but no good effect. Memory gets bad, left ankle puffy and painful. There is numbness in right leg and foot, which is dragged. Pulse 64; C.R. 9; B.P. 155 (*? effect of Aix and the previous excess of meat*). Present diet includes meat twice, fish once, soup once, coffee or tea twice, whisky twice a day.

I give this case to show, in contrast to a previous one, how little can be done for such cases where the diet is not altered, and how many troubles such patients have besides the arthritis. It is not a mere matter of relieving the gouty pains, you have also to deal with collæmia and its very various effects.

Case 31.—M. D., female, aged 71. Complains of pain in right arm and shoulder. Comes on at night on going to bed and goes away in morning on getting up. Easy all day. Pain like a hot iron going down the bone, and then cannot use arm at all. Mother and two sisters have had rheumatism. Health generally good, no fevers. Had palpitation ten years ago. Sleeps well, except for the pain, which goes off after being up for an hour. B.D. ·7; pulse 80; C.R. 8·5; B.P. 165. Apex beat in left anterior axillary line. Impulse strong, second sound very loud, especially at right base. There are large veins over upper chest and base of neck. Bowels constipated, takes pills and salts. Urine slightly turbid, acid, sp. gr. 1014, no albumin, no sugar. Menthol increased the pain, soda and hot water did the same. Diet ordinary, with whisky and water twice a day.

The question was as to the cause of the pain, whether it was related to the large heart and high pressure, and some condition at the base of the neck, or was it simply arthritis? There is a rheumatic history, and the pain being worse at night is in favour of retentive arthritis (*gout*).

It is not anginal, as angina or aneurysm would be worse in the morning and on movement. I told them to keep the arm as cold as possible, and gave salicylic acid three times a day after food. A week later the pain was nearly gone, but she was a little deaf from the medicine. I told her to continue the salicylate for another week to complete the clearing out.

Case 32.—R. C., male, aged 46. Had rheumatic gout for years. Subject to bad throats and sent to Homburg for them. Lump in left hip and at back of left knee. Now right knee is painful after a game of golf in wet and cold. His pains are relieved by salicylates, which he has been taking for the last twelve months. No serious illnesses, business worries him much. Has bilious attacks with vomiting every three months (*a typical sign of food poisoning*). "Heart is often queer." Moderately well nourished, but pale. Sleeps well when on salicylates.

This is a common experience, and it is due to the fact that B.P. is low at night, when uric acid is in good solution with salicylate. It is the collæmics with high B.P. all day and all night who have insomnia.

B.D. ·75; pulse 65. Apex beat just inside line, first sound long or slightly reduplicated, second sound loud everywhere (*i.e., collæmic heart, of which the three-monthly migraine is a sign*). Bowels always constipated, never act without medicine. Urine milky with urates, sp. gr. 1030, no sugar, no albumin, (*obviously a collæmic urine.*) Right knee is slightly tender inside, with some thickening of fibrous tissues. Weight 9 st. 9 lb. Has been to a spa every autumn, five times

to Homburg, twice to Aix, twice to Wiesbaden, four times to Harrogate, twice to Buxton. Aix most good for gout, but it pulls down very much (*i.e., cure by collæmia ; what a mighty waste of time and money !*) Present diet: meat twice, fish once, eggs once, coffee twice, whisky twice, five cigars a day, used to take champagne and claret (*those were his days of retention, which he is now paying for in chronic arthritis and collæmia*). Is now going to give diet a trial, but is not very hopeful of being able to continue it (*even yet he has not suffered enough to see the stars*). Finds salicylate better than colchicum, and so I advised him to continue salicylate, and make a slow change of diet later on. In the course of the next few months he did slowly alter his diet. Three months later he felt clearer and brighter (*i.e., diminished collæmia from lessened introduction*). Is taking pulses and has some skin irritation (*this was the great drawback to pulses; before I discovered that they contained much xanthin, they often caused both dyspepsia and skin irritation*). Three months later is on U.A.F. diet, except for occasional fish. Pulse 72. Right knee much better, and can play golf in comfort. Two months later (summer) feels played out after hard work (*is probably not taking enough proteid*). Has occasional catarrh in larynx and chest, for which he takes salicylates. Three months later reports that he spent his holiday in golfing—no spa this year. Salicylates relieved the throat. Acne, which was bad in early summer, is now all gone ; he thinks this is a result of diet, perhaps of leaving off pulses. Still occasional pain in one leg. Weight has increased to 10 st. 7 lb., so he is not wasting on the diet. Finds that fatigue is now much less than it was. Has no palpitation at all, in fact, is better in many ways. He again had some salicylates for his knee. A year later he was having fish three times a week. Has been well till the last week or two, when he got a chill and a sore throat. Water was thick and he had some lumbago. Got through last winter very well, better than for several years, and has had fewer drugs than for many years past. B.D. has improved greatly, and is now ·9 to ·95. Still smokes a good deal, and has still some retention, from this cause no doubt. As the knee was puffy and relaxed he showed it to a surgeon, who advised a supporting apparatus, which did good. He now feels well, and can work and play golf against anyone. This patient did well and kept practically well. He never got quite the best results, as he never got quite U.A.F., or gave up his smoking, but he was content with what he got, and it was at least far better than the spa results.

Case 33.—M. McD., female, aged 35. Complains of rheumatism and dyspepsia. When recovering from operation for floating kidney and being fed up digestion got all wrong. Tonics were given, but still she got worse. She then tried the U.A.F. diet, and it did very well ; is now afraid to go to a doctor for fear she may be put on meat again. Has got thin since the operation and the dyspepsia. She was not on a correct U.A.F. diet as she took revalenta, peas and lentils. B.D. ·7 or less ; pulse 64 ; C.R. 6·5 ; B.P. 125. I corrected her mistakes, and also warned her off asparagus, and she did well. Two years later she reported that there had been no dyspepsia for more than a year, but after some dinners in which she ate forbidden foods she had an attack of piles. She found that eating fruit made them worse.

I have noticed the same thing in other cases, and it is possible that piles in rheumatic subjects are really due to gout of the fibrous tissues of the rectum and are thus made worse by acids, and like gout in other parts may also be made worse by fruit.

She continued to be well on diet, and got wrong if she went off it ; thus hare soup at once sent up the pulse ; *i.e.*, caused a relapse of the gout. At one time she had an attack of mucous colitis with pain in left hypochondrium and lumbar regions (*this was no doubt gouty, and as additional evidence of the same thing it yielded quickly to salicylates*).

Case 34.—M. M., female, aged 63. Complains of rheumatoid arthritis for eight years. Woodhall Spa has done some good. Mother was an invalid with arthritis, especially in hands and shoulders. One brother has gout in feet. Scarlet fever as a child and measles. Enteric at 18. Influenza two years ago

and left knee enlarged since. Is very nervous. B.D. ·75; pulse 100; C.R. 8·5; B.P. 165. Apex beat slightly to left. Second sound loud and banging (*high B.P., heart beginning to fail*). Has occasional colds and some expectoration early in morning. Has a feeling of emptiness and sinking in epigastrium at times (*collæmic gastric congestion and temporary stoppage of digestion and absorption*). Urine sp. gr. 1020, acid, slight cloud of albumin, no sugar. Left knee chronic pultaceous enlargement, and same in left ankle. Weight 8 st. 9 lb., steady. Present diet includes meat once, egg once, oatmeal once, brown bread to keep bowels open, tea or cocoa twice, occasionally some stout, which does good (*i.e., acts as a retentive; she is probably taking deficient proteid, having reduced meat and not put enough milk or cheese in its place*). I tried to correct her errors of diet and to avoid drugs.

Three months later she came back with pain in right leg followed by a rash in the adductor region, causing enlargement of glands in the right groin. This proved to be herpes zoster, and she had been taking arsenic pills for her arthritis. She had also some tingling, probably due to neuritis, in the fingers.

Here is a quite ordinary case of collæmic arthritis in the second collæmic stage of life, and it is accompanied by high blood-pressure, weakening heart, anæmia, nervousness, catarrh, dyspepsia, congestion of stomach, constipation, &c., and the drugs given to relieve some of her symptoms produce still further troubles in the form of herpes zoster. Yet here we have to deal with nothing whatever but food poisoning, which correct food would have prevented and at certain stages completely cured. Such cases could be given in scores. Weak heart and anæmia are most constant symptoms in chronic arthritis, and of course they are simple results of chronic collæmia.

Case 35.—W. L., male, aged 60. Complains of pain in chest and shoulders for two or three weeks, worse on movement. Also pains in the legs. Had podagra eight or nine years ago, and occasionally since. Has drunk ale for last thirty years; it makes his head ache and he does not like it now. There is enlargement of the knuckles and ulnar deviation, very marked in right hand. Tophi in right ear. Had headache for three weeks, on and off, always suffers from it in summer. Appetite good. Pulse 85, with occasional intermissions; second sound loud, first sound reduplicated over septum, Has symptoms of angina occasionally on exertion. Urine, colour and sp. gr. high, no albumin (*collæmia*). I gave acid and opium mixture with a dose of salicylate of soda at night to counteract cumulative effect of the retentive. This relieved his headache enormously, and also the pain in the chest (*which was probably of an anginal nature and due to the collæmia which the drugs removed*). Pulse fell to 72, and showed lower pressure to finger and in pulse tracing. He had still some joint pains. A week later he had no headache, felt much better in himself and free from depression; his only complaint now is a little lumbago and pain in the joints. I now increased the salicylate of soda, giving it three times a day, and after a further increase to four times a day he reported himself as much better, pains all gone, "ankles beautiful." An eczematous rash on left leg was also improving on the salicylate. He got to like the salicylate mixture, and asked for it, as it relieved all his pains.

No doubt he will have to take a large amount of salicylate to clear out all his deposits, especially if he does not alter his diet. Here was a case of undoubted gout with fairly marked rheumatoid changes. Urate deposits in rheumatoid joints are really by no means uncommon, and it is only prejudice that prevents our seeing

this. Then he had collæmia causing high pressure, headache, and some heart failure, shown by quick rate, intermission and slight anginal pain, and all these latter symptoms were relieved by retentives which cleared the blood and lowered the pressure. Finally, his arthritic pains were very markedly relieved by salicylate of soda, which dissolved the deposits.

Case 36.—G. H., male, aged 24. Fingers swelled and fusiform with rheumatoid changes. Tophi present in both ears. Says he had podagra eight years ago. His father is 47, and has had gout for twenty-one years. He has drunk 4d. ale, but takes no alcohol now. He works in gelatine and has done so since 13 years old. Temperature and pulse normal (*this was evidently a chronic arthritis kept up by collæmia*), so I put him on potassium iodide as a retentive, and a week later, when he was better as the result of its action, I got him to bring a specimen of urine. It had sp. gr. 1015, the acidity was low, yet it yielded 154 gr. urea, and 4·1 gr. of uric acid, relation 1 to 37 (*i.e., retention*).

I had, therefore, relieved a chronic arthritis by stopping collæmia and producing retention. This is the effect of potassium iodide, it lowers the acidity of the urine and yet markedly diminishes the excretion of uric acid, and I often think it does both by causing retention of phosphates in the body, thus removing a natural solvent from the blood and urine. Iodides in equal doses with salicylates will completely prevent any solvent effect, but a small dose of iodide with a salicylate is not harmful. The above specimen was a morning urine, so the retention is all the more remarkable. Those who complain that their pains are worst in the morning, *i.e.*, collæmic hours, will get benefit from retentives; those whose pains are worst in the evening hours, or are accompanied by fever, will be relieved by solvents. Here again C.R. will give us the clue to treatment in a moment.

Case 37.—M. M., female, aged 38. Complains of chronic rheumatoid arthritis, all the doctors say "debility and want of nutrition" (*and if they had added chronic collæmia from food poisoning as the cause of all, the rest might have been not far from the truth. But they did not; they neither added it nor treated it*). Tonics have done most good (*no doubt*). Has chronic trouble in throat and nose in addition to the joints. Left knee was very bad eighteen months ago. All joints affected and left elbow is the worst, as she was too ill to keep it moved when it was attacked. Often has congestion of the throat. Uses Godfrey's inhaler for congestion of the nose. Is rather pale. Pulse 108. Second sound relatively loud (*no doubt a collæmic heart beginning to fail from anæmia and poor nourishment*). Has a "dyspeptic cough" in the early morning, relieved by a cup of tea. Bowels act only with Carlsbad salts. Menstruation regular, much pain on first day. One child aged 7. Urine sp. gr. 1024, turbid with urates, acid, no albumin, no sugar. Slightly reduces bismuth (*? not sugar*). Weight 9 st. 12 lb., steady. Has had arthritis for twelve years and under various doctors. Cromer is too cold for her, does better in a warmer place. (*Yes, she is somewhat weak now.*) Present diet includes meat twice or three times, fish once, tea or coffee three times, wine once and some lithia water. I told her to continue a tonic containing arsenic she was taking, and when well and strong to slowly alter her diet stage by stage. (*Unfortunately at the time this patient consulted me my diet was not U.A.F., but still included some pulses.*)

She had some attacks of diarrhœa and some headache, and the arsenic had to be given up. I then gave her iodide and nux and then things improved, and she slowly gained weight up to 10 st. 10 lb. She began to feel better in herself, and looked better and brighter. The joints were better as a whole, but now one and now another was bad at times. She was still on pulses. Later she became afraid of increasing weight and began to cut down her food on this account, and in spite of all I could do would not keep faithfully to the diet; so far, however, she was doing well, and had passed a whole winter, the first for many years, without a severe attack of arthritis.

This trouble of getting stout is a bugbear to many women of middle age, and is an excuse some of them adopt for getting out of the diet. This patient, for instance, was taking butter and cream quite freely, and yet complaining of these results. With a little care U.A.F. diet may be used to make people thin and keep them so. Most cases of chronic arthritis do well on diet, provided you give enough proteid and keep up the strength of the heart.

Case 38.—J. B., male, aged 49. Complains of gout in toes and now in knees for fifteen years. Has been taking Turkish baths and colchicum, but gets no better. Four days ill, then a week well, and *vice versa*. Is thinking of going to Buxton. Has been a very hearty eater, but no stimulants. The left knee is slightly tender and painful, but no enlargement. No other important symptoms. Weight 13 st. 4 lb., steady, has been 14 st. 8 lb. I gave him salicylate for a change, and U.A.F. diet to be done gradually. He started the change of diet by going to a vegetarian restaurant and eating heartily of haricot beans and tomatoes (*he would have done better to have kept to his meat. Thus vegetarians and their poisons upset my good intentions.*) He then went to Buxton and a doctor there tried to frighten him about diet, but fortunately for him did not succeed. A month later he had had no pain and was taking no drugs. Has slight stiffness in the knee, but no pain or swelling. Is still taking fish once a day, but otherwise U.A.F. Has some huskiness and tickling in throat. I told him to use a little salicylate for this if necessary.

A year later I heard of him from a friend that he considers himself cured and has not had gout for a long time.

It is in these cases of what would be called gout in a strong, well-nourished man with a hearty appetite that correct diet cures most quickly, as there is no difficulty in taking sufficient proteid, and no weak heart to keep up the collæmia. He is not really free from urates; it will take him some years to get so, but under these conditions they pass out slowly, causing but little arthritis or collæmia in the process.

Case 39.—T. D., male, aged 40. Complains of chronic arthritis, no rheumatoid changes. Had diphtheria two years ago. No fever with the arthritis. Pains worse at night, especially the last three months. Right elbow is the worst at present. Feels depressed and queer on some days. Pulse 70, generally slow. Respiration short on running. Apex beat in left nipple line. First sound reduplicated over septum, short systolic murmur over aortic cartilage. Urine sp. gr. 1067, no albumin, no sugar. Weight diminishing of late, a good deal of worry. Has been taking salicylate, but no meat, beer, or wine, and also hot baths (*so salicylate has been doing more harm than good*). I advised him to take soda sal. gr. xv. $4^{is}$ horis for some days, and to take meat and wine, but no hot baths.

A fortnight later he was better, but not cured, no salicinism, so I increased the dose to gr. xx., and a week later there was a more decided improvement.

I told him to continue salicylate for some time and gradually replace it by tonics and massage.

Six months later he reported that the salicylate used in my way did better than anything else and that there was improvement. He is now working towards U.A.F. diet.

Two years later, writing to him about some other matter, I enquired how he was, and his reply was, "I am pleased to say my rheumatism has been much better," and I believe the improvement has continued.

Case 40.—M. T., female, aged 37. Sent to me by Dr. Somer, of Broadclyst, near Exeter. Complains of rheumatic gout in both hands, especially in the right. The fingers are nodular, and worse when working in cold water at photography. There is gout in the family, especially on her father's side, an uncle had "gout of the heart," and one brother had gout and died of dropsy. She had sciatica a year ago, relieved by sand baths. Had neuralgia badly twelve years ago. Subject to colds, large tonsils, and bronchitis. Is irritable and depressed in the morning, occasional insomnia. B.D. very fair, ·8; pulse 72; some raised B.P. First sound long, second sound loud (*collæmic heart*). Often slight muscular and fascial pains. Bowels act only with Apenta, piles bleed at times, one child eight years ago, after which she had nervous trouble and took much port wine for six or seven years (*hence, perhaps, her present gout*). Weight 129 lb. Lithia did some good, piperazine no effect. Used to suffer from cold hands and feet, not so bad since the arthritis came on (*i.e., arthritic replace collæmic symptoms*). Present diet includes meat three times, coffee or tea twice, whisky with Vichy water twice a day. I advised diet, beginning as usual by cutting off tea and coffee.

A month later hands were much better, but depression had been rather worse, and she had gained 2 lb., which she objected to.

Six months later hands gave no trouble, but she had increased 6 lb. in weight. She only takes meat occasionally, and now knows that it does not agree with her. B.D. has improved to ·9 or ·95, feels stronger and nerves are better. Pulse 72. Has had some depression on and off. Dr. Somer reports that she appears almost well, only a little depression. Has lost the pain from hands, also the deposits from the joints of the fingers; he thinks she will lose the depression also if she perseveres.

Here, again, in a well-nourished woman with a good B.D. and a strong heart, diet quickly relieves arthritis. Her heart was probably weak at the time she suffered with nerves after confinement, but has got strong and hypertrophied up to its work since. In her brother the heart failed to do this and he died with dropsy.

Case 41.—P. H., male, aged 50 (medical). Complains of chronic rheumatoid arthritis, especially in right knee and left ankle, Worse the last six or seven months. Right knee creaks and is stiff, and cannot be used for going upstairs. When joints were first attacked there was some fever, and he was laid up two months. Never ill; lived in British Guiana fourteen years. Occasional malaria. Father gouty late in life. Has taken a lot of meat, whisky and cocktails (*cocktails contain caffein*), gin and bitters freely. B.D. ·7; pulse 80; C.R. 9; B.P. 135. First sound long. Urine clear. Weight now 12 st. 1 lb., was 14 st. 2 lb. some years ago. Has been on U.A.F. diet on and off as near as he could while on ships, for two months or so. There has been general improvement, though joints have at times been worse. Last week his ankle was bad, so he took magnesium sulphate and iodide, and that shifted it (*i.e., collæmic arthritis cured by retentives*). He has been letting U.A.F. diet cause collæmia, hence joints at times worse. I advised salicylic acid, and to keep cool and take some acid foods. Two months later he was decidedly better, and had taken 480 gr. of salicylic acid with advantage; was now giving it up because of hot weather.

Case 42.—H. W., male, aged 65. Complains of gout in feet for eight years or longer. Been five or six years to Harrogate. Better last autumn, worse again

now. Lately (three weeks) suffered from hoarseness and sore throat. Has cramp in limbs, which is increasing. Has occasional occipital headache and vertigo. Arcus senilis well marked. Sleeps badly. B.D. ·8; pulse 108; C.R. 8; B.P. 140. Apex beat in the left nipple line. First sound long, or late systolic murmur, second sound loud at base. Occasional bilious diarrhœa, liver covered by emphysema. Urine high coloured, no sugar, no albumin. Weight 11 st., diminishing. Has a Turkish bath in his own room, and takes it when he cannot sleep. Often influenza now. Ordinary diet and generally a good feeder, now cannot get it down; likes wine better than whisky. I advised him to take wine and feed up, and gave salicylate of soda with ammonium chloride internally, and oil of wintergreen to paint on front of throat, and told him to keep cool and take no Turkish baths. Both the medicine and the painting did good, and he returned in a few days quite well as regards his laryngitis, and he was so struck by the effect of the wintergreen that he painted some on a friend's throat and cured him also.

Case 43.—M. K., female, aged 46. Complains of chronic rheumatism in knees, feet, and all over. Wrists enlarged, fingers fusiform. It began last summer when she was much run down and overworked (*i.e., collæmic arthritis*). Her father had rheumatism when a very old man (*gout*). Had scarlet fever and rheumatism at 22. Never very robust. Pains tend to keep her awake. B.D. ·75; appetite poor; pulse 100; C.R. 8·5; B.P. 135. Apex beat in left mid-clavicular line. First sound long, second sound loud (*a debilitated collæmic heart*). Bowels act with salts and syrup of figs. Urine normal, menstruation regular, pains increasing of late, and slight headache then (*i.e., it increases collæmia*). Ankles both enlarged. Present diet includes meat twice, fish once, tea twice, whisky once a day. No real appetite, takes food because the hour has come (*how common this is, and how wrong and unphysiological*). I put her on two meals and told her to get hungry and keep so. Continued ordinary diet and wine, no tea, and gave aspirin. Some months later reported that aspirin had done much good, and she was eating and sleeping better. Left ankle is still swelled and has improved least; it was the only joint she kept wrapped up, which sufficiently accounts for the failure of the aspirin. C.R. 8; pulse 80; B.P. 135. I told her to leave off the wrapping and keep the joint as cool as possible, and continue the aspirin. U.A.F. diet to be considered later when the aspirin could be left off.

Case 44.—J. F., male, aged 54. Complains of pain in the left shoulder, many previous attacks. Has always eaten freely of meat, not much beer. Tophi in both ears. Pulse 80, not high B.P.; temperature 100·6° (*i.e., collæmia cleared up by fever*). Marked ulnar deflection of fingers, most on right side. Urate deposits on both hands. Left elbow and shoulder are both painful and swollen. Right ankle and foot swelled. He talks of his trouble as "rheumatics," but it is obviously gout. He was given salicylate gr. xx. 4is horis. Two days later temperature subnormal and he was better. Three days later temperature 98° F.; pulse 90. Mixture 6is horis. Two days later much better, quite free from pain; pulse 68, some headache and deafness. Mixture bis die. Four days later, pulse 56; feels high B.P. to finger, and tracing shows high B.P.; temperature normal. Three days later the wrist and left ankle were swollen; temperature in evening 99°. Four days later arms better, pains now in left knee and ankle. Salicylate resumed 4is horis. Temperature 100·8° in evening. Two days later pains not quite so urgent, and two days after that pains better and temperature below normal. After this the first interphalangeal joint of first finger of right hand remained painful, and the increase of the salicylate bis horis for a few doses had no effect. Three days later an opaque bulla the size of a walnut had formed over this joint, and this was incised and dr. i. of pus obtained. This pus I extracted in the ordinary way, and found it to contain uric acid equal to 3·7 gr. to dr. i.

We here had a gouty joint suppurating and discharging uric acid in the pus. (*Once suppuration had set in salicylate, of course, had no effect.*) A fortnight later there was a slight rise of temperature, and one foot was painful and swelled; salicylate was put on every four hours, and three days later temperature was subnormal and pain gone. (*Thus on several occasions salicylate promptly relieved gout.*)

Case 45.—L. G., male, aged 45. Complains of gout in the fingers of his right hand. Drank ale, 3 pints a day, and whisky occasionally for years. Was in the Guards and invalided ten years ago for "chronic tubal nephritis." Was ill nine months with it. Had gout in instep before the nephritis, and in toes a year after he was invalided. He felt very bad with the nephritis, and had dropsy. Has often had gout since in fingers, toes, ankles, and knees. This last attack began two days ago. Is well nourished and florid. Tongue flabby and a little tremulous; pulse 112; temperature 101° F., and rose first night to 102° F. Fingers of right hand are swelled and shiny. Urine 1030, acid, trace of albumin. He was given salicylate gr. xx. 6$^{is}$ horis, and next day the fingers were better and temperature fell to 99·6° F. in the evening. He went on well and salicylate was left off a fortnight later. Three days after this he had some pain about some bad teeth, and an alveolar abscess formed; with this the temperature rose at night and there was some return of gout in the fingers and left olecranon bursa. Next day temperature was 100·4° in morning, and then the stumps were extracted and some salicylate given, and temperature soon fell to normal and the pains went. (*I have seen an alveolar abscess cause a relapse of acute rheumatism in a child in just the same way as it acted on gout here.*) After this temperature remained normal and he got quite well, leaving hospital ten days later, taking some salicylate with him, and having been cautioned about meat and beer. His urine was examined on several occasions, sp. gr. 1021 to 1027, and no albumin.

What are we to say as to the chronic tubal nephritis? Probably in the ten years since it was acute the kidney had become small and fibrous, and the albumin a trace to nil; then the good specific gravity while under observation was due to a large excretion of urate under salicylate. When he left the army he was cautioned by his doctor not to take to drink, which this doctor thought was the fate of all chronic nephritic cases. He says he occasionally suffers from depression, which is worst in the morning, especially after some extra drink; so the prognosis of his doctor will still be justified. See how much suffering uric acid causes besides gout!

Case 46.—D. W., male, aged 64 (medical). Now complains of dyspepsia and debility with vertigo and faintness. Four, five and seven years ago had gout in toes, but none since. Influenza three years ago (*i.e., the influenza brought about collæmia and heart failure and cured the gout, i.e., collæmia replaced arthritis*). This patient also gave an interesting history that six years ago he had had pneumonia, and with the onset of this he had an attack of gout in his toes, later when temperature became subnormal after the crisis the gout also went away. (*This is very interesting as it proves that pneumonia, like other fever, may precipitate gout or rheumatism* (*the same thing*) *in a gouty or rheumatic subject.*)

Case 47.—A. W., female, aged 62. Complains of swelling and pain all over, on and off for many months. She first had pain in her big toe when she was 60 (*? gout*). Knuckles, wrists, fingers and one knee are swelled and painful. Right hand and wrist most affected and most tender. There are rheumatoid changes, but no ulnar deviation. Pulse 72; vessels distended by high B.P., first sound reduplicated, second sound loud (*collæmic heart*); nails very reedy. Urine good colour, no albumin. Used to have sick headache occasionally, and has long been subject to "rumbling' in the head and low spirits, but both of these left off suddenly when the joint troubles began, but she has no headache now, since the joints got bad.

This is a common history, but it is none the less interesting to see patients, who know nothing of causation, observing such dis-

tinct alternations between arthritis and collæmia. As we know, the liver, spleen and probably some other glandular organs are the ordinary foci. The joints, once there are deposits in them, form additional foci of retention; and these additional foci keep the blood for a time relatively clear, hence absence of headache and depression. But all the uric acid retained by arthritis has got at some future time, if the patient lives, to be re-dissolved and passed through the blood; then collæmia, headache and depression will be worse than before, and Bright's disease or diabetes may be added results of the collæmic process in the final collæmic stage of life. I have records of similar results as regards sick headache in a number of patients suffering from gout or rheumatoid disease.

Case 48.—L. E., female, aged 72. Complains of rheumatic gout which began in her fingers twenty years ago. Mother lived to 93, father died of carbuncle. One of her children suffers from eczema. Is somewhat thin, complexion vascular. Pulse 100; tracing takes 3½ oz. to develop it and shows high B.P., the predicrotic notch being well above the centre of the upstroke. The apex beat is in the anterior axillary line and there is a systolic murmur there, also a loud second sound followed by a short diastolic murmur down the sternum, showing a slight aortic leak. Has a cough occasionally in winter. Micturition once or twice in night. Urine full amber, turbid with urates, sp. gr. 1029, faint trace of albumin (*probably a granular and now somewhat congested kidney*). The left knee is large and grates on movement; there is slight œdema of the ankle.

As there is no history of rheumatic fever or of any arthritis till twenty years ago, it seems probable that she has a granular kidney, that the morbus cordis is the result of chronic collæmia, and that the chronic arthritis is largely collæmic also.

Her pains are rather worse at night, when the collæmia of the day is being cleared out into the joints and other parts, retention. She is more languid and has less joint pain in summer. Here the alkali is sufficient to make even the joints alkaline, hence they no longer take up uric acid from the blood, but give it out, consequently the irritation diminishes.

Of course, even what I here speak of as "collæmic arthritis" is partly due to retention in the diurnal fluctuations from collæmia to retention, and *vice versa*, but there is no doubt that a joint, once it has become a seat of deposit, attracts more urate from a collæmic blood, and this fresh urate keeps up or increases the local irritation. Such collæmic arthritis is relieved by retentives (*e.g.*, iodides or meat diet), while real acute retentive arthritis, acute gout or rheumatism, is relieved by solvents.

Her present diet includes: meat two or three times, fish once, egg twice, coffee once, wine twice a day. She was taking some hot water in excess of her

thirst, with the idea of washing out, and yet she had a dilated and failing heart and dangerously high B.P. I gave some salicylate, also an acid and some nux; but, as I now see, I rather overdid the acid and did not give enough salicylate. Three weeks later she was sleeping better and had less flatulence, but the joints had not altered much.

In these days I should first treat the collæmia with retentives in such a case, and look after the heart and the B.P., and only give solvents later if the joints did not get well, as it is probable that they would, on retentives followed by U.A.F. diet.

Case 49.—R. J., male, aged 48. A tall, well-made man, face sallow to pale. Has suffered with headache for some few years. Has had gout in the right great toe, slight at first, but getting worse. Last year went to Brides-les-Bains just after an attack, and drinking the waters there brought on a second attack. Has headache in the morning often; it lasts only one day, and if he goes to sleep at night he wakes next morning without it. It sometimes comes on suddenly, so that after feeling very well for a little a headache begins. When he has gout has no headache, and when headache no gout (*a clear alternation of migraine, a collæmic trouble, with gout, a retentive trouble*). A year or two ago had great pain in cæcal region (*perityphlitis*). Surgeons spoke of operating, but physicians said "No, it is gouty." He was put on opium, and had an attack of gout in his right toe at the same time. Has been taking but little meat of late, and his headache has not been better. (*Indeed, no; he must be thankful if it is not much worse, for the first effect of diminished intake of uric acid is increased outgo, collæmia, and its results.*) Diet has not been strict enough or long enough continued to do real good. Has a certain amount of mental depression in the mornings. He was very well all his early life, and never required a doctor till he got the gout (*i.e., second retentive stage was well marked*). Headache and depression have been increasing of late (*i.e., he is now tending towards solution and collæmia*). He has some eczema of groins and calves (*more foci of retention*). Pulse 100 after a little exertion, tracing shows a marked first wave, and takes 5 oz. at least to develop it. The predicrotic notch is above middle of upstroke. Urine no albumin now. Weight about 14 st. I gave some salicylate for the eczema and gout, but allowed him to continue opium for the headache, provided he followed each dose with salicylate. Unfortunately for him he travelled much, and had a doctor in each place he stayed at, and I fear our diagnosis, prognosis, and still more our treatment, did not always harmonize. He never tried these drugs properly.

Twelve months later I saw him again. In Paris, a few days ago, saw a doctor who told him to take acids for his headache, and these did good. (*They act in just the same way as the opium, and either of these are better than caffein, of which he has taken much.*)

Six months later he reported that salicylate did good at first, then it lost its effect (*probably not taken at all regularly*). Urine now sp. gr. 1022, acid, no sugar, no albumin. Is complaining of some trouble as to his sight. Later, with his acids, he got another attack of gout in the toe, which made the headache better for a time. About this time he wrote to me asking why I objected to caffein, as a small dose in the morning relieved his head better than anything. I tried to explain that caffein was equivalent to uric acid, and not only prevented its elimination, but directly increased the quantity by introduction. I fear, however, he went on with it, as he was busy and could not afford to lose time with headaches (*could not afford to save his life*).

Some six or eight months later he came to see me; he had had some retinal effusion in the summer which had frightened his doctors, and he had been put on a strict vegetarian diet, and wanted my advice as to the best method of carrying it out. This was the very advice I had given him two years before without effect. He now said, referring to his food, that "he had given up everything except the ghost," and he little thought, probably, how soon that also was to go. His headaches have been less frequent and less severe on this diet. He had a bad headache a few days since, and took a considerable dose of

caffein to relieve it. The late Sir Andrew Clarke advised him to winter in Madeira, and "a non-nitrogenous diet" (*whatever that may mean; I have never seen such a diet before or since*); and I advised iodide and bicarbonate of potassium. Albumin was found in his urine at the time of this severe headache. Sir A. Clarke said "Gouty excrementitious products in the blood." He went to Madeira, and I heard of him again next spring, but was unable to do anything to make his diet really usefully U.A.F. (*he had pulses and some tea and coffee*), or to prevent his taking drugs and continuing caffein for his headaches.

Twelve months later, on May 24, the papers recorded his death, which had occurred the previous day, from apoplexy coming suddenly at 12 noon, and death followed one and a half hours after the onset.

So ended at the great collæmic time of year in the collæmic hours of the day, a life which on proper diet might have been prolonged to nearly double the length attained. This case illustrates well about the worst that uric acid can do to the outer casing of a poor human; here we had gout, migraine, appendicitis, retinal effusions and hæmorrhages, early Bright's disease (granular kidney), mental depression and cerebral hæmorrhage. Of what use is it to be great or rich if you live but half your life, and no inconsiderable part of that in misery?

Case 50.—H. B., male, aged 37. Ten years ago sharp attack of rheumatism in right knee when exposed to cold. It went away on reaching a warmer climate. Five years ago passed a stone nearly as large as a haricot bean, composed of uric acid and urates. Had had some gravel before this. After this his sugar was cut off and his meat diminished. Is nervous, and leads a sedentary professional life. Has had malarial fever in India several times (*here was a probable cause of the gravel and stone*). Four years ago another small stone was passed, and last year had a further attack of gravel. He was then advised to eat ordinary food in moderation (only digestible things), and to drink plenty of water. Result not entirely satisfactory, has had some dyspepsia and occasional pain in back and left side. Has also had some gout in toes of left foot and the left hand, which has been used more than usual recently in sawing wood, is somewhat stiff and swelled. B.D. now ·7.

Four months later he had begun the U.A.F. diet; he has been using no drugs and yet is distinctly better; he much prefers U.A.F. diet to the washing-out plan or the use of drugs. Has put his wife and children on the same diet, and they are all doing well. His physical power is greater, and fatigue and stiffness after exertion are less. He is watching the B.D. of self and family to see that they are and remain well nourished. He is very grateful for having got rid of a serious complaint (*probably he is counting his chickens a bit too early*) and being taught what good health really is.

Case 51.—M. F., female, aged 38. Gives a doubtful history of renal disease for twelve weeks, general pigmentation six months, wasting nine months, slight cough, no hæmoptysis; vomiting, no relation to food, six months. Has some chronic arthritis, the knees now giving most trouble. Pulse 80; C.R. 8; B.P. 100. There is some lipping of the finger joints, showing chronic arthritis there. Transverse diameter of heart (C.D.) measures 5 in. from right border of sternum to a little outside the left mid-clavicular line. Sounds feeble. Urine sp. gr. 1020, acid, no albumin. She had occasional vomiting with constant signs of debility and weakness of the heart and was regarded as a case of Addison's disease.

The point that interested me was the association of this disease with distinct chronic arthritis. It occurred to me that Addison's disease might be a rheumatic fibrosis of the adrenals similar to

rheumatic ovaritis or metritis (fibroids, &c.); and I had it in my mind to try salicylates if I could get the patient somewhat stronger and better nourished, and clear from vomiting for a time.

Twelve days after admission she had sudden vomiting one night followed by collapse and temperature rising quickly to 104·8° F. I saw her next morning and found her wandering, and no pulse to be got at the wrist. C.R. 13; no B.P. to be got. Temperature 102·8° F.; C.D. 5¼ in., nothing in abdomen, no other local signs. I ordered nitrites and heart tonics, but nothing was of any use and she died an hour or two later. At the *post-mortem* were found some old pleural adhesions, general pigmentation, chronic arthritis, no urates, and atrophy of the adrenal glands.

Case 52.—M. L. D., female, aged 48. Slight general rheumatic pains, and pins and needles in fingers, said to have arterial sclerosis; gout in mother's family. Sunstroke three years ago. Enteric at 16. Fever and peritonitis twelve years ago. Influenza once or twice. Face pale, pain and neuralgia in teeth. B.D. ·6 (*decidedly poor*); pulse 80; C.R. 7·5; B.P. 120. First sound long and defective in tone. Occasional cold and cough. Shooting pains in right mamma, and abscess there with her first child (*probably rheumatic irritation of an old scar*). Some flatulence and occasional pain in right groin (cæcal region), nothing to be felt there. Stomach down to umbilicus, no splash. Menstruation regular of late. Slight œdema of ankles. Weight 10 st. 4 lb. 6 oz. She is a a vegetarian, and her diet includes porridge, bread, fruit, tea, coffee, and only half a pint of milk in the day. Bread and butter often, one egg in day, and occasionally weak tea. (*Here again deficient nourishment and not U.A.F. food, producing anæmia, debility, weak heart and neuritis, also some collæmic rheumatism.*)

## *Arthritis (Acute).*

Case 1.—J. G., male, aged 32. Complains of rheumatic fever. Had similar attack six years ago. Tongue tremulous, indented by teeth, slight white fur all over. Pulse 88. Respiration 25. Temperature 99·4. Heart, systolic murmur in front, not heard behind. Knees and ankles puffy, great pain in those of right side and right shoulder. Cough always in winter, less in summer. (*Chronic bronchitis, another disease originating in retention.*) Some pain on left side of chest. Given sodium salicylate gr. xx. 3ⁱˢ horis. Next day had a fair night, pain in right knee better, right elbow and shoulder still painful. Pulse 82; temperature 99. Next day, fair night, no pain except a little in right shoulder. Pulse 78. Temperature 98.

Next day, good night, pain only in right shoulder. Feels sick after his medicine, and has buzzing in the ears and deafness. Salicylate reduced to ter die. Next day still pain in shoulder and buzzing in the head. Pulse 72. Temperature 98.

Next day no pain anywhere. Pulse 64. Temperature 97. And so he continued for three days; then salicylate was left off and quinine and iodide of potassium given. He went on well, and got up and had no pain. (*Most of the urate having been cleared out by the salicylate, a retentive* (*iodide*) *did good by keeping the blood clear.*)

Case 2.—W. S., male, aged 13. Had rheumatic pains and a rigor two days ago, previous indefinite pain for three weeks. Pain now in both knees, also in feet and right elbow. He was given salicylate of soda gr. xv. 4ⁱˢ horis. Two days later temperature down and pains gone, but deaf from salicylate. Three or four days later temperature began to rise a little again and got to 100. Salicylate gr. x. 4ⁱˢ horis. No fresh signs of arthritis anywhere. Three days later the salicylate had had no effect on the temperature, and there were no joint signs, so it was left off and M. quinæ given. It was then discovered that he had a bad tooth round which there was some periosteal suppuration, the temperature eventually rose to 102, but fell after the tooth was removed. Later he had some return of the joint pains, and these were quickly relieved by the salicylate, though it had no effect on the pain and temperature due to dental trouble. There

was a late systolic murmur at the apex of the heart and the second sound was occasionally reduplicated. This murmur appeared to develop during the arthritic attack.

Two or three weeks later he was re-admitted with a relapse of arthritis and he looked ill and was quite unable to walk. Blood from a finger now showed diminished alkalinity. He was at once put on salicylate as before, and the urine of the first twenty-four hours that was saved was 21 oz., sp. gr. 1025, turbid, acid, and yielded 212 gr. of urea and 14·9 gr. of uric acid, relation 1 to 14·2.

He only formed 6 gr. of uric acid in this day and the remaining 8·9 gr. came from the joints, and their removal by salicylates was the cause of his relief. When the temperature was due to other things (local suppuration) the salicylate had no effect, and we also know that if anything (alkali, heat or deficient dose) prevents the salicylate from acting as a solvent and eliminating such an excess of uric acid, it neither relieves the pain nor lowers the temperature. Obviously salicylates do not relieve arthritis and lower temperature by some unknown method, but simply by dissolving and removing uric acid, and we see that they act equally in the arthritis called gout, in that called rheumatoid, and in acute rheumatism (rheumatic fever), for all are due to one and the same cause, irritation by urates. I do not doubt that microbes and the fever they produce occasionally precipitate such urates on the joints and so start the trouble, but the microbes are of quite secondary importance and to be ranked along with cold, acids, champagne, opium, &c., which do the same. Both scarlet fever and enteric, and probably also measles, may come in with an acute arthritis for reasons which are now quite obvious. Salicylate has no effect on these specific fevers, but it lowers the temperature and relieves the pain so far as these are due to gout; and in all cases the C.R., the blood granules and the excretion of uric acid in the urine will tell us all we want to know as to the causation of the arthritis. In arthritis due to pyæmia salicylates have, as in the tooth trouble in this case, no effect, as there is no uric acid in the joint to be removed.

Case 3.—W. G., male, aged 37. Admitted into the Metropolitan Hospital with rheumatic fever. Temperature 101. Was put on salicylate 20 gr. every three hours. Urine of first twenty-four hours (*only part of which was under salicylate*) sp. gr. 1028, yielded 482 gr. of urea and 16·7 gr. of uric acid, relation 1 to 29 (*salicylate not yet in full action. The formation of uric acid was* 13·7 *gr., so only* 3 *gr. were removed from the joints and the pains were still there.*) Next day temperature fell to 100, but the same dose of salicylate was continued. Urine sp. gr. 1033, yielded 448 gr. urea and 17·5 gr. of uric acid, relation 1 to 25. (*The formation of uric acid* (1 *to* 35) *was* 12·8 *gr. and* 4·7 *gr. were removed from the joints.*) The temperature reached 99. Salicylate reduced to 4ⁱˢ horis. On the following day, urine again sp. gr. 1033, yielded 485 gr. of urea and 20 gr. of uric acid, relation 1 to 24. (*Formation of uric acid was* 13·8 gr., *and* 6·2 *gr. were removed from the joints.*) Temperature touched 98·2, and salicylate was reduced to gr. x. four times a day. Temperature remained after this from 98 to 99 and the pains were gone. Convalescence ordinary, no relapse.

Here 13·9 gr. of uric acid were removed from the joints in three days and, with this, temperature fell and pain departed; no doubt some more was eliminated on the following days, which we did not watch. The greatest rise of uric acid here was on the third day, and temperature reached its lowest point on that day. *Sublatâ causâ, tollitur effectus.*

Case 4.—F. J. R., male, aged 39. Complains of acute rheumatism, many joints bad. Temperature 102. Urine sample got just before salicylate was begun gave uric acid in relation to urea 1 to 30. He had been taking drugs outside (*probably alkalies, as there was no salicylate in the urine; but for these drugs there would have been retention*). Three days later the pains were much relieved by the salicylate. Pulse 75; relatively low B.P., as a tracing only took 2 oz. to develop it, and though the first wave was well marked the pre-dicrotic notch was half-way down the upstroke. The first twenty-four hours urine on salicylate yielded 560 gr. urea and 26·4 gr. uric acid, relation 1 to 21. The endogenous uric acid was 1.6 gr., so that 10·4 gr. came from the joints, and there was obviously plenty in the blood. The above-mentioned tracing was not taken till two days later, when both the amount in the blood and the B.P. had fallen, for two days later the urine gave 472 gr. urea, and 13·9 of uric acid, relation 1 to 34, or nearly normal, *i.e.*, formation equal to excretion. But now the temperature was normal, there was no pain, and the patient was wanting to get up. The uric acid before salicylates was 16·8 gr., the first day on salicylates 26·4 gr. and no doubt nearly as much next day, of which we have no records, but two days later it had fallen to 13·9 gr., and with this the pulse rate and temperature were about normal and B.P. moderate.

The relation of B.P. to C.R. in acute rheumatism during the first days on salicylate is a matter of some interest, which I am now investigating with the object of finding out whether collæmia is here co-extensive with uric-acidæmia.

I was also estimating the alkalinity of the blood in this case and found it to be distinctly greater when the uric acid excretion had fallen to 13·9 than when it was 26·4.

Case 5.—H. J. H., male, aged 34. Complains of paroxysmal febrile attacks, generally one in fourteen days. There is "low fever," temperature rises to about 100. Father gout; mother weak heart and nervous. Had scarlet fever as a boy. Occasional neuralgia (*? rheumatic*). Was ill in Venice last year, but had the attacks before that. The first symptom of the attack is generally pain in head, back, and legs, and then the heels get tender. Attacks often follow a chill. Occipital pain accompanies the attack. Attacks are worse in the spring (*collæmic season*). Temperature may rise to 101; pulse 68. First sound reduplicated or late systolic murmur (*collæmic heart*). Urine sp. gr. 1025, acid, no sugar, no albumin. Saw the late Sir A. Clarke six months ago and he diagnosed rheumatism of diaphragm and gave a powder, to no purpose (*i.e., did not cure the attacks*). Cannot take quinine, as it makes his headache worse (*collæmic head*).

These paroxysmal attacks remind one of migraine on the one hand, which he no doubt has with them, and on the other of paroxysmal hæmoglobinuria; they are, no doubt, collæmic attacks followed by, or complicated with, slight retention in heels, diaphragm, liver, &c., causing more or less fever.

I gave salicylate of soda 15 gr. 6is horis, and I heard from the patient a few weeks later that he had had no attack while taking the medicine. Pulse 76. I advised him to continue the medicine, and if it kept off the attacks to consider U.A.F. diet. I never saw him again (*perhaps he was fond of his meat and wine !*).

Case 6.—G. P., male, aged 17. Attended as an out-patient complaining of pain in his joints. Temperature 102. I could find no other physical signs, and sent him in as a case of rheumatic fever; but he was soon found to have enteric, which had resembled rheumatic fever at its onset, and he died on the twenty-third day of the disease from continued high temperature (104 *for some time*) and exhaustion. Diarrhœa had also been severe for a week before death. At the *post mortem*, brain and membranes normal, lungs considerable congestion, especially of right upper lobe, which in parts is almost black and airless. No fluid in either pleura. Heart, mitral valve admits two fingers easily, left ventricle walls pale, soft and friable, so that the finger easily penetrates them. Liver normal, spleen large (19 oz.), soft and pulpy. Kidneys large, cortex cloudy and mottled; intestines, at the ileo-cæcal valve and for 6 ft. above it were numerous raised Peyer's patches, the ones near the valve having a reticulated appearance from the separation of numerous small sloughs, and in others a foot or two above the valve these sloughs were not yet separated, and still higher there was general congestion, but no formation of sloughs. The mesenteric glands were large, dark coloured and firm. A brother aged 19 had died a few days before him of the same disease. He also had separating sloughs and a very large spleen.

I have seen several other cases in which enteric resembled acute rheumatism at its onset. Scarlet is by no means the only fever to be complicated with arthritis and endocarditis or both.

Case 7.—P. McM., male, aged 35. Under the care of my colleague, the late Mr. D. H. Goodsall, at the Metropolitan Hospital. Complains of abscess in thigh and sinus in foot. A small sand insect (*Bicho, Pulex penetrans*) got under his little toe-nail in Brazil sixteen weeks ago, and, as a result, he had some cellulitis on the dorsum of the foot, which was incised ten weeks ago. Soon after this came a swelling in muscles of left thigh. This was hard, but with potassium iodide got softer, and is now fluctuating. Had syphilis eighteen years ago. Five days later abscess in thigh opened and lining membrane scraped. Eighteen days later sinus in left thigh laid open its full length, and plugged with iodoform gauze. Twelve days later temperature up and down—occasionally 104. There was a question of diagnosis, as he had had intermittent fever in Brazil, and he was given quinine for a time. Three weeks later temperature still runs from 100 to 103·6. He had developed some pain in right knee and ankle, and as the cause of this was at this time not regarded as pyæmia, some salicylate of soda was tried, but it had little effect on either pain or temperature. A week later the dose was increased to 15 gr. every four hours. This again had little effect. Temperature 103 and above. As the urine at this time was but slightly acid, some nitro-hydrochloric acid was given to help the salicylate under the idea that alkali was interfering with its action. Temperature was now 101 to 102. As there was no salicinism, the dose of salicylate was increased to 20 gr. every three hours, but the temperature paid no attention to it, and remained at 102. On the last day on salicylate I got a sample of twenty-fours' urine, 58 oz., sp. gr. 1020, urea 1·5 per cent. Acidity to urea 1 to 15, very low; uric acid ·06720 per cent. Uric acid to urea 1 to 22. Total uric acid 17·8 gr.—(*no large secretion for so much salicylate*). He was now seen by the late Mr. Walsham, who diagnosed pyæmia and put him on quinine. Five days later, when he was on no drugs at all for a day or so, I again got the urine (24 oz.), sp. gr. 1018. Acidity to urea again 1 to 15. Uric acid to urea 1 to 23, or much the same as on salicylate. (*Uric acid was not the cause of the temperature here, and so salicylate had no effect either on the excretion of uric acid or on the symptoms.*) At the end of a week from this he died, temperature ranging from 102 to 104, except the last twelve hours, in

which it was subnormal. He had some pustular abscesses about the arms in addition to the old troubles in the legs. At the *post-mortem* only the external lesions were found, nothing in the viscera.

There is no doubt that this was a case of pyæmia, and it is interesting to see that salicylate in quite full doses neither relieved the pain nor lowered the temperature, and it had also, as we can see, very little effect on the excretion of uric acid. This man was in a very weak and debilitated condition, with very low urinary acidity; he was thus, as in all conditions of debility, excreting an excess of uric acid, and the salicylate did very little to increase this. Salicylate relieves acute rheumatism exactly in proportion as it removes the irritant from the joints; here the irritant was of a different kind, not soluble in salicylate solutions.

### *Bronchitis.*

Case 1.—H. J., male, aged 60. Complains of morning expectoration and some pain in his chest since an attack of influenza three years ago. He also had a chill followed by severe bronchitis two years ago. Up to the time of the influenza he was well and had no cough. Moderately well nourished, but pale. Has been a very strong man who should have lived to 80 or 100. Arcus senilis present, Sleeps badly unless he takes whisky, which lowers B.P. (*collæmia*). Pulse 95. First sound markedly reduplicated at left parasternal line. There are general signs of emphysema and a few catarrhal signs in the lungs, no dulness or local signs. Expectoration in the morning is considerable, generally pale or green. Urine, sp. gr. 1028, acid, cloudy, with pale urates (*collæmia*), Slight œdema of shins. Feet cold at night (*weak heart muscle*). Present diet of four meals includes meat or fish twice, egg once, tea twice, beer once, whisky once, and some tobacco. (*Not so bad as some people, but still enough poison to keep chronic bronchitis going.*) I advised a gradual change on to U.A.F. diet, and a reading of Dr. Keith's book. But he stumbled over diet, and never did it completely; of course at times he felt weak from collæmia in spite of acids and heart tonics, and putting his weakness down to diet, feared to make the change. He died a year or two later of the conditions we can here see developing—bronchitis and heart failure.

Here was a man whose original structure should have carried him at least well into the eighties, who died twenty years before his time, and was a cripple for some years before his death, simply from food-poisoning.

Case 2.—F. W., male, aged 1 year 3 months. Admitted with cough and dyspnœa. Has had cough and shortness of breath some six or seven days, also some pain in left side. A well-nourished child, now cyanosed and breathing with difficulty (respiration 48). Accessory muscles of respiration in action. Heart sounds natural. Rhonchi, sybili, and râles all over chest, with occasional friction more marked on the left. Percussion more impaired at left back than elsewhere. Broncho-pneumonia. Temperature 103 to 104; pulse 150; respirations 55 to 60. He was put on ether nit. ammon. acetat. and aq. camph., and a steam-kettle was put in action.

Two days after admission, temperature 103, but touched 104·8 for a few hours. Pulse 160; respirations 63. No sign of improvement anywhere. The ether and ammonia were stopped, and he was put on bicarbonate of soda 15 gr. 2$^{is}$ horis, and later 20 gr. in same times.

Two days after this the temperature began to break, and touched 99 at 2 p.m.

Pulse 140; respirations 53, some improvement. Again, two days later, temperature fell in the evening to 97. Pulse 100; respirations 40, and there was no further rise, pulse reaching 90, and respirations 25 three days later. The rest of the case was uneventful.

Here, as usual, bicarbonate of soda in large doses broke the temperature in about forty-eight hours (the time it usually takes to make the urine alkaline), while the retentive drugs (nitrous ether and liquor ammon. acet., both powerful retentives) not only did no good, but all signs were getting worse when they were left off.

Case 3.—P. N., male, aged 7 months. Acute bronchitis. Has had a cough for some three weeks. Is slightly cyanosed. Heart sounds normal. Many râles and rhonchi all over the chest. Temperature 101; pulse 130; respirations 45. Was put on bicarbonate of soda, first 10 gr., and then 15 gr., every two hours. Temperature came down on evening of second day to 98 and never rose above 99 again; at the same time pulse fell to 110 and respirations to 35. Three days later temperature normal; pulse 90 to 100; respirations 25. He was taking his food and sleeping well. The rest of the case was uneventful, except that during convalescence he was given a little strophanthus for a few days as the pulse remained rather quick (*this is very common in children with bronchitis, as every bronchitis is a strain on the heart*).

Case 4.—A. T,, female, aged 3. Case headed: Acute bronchitis and rickets. Has had a cough for some time, getting worse of late. Is slightly cyanosed, cough loose. Heart normal. Moist râles general all over lungs, also some coarse and fine crepitations in axilla and back. Liver enlarged, and one to two inches below costal margin. Temperature 100; pulse 150; respirations 35. She was put on bicarbonate of soda, 20 gr. 2$^{is}$ horis. On the first day after admission temperature rose to 101·4 in the evening, but next morning it was normal and remained there. Pulse fell next day to 120, and respiration fell more slowly, touching 25 some six days later. At this time the bicarbonate was reduced to 10 gr., and a little belladonna was given with it to dry up secretions.

A fortnight after admission there was a slight relapse, temperature on one day reaching 100. Pulse 120 and R. 35. Bicarbonate was repeated and the temperature quickly came down again. As the pulse remained quick some nux and digitalis were added to the bicarbonate and the pulse came down to 110. (*No doubt this heart weakness, dilated right side, was the cause of the enlarged liver*). All symptoms now gradually subsided and the child got well and went home.

Possibly the bicarbonate was reduced too soon in the first attack before it had cleared out all the urate from the bronchi, hence the relapse. I purposely reduced it as soon as I could, on account of the weak heart and congested liver.

Bicarbonate of soda has little or no effect on a specific bronchitis such as that of whooping-cough, measles, enteric fever, or on tubercle, hence we may get a diagnosis in these cases by observing that the alkali quite fails to cure or to lower temperature, though given in sufficient doses to get the urine alkaline in two or at most three days.

I give these few cases in illustration of my paper in the *British Medical Jonrnal*, 1908, vol i., on the "Treatment of Bronchitis

by Alkali." I could easily give many more cases from hospital records showing the same thing, but nothing is to be gained by doing so.

If an alkali given to the extent necessary to make the urine alkaline in forty-eight hours (and adults may require any dose up to 200 or 300 gr. in twenty-four hours) does not reduce the temperature, this being followed by the pulse and more slowly by the respiration, it is generally safe to conclude that we have to deal not with a mere bronchitis (*i.e.*, rheumatism or gout of the bronchi), but with a specific bronchitis or a tuberculosis.

If you get a catarrh supervening on tubercular disease of the lung the alkali may reduce the temperature, pulse and respiration in so far as they are raised by the catarrh, but will leave untouched the alterations of these signs that are due to the tubercle.

Alkalies thus not only give us a speedy, safe, and certain cure for a dangerous disease, but also enable us to diagnose between bronchitis and other troubles which resemble it. For the full explanation of the fact that alkali does better in this disease than salicylate I must refer to the above-named paper or to "Uric Acid," ed. vii., of which this volume is the clinical appendix.

Case 5.—J. H. male, aged 76. Seen with Dr. Sealy, of Weybridge. Complains of severe attacks of dyspnœa in the early morning. He had a bad attack five days ago and was unconscious, and very bad for three or four hours. Fears the same condition may return, breath very short at stool in the morning. Has slight dyspepsia and often vertigo lasting twenty minutes. Had headaches a year ago. First suffered from dyspnœa two and half years ago. Has an idea that he is weak and must be fed up. Is at present able to walk with help from room to room. B.D. ·8; pulse 96; C.R. 8; B.P. 140. Heart sounds much muffled by emphysema. Some cough, but no expectoration. (*We have here obvious heart failure with bronchitis and emphysema, the heart failure being accentuated by the collæmia of the morning hours.*) Abdomen distended and tympanitic. Bowels act only with drugs. Urine sp. gr. 1030, milky with urates, albumin a trace, no sugar (*collæmia and congested kidney*). He is decidedly obese and abdominal walls are thick. Present diet as an invalid includes fowl once, fish twice, soup, coffee twice, wine and whisky. When well, add to this egg once, meat twice a day. He has coffee in the early morning and sleeps well after it (*i.e., it relieves collæmia pro tem., but makes it worse later when he has the dyspnœa and vertigo as results. Here was clearly a case for diminishing fluids, to help the heart, and retentives*), and I gave him ammonium chloride and sodium iodide and some nux, and for severe dyspnœa attacks a little morphine if necessary. (*Nitrites might do, but their effect passes off too soon.*) I did not alter his nourishment except to make his diet as dry as possible. He did very well and soon got better. Three months later, however, he had a more severe attack of heart failure and bronchitis, when I was asked to see him at Hastings with Dr. Allfrey, who did not expect him to live when he first saw him. He had been given my previous prescription with a little digitalis and was rather better when I saw him. Temperature 99·4. Some bronchitic signs, but most of the trouble was heart failure under collæmia. I again used retentives with nux and strophanthus in place of digitalis, and he again recovered.

Six months later he reported that he had meanwhile improved wonderfully in health, and thought he had got over all his troubles; but yesterday he had

a strange feeling, and staggered, and his nurse gave him brandy and he got better. Has been taking the retentive mixture almost continuously since I last saw him, never feels so well without it. I told him that drugs could only hold the castle for a time, and that no cure was possible without change of diet (*i.e., removal of the cause*); but practically the only things I could cut off were some soups and slops and some part of his coffee, as for the rest he practically preferred to die rather than alter them. He was a rich man, and food was the chief enjoyment he had out of life, and so there was no doubt how it would end. Later on I saw him with Dr. Mahomed at Bournemouth, and an attempt was then made to do some clearing out with aspirin between times, and for a little it agreed and did good. A year later he was complaining of considerable headache. Pulse 96; B.P. 155 (*i.e., a rise*). No cough for some weeks, and the head has been worse since the cough got better (*collæmia and the heart gaining a little from absence of cough, hence rising B.P. and headache*). He is worse whenever he has to take an extra dose of his purgative pill (*i.e., it increases collæmia next morning*). Erythrol nitras had been used, but was not liked by the patient. I gave a little mercury to lower tension for a time. Five months later he came to me in town. He had seen some note of mine about a bread and fruit (*dry*) diet as a temporary relief for high B.P. and he put himself on it and was quite pleased with the result, and apparently there was some improvement. Pulse 84; C.R. 6·5; B.P. 125. There is a slight cough with yellow and white expectoration.

Looking back now in the light of other experiences I think this patient would have done very well on a dry diet of bread and fruit (anti-fat) till he had lost some of his excess of tissue, especially if he had then had his proteids increased from U.A.F. sources.

But this was out of the question; though he would do bread and fruit for a few days I could never get him nearer the U.A.F. diet than fish twice a day and two eggs; and now, but for accidents, things might have gone on fairly for for some time.

Six months later he again had some bronchitis at Bournemouth, and I then found: pulse 96; respiration 35; C.R. 7; B.P. 130. Tongue, yellow coat; appetite poor; bowels constipated. Heart sounds very distant, but obviously again some failure. Is taking a good deal of whisky. He again recovered on similar treatment, but after this his breath remained rather shorter and his appetite poor, so that he could not be kept to any diet, and was given any meat he liked. (*A good starve would have done him all the good in the world. Why is it that when Nature thus says "no" to all food, people still think it necessary to stuff in spite of her?*) Pulse 88; C.R. 8·5; B.P. 140, flattened 180, (*this falling off in C.R. to B.P. ratio is a bad sign, and means increasing cardiac debility*). He is taking a considerable quantity of drugs for flatulence and dyspepsia while neglecting their real causes (*collæmia and weak heart*). A few months after this he had hæmaturia from gravel, which, however, passed off in a few days; (*no doubt he is clearing out a good deal of urate*). Pulse 100: C.R. 8; B.P. 130, flattened 170.

Four months later, however, he again got an attack of dyspnœa with congestion of the bases of the lungs, and this was unfortunately treated with some salicylate under the impression that it was an acute bronchitis, while it was, as before, chiefly cardiac congestion. When I saw him, pulse 96, but irregular, and dropping 1 in 12, so that its rate was really above 100; respiration 48, wheezing and laboured; B.P. only 120 (*here he had marked heart failure, especially of the right side, leaving the left side relatively empty*). Expectoration yellow, thick, and tenacious. He had had a slight return of hæmaturia a few days previously. I again gave some retentives and some calomel, but before they could come into action and counteract the salicylate he became comatose and died.

Salicylates, in my experience, have a most depressing effect on the heart muscle power, especially when there is dyspnœa, which also increases collæmia and puts the most severe strain on the

heart; and it is this effect which led me to use bicarbonate of soda in bronchitis in preference to salicylate. Either solvent will cure, but the salicylate has its solvent action hindered by the alkalinity of dyspnœa and cyanosis, and under these conditions acts as a powerful cardiac depressant. I think the salicylate brings more uric acid into the blood than the alkali, and the bad effects of collæmia, always great, are thus more marked in one case than the other.

Case 6.—M. C. W., male, aged 48. Complains of bronchitis in winter, dyspepsia and shortness of breath. Has been in North Devon the last few weeks and was well there. Had bronchitis first in the summer three years ago and been subject to it in winter since. Had rheumatic fever as a child, congestion of lungs three years ago. He is well nourished, but slightly cyanosed. Pulse 88; moderate B.P. Apex beat quite in left nipple line and there is a double murmur pre-systolic and systolic there, and second sound is markedly reduplicated. There is a slight wheeze in the upper bronchial area (*bronchial congestion of morbus cordis*), bases clear. Cough and slight black expectoration in the morning. Liver full size, but somewhat covered by emphysema. Urine sp. gr. 1024, amber, clear, acid, no sugar, no albumin. The doctor he saw for his dyspepsia cured him with digitalis and potassium iodide. He said one valve of the heart was not right. He had not had his fluids reduced, and was still drinking 5 pints a day.

It is wonderful that the dyspepsia was cured when the fluids were not reduced, but digitalis and iodide would do a good deal. I could only give heart tonics and iodide, and advise him to cut down fluids as much as possible, but I fear he did not follow my advice. I never saw him again, but I heard that he died of morbus cordis three years later in Germany.

### *Abdominal Cases.*

Case 1.—M. C. C., female, aged 43. Complains of diarrhœa and abdominal pain, increased by being nervous. Had it first seven or eight years ago, and on and off since that. She also complains of general debility and weakness. Her doctor says "full of gout and liver troubles." Her father was very gouty and had much pain in his feet. Has had headache for some years, used to be worse before the diarrhœa was bad (*the diarrhœa is due to heart failure and secondary congestion, and heart failure lowers B.P., hence headaches less severe*). Has some skin irritation (*gouty eczema*) on leg and back. Skin of face pale and puffy. The eyes feel as if full of dust and lids are swelled (*gouty hot eye*). Teeth going bad. B.D. ·75; pulse 92; C.R. 7·5; B.P. 140. First sound long, second sound loud (*here are the signs of weak heart muscle, collæmic heart with defective muscle nutrition*). Her fingers are stiff at times, and show signs of chronic arthritis. There is no flatulence, but a little pain in the left iliac region; bowels act twice a day, relaxed and some mucus, no piles. The stomach is down to the umbilicus, the liver is full size and the tip of the right kidney can be felt (*showing general congestion owing to cardiac debility*). Menstruation regular every three weeks or so, always four or five days pain, used to faint with the pain at one time. Generally some leucorrhœa. Urine often thick with sediments (*collæmia*). Hands and feet are often cold (*collæmia plus weak heart*). Weight 6 st. 13 lb., said to be steady. She was dieted by the late Sir A. Clarke, when aged 24, and it did good, but she tried this diet again for her diarrhœa without effect. Present diet of four meals includes meat twice, egg or bacon once, tea twice a day. I tried bicarbonate of soda and bismuth, but it was no use (*the proper treatment was by heart tonics*). Later I gave a mixture containing salicylate and bismuth,

but also some nux, and this did much good, and she then slowly changed on to U.A.F. diet. Six months later she overtired herself in house hunting and had a relapse of diarrhœa and abdominal pain (*i.e., from heart strain and congestion again*). I continued a heart tonic and used salicylate of methyl locally for the abdominal pain.

Six months later she reported that diarrhœa and pain were absolutely cured, and she gave the chief credit to thirteen months of a U.A.F. diet. Pulse 85 ; C.R. 6·5 ; B.P. 125. Weight 7 st. 3 lb. 2 oz., an increase. Takes plenty of potato and never any fruit.

Here the pulse was slower, the C.R. and B.P. ratio was almost normal and the pressure had also fallen. Diet had cured by lowering B.P. and relieving the work of the heart. I have often known meat cause chronic diarrhœa which was cured by leaving it off ; we here see the correct relation between cause and effect. This patient had had some little arthritis when she was stronger and the headaches were severe, but as the heart got weaker the headaches diminished and the arthritis disappeared, and the diarrhœa took their place. She may have had a little rheumatism of the bowels at one time, but latterly it was collæmic congestion rather than retention.

Case 2.—J. B., male, aged 37 (medical). Complains of gastric pain since 10 years old. Comes in attacks, which are worst in the winter. Pain in epigastrium is like toothache in the stomach, worse when out in cold, better when warm. Father gouty, and died about 40 of gout of the stomach. Three years ago had suppuration in right middle ear and septic pneumonia, and his gastric attacks have been worse since that. Attacks last seven to ten days, and there is occasional vomiting when the pain is bad. Attacks are made worse by calomel, aperient waters, acids, pastry, and sweets (*mostly retentives, they should therefore be relieved by solvents*). Appetite not much affected by attack at first. There is a systolic murmur both at apex and base on exertion. Urine, sp. gr. 1025, no albumin, no sugar. Bowels act once a day regularly, and are not affected by the attacks, Takes very little meat, often eggs ; coffee for breakfast, meat for dinner. I advised salicylate of soda 20 gr., three or four times a day. I heard from him a few weeks later that the medicine relieved and cured the pain, and the improvement was constant and continued. (*In a word, the trouble was a gouty gastritis increased by retentives and cold, and cured by solvents and heat. The history of his father's gout of the stomach is interesting and suggestive.*)

Case 3.—J. H., male, aged 48. Complains of stomach trouble. Pain in the epigastrium coming in attacks, about one in three months. Five years ago had ulcer of the stomach and vomited black coffee-grounds. Pain since that. His mother suffers from sick headache. Pulse 60, long ; some high B.P. At apex first sound long, second sound loud. The pain is in the epigastrium, and it is very slightly tender now. Has much wind and is rather constipated. Urine, sp. gr. 1028, no albumin, no sugar. Milk diet agrees well, and he is well when on it at home, but has difficulty in getting it while away. I again tried salicylates in this case, but unfortunately never heard the result.

I give it for its interesting history, the migraine in the mother, and the gastric ulcer. If uric acid can cause irritation, catarrh, and appendicitis, why not also gastric ulcer ? Catarrh has been attributed to cold, but we now know that it is never due to this alone, and

that if uric acid is not available cold is harmless. The real etiology of gastric ulcer is unknown, and uric acid is just as likely to cause ulceration here as elsewhere, in fact more likely, as a precipitating acid is so often present. This, and many other things, we shall learn with certainty when more people live U.A.F.; the cause being removed, the effect, if effect it be, will follow. The depth of ulceration is due to local conditions, and does not show that the trouble did not originate in a superficial catarrh, and it is practically certain that many gastro-duodenal catarrhs are due to uric acid and to nothing else; so exactly in causation, reaction to drugs, and consequences, do they resemble catarrhs in other parts which we know to be due to it. In many minor gastric troubles the first thing I do is to look for signs of chronic arthritis, and if I find them, and in default of other clear indications, I treat the gastric trouble as an arthritis.

About the time these cases were passing through my hands, I received a letter from Dr. John Watson, of Newbury, in which he said that having read a paper of mine in the *Practitioner* on gout of the intestines, he was led to treat an old gentleman suffering from very severe gouty gastritis with salicylate of soda. "The effect was simply magical; he lost all pain after taking the first dose, and has had none since; his dyspeptic symptoms have almost entirely vanished now, after four days' treatment, and the drug has acted like a charm."

A similar record came about the same time from Dr. C. E. Lockwood, of New York, who says: "I was recently called to see a lady who was suffering from pain and soreness in the neighbourhood of the cæcum, and noticed that one of her finger-joints was enlarged. Having just been reading the chapter on gouty dyspepsia and gout of the intestines in your work, I prescribed 10 gr. of salicylate of soda three or four times a day, and was pleased to hear her say that the pain and soreness began to leave her after the first dose." He then goes on to mention a case of eczema capitis in which the eruption had alternated with rheumatism, and here the same drug caused almost entire disappearance of the eruption in forty-eight hours.

Case 4.—C. W. J., male, aged 45. Complains of pain in the epigastrium. Eighteen years ago was very ill with it. It was called dyspepsia or neuralgia. Had a severe attack nine days ago. Pain worst about two hours after food; no vomiting, no diarrhœa. Pain is relieved by morphia pills. Father's mother died of gallstone: family subject to catarrh and inflammation of lungs. Had jaundice at the age of 7, not since. Wine may act as a poison and bring on the pain. Often has catarrh. Is stout, well nourished, and of ruddy complexion.

Pain may keep him awake for two or three nights, but sleeps after morphine. During and after attacks can take nothing but Benger's food. B.D. ·9 ; pulse 72 ; C.R. 10 ; B.P. 130.

This abnormal ratio is due to recent and temporary underfeeding ; if the heart had been weak the pulse would have been quick. Underfeeding lowers B.P. and slows the heart by taking work off, hence a little starvation is good treatment in plethoric morbus cordis and heart failure ; not more food, but less food and fluid.

First sound long, second sound slightly loud, Has a constant cough in the winter. Bowels regular apart from attacks and morphine. Has had piles operated on three years ago. Urine sp. gr. 1022, acid, no albumin, no sugar, no bile pigment. Weight 11 st. 6 lb., increasing slightly at present. The stomach is down to the umbilicus, but there is no splash ; there is a tender spot just below the ensiform cartilage (*seat of his pain*), no tenderness in gall bladder region. Liver dulness is full size, and there is some dulness in spleen region and down the descending colon, probably fæcal. Diagnosis gouty gastritis. Aspirin given, continue morphine if necessary ; regulate bowels with salts.

A few days later medicine had acted like a charm, pain has gradually diminished and become a mere nothing. No morphine required since he saw me. Is back on fish again. Pulse 84 ; C.R. 12 ; B.P. 130. I advised him to keep on ordinary diet and take aspirin for a time to clear out, and then go gradually on to U.A.F. diet.

Case 5.—J. W. N., male, aged 50. Had "influenza of stomach" five months ago, and has been ill with general rheumatism on and off since that. He then went to Droitwich and got inflammation of bowels there. Never strong. Had rheumatic fever very badly twenty or twenty-five years ago. Now general rheumatic pains which are best in early morning and get worse as the day goes on. B.D. ·7 ; pulse 108 ; C.R. 8 ; B.P. 100. First sound short (*weak muscle*). Has pain like a bad stomach-ache in middle line just above the umbilicus. Bowels act only with pills, some fæcal accumulation in descending colon. Urine sp. gr. 1027, milky with urates, no sugar, no albumin (*collæmia*). Liver dulness not increased or covered by emphysema. (*Here we have chronic arthritis and colic associated with weak heart and collæmia.*) Present diet includes meat twice, fish twice, egg once, tea once, whisky twice a day. I used salicylic acid and pulv. opii. co., and in nine days he was fairly comfortable and all pain gone. Stomach better than any time in last four months ; the pains in the fingers have been much better for some days. Pulse 80 ; C.R. 7·5 ; B.P. 100.

Five months later he reported that the medicine had taken all the pain away and he had since for three months been altering on to U.A.F. diet, and only has meat once a day, but he now feels weak and disinclined for work. Pulse 68 ; C.R. 7 ; B.P. 100.

This proved on investigation to be due to the fact that he was taking too much rubbish and slops and not enough proteid. He was leaving off concentrated foods of 20 to 25 per cent. proteid value, and replacing them by foods of only 4 to 8 per cent. proteid value.

Case 6.—M. M., male, aged 27. Complains of weakness and dyspepsia, with pain in chest and stomach, which is getting worse in spite of all treatment. It began two years ago. Has been subject to headaches for years, one in seven days, probably migraine. Has had some rheumatism in legs and thighs the last two months. Has been a vegetarian for four months. Has an uncle in the profession in practice in Orotava. Is sleeping better since being a vegetarian. Appetite moderate, thinks he used to eat too much. B.D. ·75. ; pulse 64 ; C.R. 6·5 ; B.P. 120 ; second sound slightly loud. Occasional colds, has one at present. (*He has probably been underfeeding, hence the slow pulse and normal B.P.*) He

has pain in the chest and right hypochondrium, increased by all food. Bowels act well when he eats fruit, but this fruit-eating sometimes increases the pain in the chest. Urine cloudy with urates, no sugar, no albumin. Weight 10 st. 7 lb. in clothes. His present diet includes one egg, porridge, brown bread, some peas or lentils, some pudding, and a good deal of fruit. No milk or cheese. (*This is a rather acid diet, deficient in proteid.*) I suggested some milk and cheese in place of pulses, and a diminution of fruit; to diminish slops and only to drink when thirsty; take breadstuffs supercooked.

A month later he reported that he had been very bad with dyspepsia, had some fever and vomiting, and was in bed for two days. The bread caused acidity in spite of being toasted. He felt stronger on cheese but it caused dyspepsia. Has had some headaches. Pulse 80; C.R. 7; B.P. 120. I gave some salicylate and bromide of ammonia to see whether it would relieve the stomach and the migraine. He never gave me a report as to this, and I heard no more of him till eight months later, when a friend of his called on me and said that he had been reading Dr. Dewey's books, and, being disgusted at the non-success of all other treatment for his dyspepsia, was doing a starve, and was now at thirtieth day of fasting. He asked me to go and see him, which I did. His weight at the beginning of the fast was 10 st. 2 lb., so he had lost more weight since I first saw him; his weight now is 8 st. 4 lb., so he has lost 26 lb. in thirty days. I saw him on thirty-second day of his fast, when he had lost 28 lb. Pulse 48; C.R. 6·5; B.P. 95; B.D. ·8 (*an improvement since I first saw him*). Tongue red and angry-looking with irregular yellowish coat. About twenty-second day he felt his tongue clean and some appetite coming, and he then tried to break his fast on lemon and acid fruits, but they upset him and caused wind in the stomach, and so he went on fasting again. Heart is acting slowly; second sound relatively loud (*? first sound slightly weak*). He thinks he will get an appetite in two or three days now, and wants to know what to break his fast upon. Before he began to starve he went on two meals a day and lived for three weeks on bread only, and yet he lost weight. (*This is not extraordinary, as he was no doubt on deficient proteid*).

I looked at his body, and seeing that he had still 10 lb. that he could lose I said he might go on for three or four days, and advised him to break his fast on milk pudding, or toast and milk. He was to keep quiet in bed or on couch so as to minimize the loss; he had been walking about before. A week or so later I heard from his friend that he had gone longer than the four days I gave him, and had otherwise disregarded my directions, and I then refused any further responsibility in the matter.

Three and a half months later I heard from his friend that he had gone to Spain, his native country, where he has picked up wonderfully; has regained his lost weight, and is quite cured of his dyspepsia. He broke his fast nine or ten days after I saw him on milk puddings, and this time did well.

My impression was that his dyspepsia was either collæmic, related to his migraine, or a rheumatism of the stomach and duodenum, and I should have felt sure of this latter cause if the salicylate had relieved it, as in some cases previously given. A forty days fast would quite suffice to cure such a condition, as it would allow of complete rest and, with very alkaline blood, complete elimination of urates from the seat of irritation. In this connection it is interesting that the acid fruit on which he first tried to break his fast brought back the trouble, and this is decidedly in favour of a rheumatic gastro-enteritis. I have often cured minor forms of dyspepsia by a five to ten or twenty days fast, but I always try other things, especially two meals or even one a day, getting the required rest interstitially, a little each day; in so many cases

these measures are successful that fasting is not often required. The above patient was unmanageable and only came to see me very rarely, so that I had not much chance with him. However, all is well that ends well, and I think he deserves great credit for his pluck.

Case 7.—J. G., female, aged 49. Has had pain and tenderness in the region of the cæcum for several weeks and been to various doctors, one of whom advised operation, which however she wishes if possible to avoid. There is plenty of gout and rheumatism in the family, the patient herself and several sisters having suffered often from rheumatic tonsillitis and minor signs of arthritis. There was distinct tenderness and a little fullness opposite the right anterior superior spine of the ilium. I said that if salicylates would distinctly control the trouble she might return home and give up all thoughts of an operation for the present, and I ordered 12 gr. of salicylate of ammonium three times a day (15 *or* 20 *gr. would have been better*). This was given under the supervision and with the concurrence of Dr. Owen, of Southsea. Twelve days later the report was that for the first three or four days she did not notice any difference, but since that there had been less pain each day. The pain was not acute when I saw her; she had come to London to find out what the pain was and whether she should be operated on, and had been told it was appendicitis. I told her to go on for another ten to fourteen days, and then to take only one and a half or two doses after dinner at night. A fortnight later she was on one and a half doses at night, and never has a twinge of pain now, only she feels a little catching or stiffness about the part (*tender adhesions*) on stretching or making certain movements. At one time she had some pain in the right hip joint, and she often had rheumatic pains in other parts.

To make a long story short, this patient got quite well and never required to be operated on. For several years she had occasionally to resume the salicylate for a week or two, but now (ten years later) this has for a long time been unnecessary. She never adopted a completely U.A.F. diet, though greatly diminishing her original intake of poisons.

Case 8.—E. W., male, aged 33. Seen with Dr. Gayford, of Fleet Street. Complains of intestinal colic, three attacks in last twelve months. At first the attacks were accompanied by diarrhœa, now pain only. His father has chronic rheumatism and some bronchitis. Mother has cataract. Not otherwise subject to diarrhœa; has occasional myalgic pain in limbs. Occasionally vomits a little bile with the pain. Has just returned from his holiday, in which he has been eating four hearty meals a day, and has an attack now (*i.e.*, *retention*). Pulse 84, soft, is on opium for the pain. Apex just inside left nipple line. First sound rather long. There is some pain and slight tenderness below and to right of umbilicus, but nothing definite to be felt there. Urine sp. gr. 1025, high colour, acid, no albumin, no sugar. Diagnosis colic (= *gout of intestines in a* (?) *rheumatic subject*), so I gave him salicylate of soda and carminatives, and advised change of diet if the drug did good. About a year afterwards I heard from Dr. Gayford that he had been better, and that salicylate always relieves his attacks at once. (*I believe appendicitis in many cases differs from the above merely in the seat and severity of the irritation.*)

## *Dermatitis.*

Case 1.—A. M. A., female, aged 39. Complains of eczema for five or six years. Lately has been trying to live on meat and toast, but is no better. Ichthyol and ointments kept it under, even on mutton and toast; now has reduced meat and can take some fruit and cheese. Headache and eczema followed on being pulled down by uterine ulceration. Her headaches are often worse after her mid-day meal. Epsom salts cure her headache (*retention*). Head often aches every morning. Headache is worse at the monthly period. Pulse 80; C.R. 5; B.P. 125. First sound long; second sound slightly loud. Apex beat a little to the left. Bowels act once in two days

with the help of senna pods. Urine often thick (*collæmic*). Liver dulness, full size. Weight 9 st. 4 lb., steady. Has been taking some salicylate of soda. For five weeks has been on what she considers to be the U.A.F. diet, but is only taking some 700 to 800 gr. of albumin when she required 1,100. She has still some headache, no doubt because low diet increases collæmia. I merely corrected her diet.

Two years later I heard from a friend that she is very well and gets on all right.

A year later I heard from a nurse that she has an attack of eczema in spite of three years on U.A.F. diet. She had been free for some time, but ate a pear last autumn, and this brought on an acute attack with fever and constipation. I told her to give up senna pods (*which are poisonous*) and to increase potato to lower acidity; she was also taking too much breadstuff (*which is acid, and being stronger and better nourished in herself the acidity had risen, hence the effect of the fruit*).

A month later I had a report that the potato had done good, and two months later the improvement continued, but any fruit or salt at once made the eczema worse. The potatoes had also diminished the constipation (*thus lowering acidity in two ways—by introduction of alkali and excretion of acids*). Bread had been reduced to 6 oz. Weight 9 st. 6 lb. 2 oz.

Here the urates had probably never been completely cleared out of the skin, and any rise of acidity by fruit or constipation sufficed to relight the irritation; this shows the importance of continuing solvents for some time after apparent cure.

Case 2.—M. A., female, aged 40. Complains of irritation on the hands and cannot sleep for it; has eczema also in the face and round the mouth. Has had this for three or four years, worse in the spring (*spring is the season in which collæmia and retention alternate*). Her doctor says it is gout, Had scarlet fever as a child, also peritonitis from chill (*? appendicitis*) seven years ago. Was feverish (*? erysipelas*) with her second child fourteen years ago, Skin of face is thick, puffy and eczematous. Eyelids are puffy. Teeth good, but dentist says they show gout. Has had a good deal of dyspepsia; but it alternates with the skin trouble, never the two together (*probably the dyspepsia is a result of collæmia, as we have seen in many cases in Chapter III., while the skin trouble is a retention, and so they alternate*). B.D. ·7; C.R. 8; pulse 80; B.P. 155. Second sound decidedly loud. Gets nervous when in town too long and is occasionally depressed. Sleeps well except for the skin trouble. Has a good deal of flatulence and oppression in chest. Slight piles and the bowels act only with pills. Menstruation regular, considerable pain. Does not affect the skin trouble. There is slight tenderness in the cæcal region at site of old peritonitis, but no definite physical signs there. Present diet includes five meals, meat twice, fish once or twice, egg once or twice, soup once, tea three times, coffee once occasionally, and often chocolate (*a fine list of poisons*). Has always taken plenty of tea. I advised a gradual reduction of poisons, and I believe it was carried out with good effect, as her husband is a vegetarian; but even vegetarians take a large quantity of xanthin at times.

Case 3.—T. B., male, aged 21. Complains of eczema of face, which is associated now, as on many previous occasions, with catarrh. The eruption now consists of numerous small vesicles on an inflamed surface. It itches and burns and is slightly tender—acute eczema. It affects the right cheek in one patch, but is most in left cheek, left side of nose and left eyelids. He says he has had at least five or six similar attacks in his life, all associated with nasal and bronchial catarrh.

I note with interest in this connection that the late Sir Erasmus Wilson said in "Quain's Dictionary," p. 425: "Eczema being an inflammation of the surface membrane of the body is not infrequently associated with a similar inflammation of the mucous membrane of

the air-passages (bronchitis). Especially is this frequent in children, the association of eczema (infantile) and bronchitis; and this association is sometimes maintained during the whole lifetime of the individual, or the eczematous bronchitis may become chronic asthma."

This is a most interesting observation on high authority made before anything was known as to the real causation of these troubles and their origin in food poisoning.

Both eczema and bronchitis in children are retention diseases and come in the first retention stage of life. Later on, as observed, they may pass into a collæmic disease, asthma, when the first retention stage gives place to the first collæmic stage in the natural course of events, or the first collæmic stage may be brought on before its usual time by the debility produced by the retentive troubles (eczema and bronchitis).

Case 4.—J. W., male, aged 3. Complains of chronic skin trouble which has been diagnosed as pityriasis rubra. First had trouble in his skin when six weeks old. The doctor at first took it for scarlet fever and isolated the child, but afterwards changed his mind. Later on he began to be covered more or less all over with black scabs and scales. He then went to a skin specialist in a provincial town, who took off the crusts, but the inflammation and irritation remained very bad. At 2 years old the trouble was continuing and causing much loss of sleep from the irritation. After this he went to another skin specialist in another provincial town and was seen every day for sixteen weeks. All washing was forbidden, he was rubbed every day with olive oil, bandaged all over and his face masked.

But in fourteen days after leaving off the mask and bandages he was worse than ever. He had been ordered for food, eggs, beef tea, meat chopped small, and bacon fat. But the heat and irritation of skin increased (*and no wonder on such a poisonous diet*). The doctor said the disease was a weakening one, and the boy must be "well" fed. The ointment for him was made up in 7-lb. tins and 28 lb. of it was got at a time. Altogether 5 cwt. of it was used, and all without effect. When he was 3 years old the father came across one of my books and wrote to me for advice. He was put on U.A.F. diet and the bandaging was continued, using some olive oil and ung. zinci c. vas. As they feared the boy might fret over being refused meat and gravy, of which he had grown to be fond, the whole family gave up meat at the same time, with the result that the whole family also became very much better in several unexpected ways. To make a long story short, the boy gradually improved for the next three years, and now at 8 years old he has been free from pityriasis rubra for quite two years. He can now run about as well as other boys, and only has a slight roughness of the skin of the face in autumn and spring. He gave up salt at the same time that he gave up meat, and that also seemed to have a good effect on the condition of the skin. He now weighs 4 st., and is strong and healthy. His first teeth were nearly all decayed even at 2 years old, but the second set are now coming in even and good. The skin over the body is now perfectly smooth, no ointments have been used for more than two years. His present diet consists of fruit, nuts, vegetables, cheese, bread, butter, and milk. He never has colds now in spite of camping out and exposure to all weathers. He had diphtheria some months ago, but made a splendid recovery after one injection of serum. Mother's mother had malarial fever in East Africa, mother's father died at 68 with carbuncle and diabetes. Father's father fond of meat, had asthma and bronchitis, and died at 66 of cancer. Father's mother, healthy woman, died 74. Hard worker. Had ten children and brought them all up.

There is here a family history of diabetes, asthma, bronchitis and cancer, *i.e.*, two collæmic and two precipitation diseases, and the grandchild presents a local skin irritation which large quantities of ointment used lavishly over long periods quite failed to cure, no doubt because of a diet which piled in uric acid in bulk, but which got well without ointments, and as soon as one could reasonably expect, when the uric acid was left off.

Do not let us deceive ourselves in a mist of names; pityriasis rubra is merely severe and inveterate eczema, and eczema and pityriasis are mere forms of dermatitis, often clearly due to uric acid.

Did space permit, I could give other instances of severe and inveterate skin irritations which had resisted the best directed local treatment of the clinics of Europe or America, in some cases of both, but which departed and remained absent when the poisons were left out of the food.

What we must look at in these cases is not the name by which the variety of dermatitis in front of us is to be called, but whether it occurs in a member of a gouty or rheumatic family, or one showing other signs of local urate irritation, such as bronchitis in the family of this child.

Nor must we lose sight of the fact that the chief result which Sir A. Garrod produced by administering urates to man was skin irritation. I much doubt if the man on whom this experiment was performed regarded uric acid as a harmless waste product. Practically all dermatitis which is due to uric acid is more or less promptly relieved by solvents, either large doses of bicarbonate of soda, such as cure bronchitis, or good doses of aspirin, salicylic acid, or salicylate in other forms. I have recorded in "Uric Acid," p. 473, some interesting cases of psoriasis which were promptly relieved in this way, and in which the salicylates first relieved the parts kept cool, just as they do in chronic arthritis, thus completing the parallel between arthritis and dermatitis. On the other hand, as may be seen in the book just referred to, when we administer retentive drugs we not uncommonly produce more or less severe dermatitis of one kind or another. We also arrive at a simple and very complete explanation of the clinical association of dermatitis and bronchitis, or eczema and asthma,

Case 5.—A. F., male, aged 65. Had cheiragra three or four years ago, and gout in one ankle one year ago. Has drunk ale. Now has redness and swelling of face, eyes almost closed. There is a good deal of oozing at the sides of the face and about the ears. There is also eczema of wrists, backs of hands, and

fronts of legs. Says this condition may remain for weeks, better and worse, and when better the face is covered with a plentiful large scale which covers his coat. I tried lotio plumbi, vaseline and zinc, and various oils. I advised him to diminish his meat. He got worse and his face became red and oozing. I then put him on milk diet and gave salicylate of soda. In a week he was better, legs less swelled, and this improvement steadily continued. In a week or two the face was almost natural, only a few scales remaining.

This appeared to be the effect of the salicylate, as the local treatment was not altered. This was years ago in pre-instrumental days, but I have since seen fairly numerous cases of acute dermatitis that at once yielded to solvents (salicylate or bicarbonate of soda) just like an arthritis, and the above patient had both.

Case 6.—C. J., male, aged 75, (medical, retired). Complains of eczema of the skin after an injury. Had eczema before on back of hands, and it was relieved by cocaine cream. He is a vegetarian and is trying to cure his eczema by a diet of bread, tomatoes and ground almonds. He is not taking sufficient proteid and has lost considerable weight (19 lb.). Weight now 103 lb. He also drinks much water. The eczema soon got well on this diet, probably owing to the diminished acidity of low diet. (*The food he takes added to his loss in weight, calculated as meat, would make up* 958 *gr. of albumin a day, and my calculated quantity* [103 *by* 9] *would give* 927 *as the amount required, so that Nature here confirms my calculation.*) I told him that he would have to add some proteid to his food, as this loss could not go on indefinitely. A few days later he reported that he had greatly increased food all round, and had been sleeping better and had gained 3 lb. in weight. He had some debility and œdema of legs, and was given some nux vomica for a time, and on the increased food he gradually regained the weight he had lost, becoming 110, and then 112 and 115 lb., at which last named figure he remained for some time. There was much difficulty in getting urea to its proper level, which it did not regain for many months. Eventually it was got to 3 and 3·5 gr. per lb. on 116 lb., and on this he was very strong and well, and able to do long rides on his tricycle, which was his chief amusement.

When he first came to me he had rather got hold of the idea that it was possible to put out what was, considering his age, a great deal of force on less urea than the text-books of physiology sanctioned, and it was partly with this idea, as well as to cure his eczema, that he was underfeeding when he came to me.

On several occasions I got the urine of a day of exercise, and this always showed the full 3·5 gr. of urea per lb. of his weight, so that if he was not eating a corresponding quantity of proteid, he was taking it from his own tissues, and, as we have seen, he lost weight and strength in the process. When he was underfeeding he only produced about 2·5 gr. of urea per lb. His weight of 116 lb. was all bone and muscle, no fat, and he was muscular and very strong for his age. He tried all kinds of vegetarian foods, some of them U.A.F. and some not. and he was specially fond of wholemeal and Hovis bread. B.P. at this time varied from 120 to 140, and it was lower at the time he starved himself. Urea was frequently tested and varied from 3·1 to 3·9 gr. per lb. per day.

A year later I have a record of pulse 72; C.R. 6; B.P. 100, which is not far from normal. He was well, strong, and able for much exercise, but taking as he did a large quantity of bread his urinary acidity was always relatively high, and he at times tended to retain, and a little laryngeal and bronchial catarrh were occasional results. In the summer at this time, urea after one of his rides went as high as 4 gr. per lb. on his weight, now 117 lb.

Next year I noticed a slight murmur following the first sound at the apex,

and C.R. was 6·5; pulse 75; and B.P. 100. (*I think he probably dilates his heart a little over his cycle rides, of which he is quite justly proud*). In the following year he complained of the slow healing of cuts, and I found a little relative anæmia; his B.D. had been very good before, and I now discovered on investigation, that he had again been letting down his urea to 2·2 to 2·4 gr, per lb., and losing a few pounds in weight.

He also had another unfounded idea, namely, that being a vegetarian, and more or less U.A.F., it was possible to do all kinds of silly things, such as exposing himself to cold and damp without harm, and he several times came to me with slight attacks of catarrh as a result. One of his pet ideas was to have an air-bath every morning while dressing, and he used to potter about in his garden for an hour or so in pyjamas even in the coldest weather.

I over and over again explained to him that however free from uric acid your food might be you would soon collect a store from retention by such reckless exposure, and that uric acid was just as deadly when retained as when swallowed. No doubt also his highly acid bread foods did something to aid retention.

There is now a break in my notes of about three years, during which things went on much as usual, and so nothing is recorded, and then one cold day early in March I got a note from Dr. Winslow Hall asking me to go and see C. J., as he was dying; and the information was unfortunately true. He had caught a cold by his usual practices some five days before, and it had been getting worse. Temperature about 101°; pulse 120; respiration 60; B.P. about 100; catarrhal signs all over the chest, and yet in spite of this he was lying in a room, temperature 55°, with the window wide open and a cold north-east wind blowing in, and with quite insufficient bed-clothing. Nothing could be done to help him, and he died two days later.

do not know what certificate Dr. Hall gave, but mine would have been death from quite groundless belief in the harmlessness of cold. Age at death 82 (he had lived long enough to know better). I mention this case because so many people when they alter diet seem to think it necessary to alter everything else. They forget anything they have ever known about proteid quantities; they imagine because they feel splendidly well at first on small quantities (living on their own tissues), that the process of auto-nutrition can be continued indefinitely; that they are exceptions to all physiological laws and can produce force out of nothing. If they fall into none of these errors they are almost sure to try all the manufactured rubbish which among vegetarians and the ignorant is honoured by the name of food, without reflecting that man and his forbears must have lived for untold centuries on the kindly fruits of the earth without any possibility of cooking, and with no preparation save what their own teeth gave them. If they come well out of all these errors, they imbibe the idea that there is some marvellous and quite unexplained power in sunlight and air, and that these overcome and counteract the ill-effects, if there are any, of cold. And so many lives are lost and much harm is done

to an otherwise good and true cause. My advice on these matters is in line with the true remark of one of my patients, that "It is not needful to be a fool because one is pious," nor is it necessary to be one because you return to the natural foods of mankind. It is only necessary to see that you get these foods in their natural condition, and without added poisons, and take a proper quantity; and if you otherwise led a sensible life before, continue to do so. In the above case a man of 82 was so strong and well as to retain to a serious extent under the influence of cold, and he died of an acute retention disease. There was no reason why he should not have lived for another twenty years apart from such reckless exposure. Doubtless the heart-strain incurred in cycling contributed something to the final catastrophe.

Case 7.—J. E., male, aged 57. Complains of gouty eczema and rheumatic pains all about the body. Had gout in the hands two weeks ago. His head is confused at times and he cannot think; he also feels very irritable, worst in the morning (*collæmia*). Two sisters have rheumatic gout and bronchitis. Had gout in his feet twenty years ago, and it is hereditary in his family. Had left pleurisy four to five years ago in Victoria Park Hospital. Used to travel for bottled beer trade and drank much beer then. Nails very reedy, has some eczema on hands and elsewhere. Pulse 75; slightly high B.P., and slight œdema of legs. Second sound loud at base. Urine, sp. gr. 1005, no albumin. He was given salicylate of soda and ung. zinci and vaseline. A week later said his head buzzed slightly, and he has weight in the balls of his eyes. Spirits better and less irritable, medicine taken three times a day. He feels less depressed when the eczema is out on his hands, and he prefers the eczema to the depression. Four days later the eczema was rather worse and he had a little bronchitis. (*Probably the salicylate ordered four times a day and only taken three times had been enough to stir up the urates, but not enough to sweep them out of the tissues.*) A week later he felt queer in the head, a little worried as he had been without medicine. Ten days later head was better. A week later he was better and stronger and had more life in him; had some pain in one hip, but the bronchitis had gone. Ten days later there was marked pain in hip and legs, but no depression; pain like the eczema obviously alternated with the depression. Two months later the eczema and pains were better, but he had a carbuncle on the back of the neck. (*As in this case, carbuncle is often associated with and in part a result of collæmia.*) Was an in-patient for two weeks for the carbuncle, He says when he passes water freely he expects to have a joint attack (*i.e., diuresis of retention*). He was given quinine after the carbuncle, but it made his head worse (*i.e., increased collæmia*). After the carbuncle he felt better, but had some pain about his heart and palpitation (*there were no murmurs; ? collæmic heart*). Eczema of hands is rather more marked, and he feels better when it is so (*a result of the tonics, quinine, iron, &c., given after the carbuncle*). Salicylate of soda given again. A month later he reported that the medicine did good both for pains and eczema. In the autumn the eczema again got worse, and he says he always has more of it in winter. In the following spring he had rather severe bronchitis, and some heart murmurs were audible for a time (*dilatation*). He also complained occasionally of pain and palpitation. For this I gave him some iron and nux, which made him feel better and stronger, but caused some rheumatic pains at first.

This man ran about the whole gamut of collæmic and retention troubles, and they often alternated in an interesting manner. Of

course there was nothing to be done but patch symptoms with drugs; he would not diet. Salicylate did most good and he used to ask for it.

Case 8.—M. K., female, aged 39. Complains of intense irritation round the anus, which comes in fits lasting about fifteen minutes. Cold water relieves to some extent. It is worse after the bowels act, has suffered from it for two years. Mother had stone in the bladder. Mother's mother had tumour. Several brothers and sisters suffer with bronchitis. Her liver was very bad three years ago. No worms seen, has been treated for them without effect. Is getting stout, weight 14 st. 1 lb. Has some chronic scaly eczema on the ears. B.D. ·75; pulse 80; C.R. 9·5; B.P. 140. Heart, some minor signs of collæmia. Gets severe colds on chest and in head, nose blocked. Much wind and distension after food. Liver full size and slightly tender. Bowels only act with pulv. glyc. co., slight piles, do not bleed, no child; has had double ovarian operation for ovarian tumour (*? rheumatic, another retention disease*). Present diet: has recently cut off meat, but is still taking meat soup, gravy, eggs, tea, occasional fish, and much acid fruit. I advised her to go on two meals a day and a spare diet, without milk, soups or slops, to diminish weight, and after that a rather dry form of U.A.F. diet. This I believe she did, and a year or so later I heard from Dr. MacDowell that she had got quite well on the diet.

## Conclusion.

The causation of disease by uric acid is, clinically, a very simple matter. In the clinic we have only to do with two classes of diseases, one might say two results of food poisoning: (*a*) that due to retention, and (*b*) that due to collæmia. The circulation will tell us in a moment which we have.

Then retention must be treated by solvents, and collæmia by retentives. The prevention of both entails only the shutting out of the poisons from the food.

We have given long chapters to illustrate causation in this volume, but once this is understood no one can fail to grasp prevention and cure. We have only to put what was wrong right, and Nature will do the rest. Introduction being shut off, the body slowly clears itself of poisons, accumulations diminish and disappear, collæmia gets less and less, till it is nothing. Those who have large accumulations will naturally take longer to get clear; hence those whose original trouble was a widespread arthritis (retention) will suffer from collæmia and its results for a much longer time than those whose original trouble was collæmic. If a simple case of collæmia (migraine) takes from twelve to eighteen months to get moderately clear, a retention case (arthritis) may take double that time; and, speaking generally, the longer a person has been living on wrong foods the longer will ne take to get clear of poisons.

But when we come to deal with complications (Chapter III.), when life is perhaps in immediate danger, then the treatment

becomes more complex, and we have to do more than stop introduction and wait for Nature to clear out her stores and accumulations. Indeed collæmia may be so severe and so directly dangerous to life, that we may be unable to alter the diet at all till we have taken other preliminary measures.

Thus, everything in a severe case may depend on nutrition, and to make any great or sudden change of food may imperil nutrition. Here obviously the patient must be got into a better general condition before any change is made. Diet will eventually remove both arthritis and collæmia, but we must none the less wait for a favourable moment to begin it, and must not endanger life with a change at a time when it will increase collæmia, B.P., and the danger of cerebral hæmorrhage on the one hand, or on the other produce heart failure, dyspepsia, and anæmia, almost equally fatal to life.

With regard to dyspepsia and its results, the most important treatment is that brought into prominence by the late Dr. E. H. Dewey, of Meadville, Penn.,[1] to which I refer in "Uric Acid," namely, leaving out breakfast or spacing the meals, which means, in a word, rest for the digestive organs when hampered by collæmia.

As regards the direct treatment of collæmia and any danger it may be producing from cerebral hæmorrhage on the one hand or from heart failure, congestion of lungs, liver, stomach, dyspepsia and anæmia on the other, the most important rule is that which I have myself evolved, chiefly from my experiences with high-pressure headaches—namely, that abstinence from drink lowers the B.P. and relieves, and this I commonly express in the form, "Take no more fluid than thirst compels." All patients can get down to 30 oz. a day, and many can get to little more than half this quantity, while in serious emergencies fluid can for a time be altogether dispensed with, a little fruit being used occasionally to moisten the mouth.

This rule finds perhaps its most important application when collæmia, with or without heart failure, has produced not only defective circulation in the brain cortex and its membranes, but more or less œdema of these structures. These are conditions which underlie various forms of mental trouble, from hysteria, through neurasthenia, to melancholia and onward, with increasing œdema, up to uræmia and coma.

[1] "The True Science of Living." Published by C. C. Haskell and Co., Norwich, Conn., U.S.A., and T. N. Fowler and Co., 7, Imperial Arcade, Ludgate Circus, E.C.

We are here specially considering conditions which are due to deficient circulation in the brain cortex, which again is due to collæmia, high blood-pressure, weak heart, and a wrong relation of C.R. to B.P.; and it is easy to see that these rules control every factor in this causation. Blood-pressure is lowered and the heart relieved by diminished fluid; collæmia is cleared up by improved digestion and nutrition, the heart and stomach both get rest and time for recuperation, and so œdema of membranes departs and the circulation in the brain cortex moves towards normal, and all dependent on it does the same.

The net result of treatment by two meals a day and diminished fluid is that the enjoyment of food is doubled, urea and acidity rise, collæmia is cleared up, and gradually peace and comfort of mind and body take the place of distress. A weak or diseased heart has only to pump for digestion twice a day in place of five or six times (a real saving of labour), and, like the stomach, it gets more real rest and time to take care of itself, which it proceeds to do. It begins to recover its tone and power, where such recovery is possible, and even in organic disease much good may be done and dropsy may be cleared up. Add to this, that with better work by the stomach and heart there is better nutrition, and with this there will be less collæmia, for the rising acidity of improving nutrition clears the blood of some uric acid, even if there is not (as some believe) more destruction of uric acid in the body, because all the organs of digestion, especially the liver, do better work.

These rules apply to any diet, and they produce results regarded by many as little short of miraculous, and some which I myself would not have believed had I not seen them. But I am decidedly of opinion that they produce the best results of all when used in conjunction with the U.A.F. diet, for the improvement on a meat diet is partly due to retention and accumulation of uric acid in the body, which is sure to give further trouble at some future time.

The clearing up of collæmia by good nutrition and rising acidity is not in my opinion due to destruction of uric acid in the liver, but to retention in that organ and other tissues; and this retention provides a store for future trouble, if the nutrition and acidity go down again, as in old age they must do. But if uric acid were destroyed in the liver instead of being retained, many of the troubles that now affect old age would be greatly diminished.

Some would, no doubt, be ready to warn us that it is a dangerous thing to cut down total fluids to 30 oz. per diem and

keep them there. In my experience, this danger is a phantom ;[1] but even if it were not so I am sure that a majority of those who suffer from such troubles as headache, epilepsy, depression, hysteria, or neurasthenia would be quite glad to get relief, even if to do so they had to run a somewhat small chance of urinary gravel.

I would point out also that, though the total fluid may be 30 oz. or less, there is a considerable amount of water in some of the foods, especially in vegetables and fruit, which together often amount to 8 to 10 oz. a day. Then the urates stored in the body are fairly soon (eighteen months) reduced by proper diet, and thus the daily excretion falls to half the original quantity. I have yet to learn that those who take natural thirst as their guide and are allowed to sip water, when water is a luxury, will ever really suffer any bodily harm from lack of fluids, so long as they continue on the U.A.F. diet.

There is all the difference in life between real hunger, which expresses the needs of the body for fresh albumins, and pathological appetite, which is often the mere result of gastro-intestinal irritation and fermentative dyspepsia. In this connection, I would say, always suspect appetite which follows a good meal in less than four to six hours from its conclusion. Those who take excess of food, as the result of dyspeptic greed, will want more fluid to hold its salts in solution. In the same way there is all the difference in life between natural thirst, which makes water a luxury, and unnatural thirst or dry mouth, a product of dyspepsia and collæmia, or the craving for tea and coffee because they are stimulants, or for beer, wine, and cider because they are also stimulants and pleasant to drink. If natural thirst is gratified no harm is done; and the body will, as a rule, have enough fluid for all its requirements and the proper performance of its functions; and, especially where the daily turn-over of uric acid has been reduced by diet to 8 or 10 gr., there need be no fear of gravel or other urinary deposits, for as neither blood nor urine are now fully charged with urates they can always hold a little more in solution if necessary. Hence gout (retention) is cured and there is no gravel.

The way in which many of these cases at once react to a diminution of fluids has often led me to suspect that the œdema of the meninges, which under the above rules soon disappears, like the

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[1] See also paper on "How much Fluid does the Body require?" *British Medical Journal*, April 24, 1909.

corresponding œdema of the ankles and shins, is more important than the other results of defective circulation, though, as I have pointed out above, the real results of reducing fluid are many and various as regards blood-pressure, capillary circulation and their primary and secondary effects on the heart, liver, and stomach. Thus the lowered blood-pressure and diminished fluid enable the heart (a hollow muscle) to take at once a more advantageous position for the execution of its work. We see the marked effects of the opposite condition when the bladder becomes completely paralyzed from over-distension. The clearing up of collæmia must improve the capillary circulation and, therefore, the nutrition of the heart muscle, so that the latter gets more time for rest and recuperation under the above rules.

The good effects of rest and the avoidance of fatigue in all cases where the heart is either weak or overworked by collæmia are fairly obvious; and these rules for the spacing of meals and the diminution of fluids are but additional means of obtaining the same end—rest and recuperation of heart power.

If the heart is not beyond repair, if its muscle and vessels have not degenerated, if its nerves have not deteriorated, if its tissues are merely debilitated, then relief of pressure freeing its circulation, work diminished by rest and spaced meals, sufficient nourishment without increase of friction and strain by collæmia, and eventual restoration of normal B.D. by absence of poisons, may be in time to save it; the heart may recover, its muscle may regain strength, tone, and colour, and even hypertrophy to the extent necessary to prevent any future dilatation, and all may be regained. And this, as we see in some of the cases recorded above, has actually taken place in the course of years. The patient has a new lease of life, because his heart has recovered, and by continuing the conditions that led to this recovery the lease may be considerably prolonged.

Bronchitis is obviously one of those conditions which tend to strain and dilate the right heart; it thus brings about collæmia, and this and the cardiac strain, acting together, intensify the effects of defective nutrition, pressure, and strain on the tissues of the heart. But correct diet removes the root causes of bronchitis (gout of the bronchi) and thus prevents a very important cause of untimely dissolution, the very untimely death of children, and the still unnatural death of those in middle and later life. We have lost so much from ignorant neglect of our natural foods that it takes quite a long time to realize the full extent of our loss. In the same way bronchitis

in infancy, by dilating the heart and hindering its nutrition, may lay the foundation for chorea and other troubles due to weak heart later on. It is interesting to recall that weak heart is a secondary cause of anæmia, which, as in the parallel cases of Bright's disease and diabetes, we can now see to be the results of weak heart exposed to the strain of collæmia from unnatural and poisonous food; all three are collæmic diseases, and the organic factor is a weak, defective, strained, dilated or diseased heart, increasing the bad effects of the collæmia and leading to defective circulation and consequent atrophy, congestion, or fibrosis of many important glands and tissues of which the albuminuria, glycosuria and anæmia are some of the visible external results.

We have seen in reference to "Mental Depression," p. 110, and "Bright's Disease," p. 180, that heart failure and the consequent defective circulation throughout the body render microbic invasion easy, so that microbes may invade with deadly effect. It is now also becoming known to surgeons that natural diet for a month or two before operation greatly increases the probability of rapid healing and satisfactory recovery, while the results obtained by Abramowski[1] seem to show that, in the case of those who live on natural foods, surgical operations may be successfully negotiated without any antiseptic precautions whatever.

Thus, just as we have seen that defective circulation renders microbic invasion a serious danger, so may we find in the future that good circulation and nutrition enable the human body to supply its own antiseptics and to flourish at the expense of the microbes in place of being destroyed by them.

In this case it may eventually be found that our present very elaborate and expensive precautions to exclude microbes are necessary only for those who have forgotten how to live on natural foods.

I will only say once more, that none of these things are diseases. They would never have been so called by anyone who had understood their real causation. I trust that the cases in this book may serve to make this causation clearer.

There is only one treatment that goes to the root of the matter, namely, to leave out the poisons; and no further treatment is required, except when life is in immediate danger. Leave off the poisons and Nature will put matters right again, so far as may be possible.

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[1] "Eating for Health," by O. L. M. Abramowski, M.D., published by Thomas C. Lothian, 226, Little Collins Street, Melbourne, 1908.

Prevention consists merely in putting the animal, man, on his natural food from the time he leaves his mother's breast; and it is now clear that the manhood thus produced will be as superior to that of present conditions as light is above darkness, life above death, and truth above falsehood. What all civilized nations require to-day are men, whole, sane, complete men; they are perishing for want of them.

Ever since I was a boy I have been lost in wonder at the historical record of the slow yet apparently inevitable perishing of what were once great and powerful races of men. I now see clearly at least one part of the causation, and thus understand that it is no longer inevitable; though I recognize also that the known cause is but a part of a greater and more universal one.

"What Nature wants,...at the end of the account is the only thing that will be got."[1]

[1] Carlyle's "Life in London," by J. A. Froude, vol. ii., p. 35.

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