water, and care should be taken to see that he is kept very warm. Gradually the amount of milk taken may be increased, but any diminution in the interval between the feeds should be avoided for some time, because the treatment aims at allowing the stomach to empty itself completely between meals. Only in this way can the fermentation be controlled. In very severe cases the cream should be removed from the milk. Sometimes further amounts of proteid may be given by the addition of somatose or plasmon. The principle underlying all these prescriptions is that no acid fermentation is possible on a purely protein diet. After recovery from the attack of diarrhoea, the child may sometimes be kept for a long time upon this diet of whole milk and continue to thrive. In other cases the addition of some carbohydrate feeding becomes necessary.

The troubles which manifest themselves on a diet of pure cow's milk are of two sorts. In the first place, very many young infants manifest a complete inability to digest the fat of cow's milk, even in great dilution. Such babies suffer from profuse vomiting, often of curdled milk, and are either constipated or pass bulky white, greasy, foul-smelling stools. Upon a change to a fat-poor, sugar-rich diet the symptoms usually cease at once. A similar fat indigestion, with vomiting, colic, and constipation, is usual with very young infants nursed every two hours at a freely flowing breast, with abundance of rich milk. Less frequent nursing and the provision of a little sugar will usually cure the vomiting and constipation.

In the second place, many babies fed on cow's milk, although they are free from diarrhoea and vomiting, remain small and ill developed. I have seen infants who for months showed no gain in weight, although they were daily taking enormous amounts of milk of good quality. These children are pale, flabby, and constipated because the volatile acids present in such excess in the sugar-fed child, and which form the natural stimulus to peristalsis, are reduced to a minimum. The stools are large, bulky, and pale when the percentage of fat is high, or hard and pellet-like when the milk is poor in fat, and are always alkaline to litmus. In such cases the addition of carbohydrate produces immediate improvement. In young infants the use of a malted sugar or of a dried milk with added malt is indicated. At 6 months one or more feeds made with the addition of some starch-containing food may be advisable, and substituted for a similar number of pure milk feeds. After 6 months it is found over and over again that infants who immediately react to increase in the amount of sugar with diarrhoea will tolerate starchy forms of carbohydrate perfectly well. Finally, it may be said that extract of malt agrees well with the milk-fed baby, but aggravates the disturbances of sugar-fed children, while cod-liver oil has properties just the reverse.

The disorders of sugar over-feeding are much more common among the poor than among the well-to-do. There are few infants in the hospital class who do not at some time or other suffer in this way, and we have here, I think, the explanation of the undoubted success of whole-milk feeding among them. Among the upper classes fat over-feeding from the use of a milk rich in cream is more common, and there is a distinct tendency at present to adopt the principle of giving undiluted milk without diminishing the bulk of the feeds and increasing the intervals between meals proportionately. Among these children the substitution of a suitable form of carbohydrate for the large amounts of fat consumed is sure to produce benefit in more rapid growth and in the disappearance of constipation. In infants habitual constipation, like habitual diarrhoea, is seldom to be treated by drugs, but is often to be looked upon as a symptom indicating a faulty composition of the food calling for the prescription of a change in the diet upon the lines indicated. The use of large doses of castor oil and of opium in young infants is generally to be avoided because such drugs mask the very symptoms which should guide our prescriptions, and introduce factors disturbing to our observations.

THE first meeting of the Swiss Surgical Society, founded last year, was held at Berne on March 8th. Professor Kocher, of Berne, was elected president; Professor Girard, of Geneva, vice-president; Dr. Steinmann, of Berne, secretary.

PREVENTION VERSUS CURE IN MODERN PRACTICE.

By CHARLES J. WHITBY, M.D. CANTAB.,

BATH.

THE President of the British Medical Association, in the address which he delivered at Liverpool on the occasion of the annual meeting, foretold the coming of a new era, in which the practice of medicine will be devoted largely, and increasingly to the prevention rather than the cure of disease. I mention this in order to emphasize the fact that it is not necessary to be an admirer of the National Insurance Act—of which, indeed, Sir James Barr has been one of the most outspoken opponents—in order to realize the proximity and inevitableness of this new era. Still, it remains true, and is not without significance, that the Act does provide for the payment of medical men for attendance on a large section of the community upon what is intended to be a preventive basis. I confess to grave misgivings as to whether the intention will be fully realized, because it does not seem to me that the conditions of genuinely preventive practice are met by the provisions of the Act. But the intention is there, and may be taken for what it is worth as a sign of the times and, we will hope, of better things to come. It seems to me, therefore, a timely proceeding to consider what are, as a matter of fact, the main conditions of success in the translation of medical practice from the mainly curative to the mainly preventive sphere, and to what extent these conditions already are or are in a fair way to be met.

To begin with such conditions as affect the profession as a whole, not as mere individuals, it seems indispensable that it should be functionally organized throughout in such a way that its ultimate resources of science and art shall be available at need for each and every case that may arise. This, I need scarcely say, is at present very far from being so: and in so far as it is so, the credit belongs in the main not to the State or the community but to the profession itself. We have done our best to arrange that the wisdom and skill of our wisest and most skilful shall be at the free disposal of those who cannot afford to pay for them. But there is a limit to the possibilities of charity, and, since those whose need is the sorest must be conceded the first claim, it inevitably happens that the resources of general and special hospitals are exhausted in the task of patching up more or less hopelessly damaged organisms rather than in the detection and stamping out of the insidious beginnings of disease. So far as charity is concerned, all the time and knowledge and skill that we can afford to give away are fully occupied at present in the curative sphere; of the attempt at prevention it is as yet futile even to dream. Yet it is, at all events, a hopeful sign that during the past three years the organization of the profession has advanced by leaps and bounds. It is as yet merely an economic and defensive organization, analogous to that of the trade unions; but I do not believe that it will stop there. Functional organization is bound to follow, and, if we are wise, will proceed upon lines governed by the preventive ideal. By functional organization I mean an arrangement by which every malady shall be recognized in its incipient stage by the regular attendant, and, if it be of a nature whose treatment falls without his province, referred to the proper quarter, where State-aided or other provision shall be made for its needs. The germ of such an arrangement may be recognized in recent suggestions that the out-patient department of hospitals, as at present constituted, be abolished, and that only consultative work and special forms of treatment be undertaken in its place. But the subject is too large for detailed discussion in a short paper—it is a matter for collective investigation, and one which the Association itself will probably have to take seriously in hand before very long.

To come now a little more to close quarters with our subject, it is obvious that the transition from the mainly curative to the mainly preventive aim in medical practice involves not merely a shifting of the general and individual points of view, but also a new standard of values as regards the theoretic basis of our work. Physiology

and hygiene must be elevated to the seats of honour; pathology and therapeutics must be content with lower places in medical esteem. This may seem a hard saying, but it is beyond question the logical consequence of the admission that prevention is better than cure. It does not necessarily, I think, involve the paramountcy of the public health service. That is concerned mainly with such minimum requirements as good housing, pure water, an uncontaminated milk supply, the notification and isolation of infective diseases—all highly important matters, but matters upon which all enlightened minds are practically agreed. There can be no health without the conditions for whose maintenance the public health service is responsible; it does not follow, however, that there will be satisfactory health when its task is done.

A community is made up not of average or typical units but of infinitely diverse individuals with infinitely diverse requirements from the health point of view. The average citizen considered and legislated for by the framers of health laws is no less mythical than the "producer" and "consumer" of political economy. The physiology and hygiene upon which preventive practice will be based will have to take account of idiosyncrasy just as curative practice takes account of it now. Generalizations may be unavoidable, but they must not be rash or premature, and must be based on the natural history of genuine types. By anthropometrical methods, aided by psychological acumen, we shall probably arrive in time at some sort of a classification, which may have important practical effects from the sociological point of view. For instance, it would not surprise me greatly if research along these lines were to result in a scientific vindication of the ancient caste idea, leading possibly to its re-establishment in a suitably modified form. For I confess to the belief that individuals fall naturally into distinct groups or strata, differentiated by inborn temperaments and capacities; and that, from the health point of view—to say nothing of happiness—it is indispensable that such matters be very much more seriously taken into account in the choice of a given individual's vocation than is at present the case. Here, then, is one among many matters in relation to which the preventive practitioner of tomorrow may find ample scope for his erudition and insight, however great these may be. Wherever he finds a round peg in a square hole, it will be his duty to call the attention of the powers that be to the danger of disease and breakdown that such a predicament, at least in extreme cases, undoubtedly involves. The economy of life and ability is a matter of vital concern to every civilized commonwealth. Unfortunately this obvious truth is far from being realized to any adequate extent as yet; it is for us, therefore, to make it known.

But these remarks are a digression from the subject of the theoretical basis of preventive practice, to which I wish for a few moments to return. It is a curious example of the way in which, during transition periods, all things work together for a common revolutionary end that the boundary line severing physiology from pathology seems to be rapidly becoming invisible. It is impossible, or soon will be, to say where one ends and the other begins. The time has long passed when it was customary to think of disease as a something extra-natural—a visitation of the invisible—to be combated by amulets and spells. But the traces of this conception have lingered until quite recently in the minds of even the most enlightened. Now they are well-nigh obliterated; pathologist and physiologist, tunnelling in opposite directions, have met on common ground. We think of disease in terms of health, and of health in terms of disease. Health seems to be in the main conditioned by the functional equilibrium of various glands; and since now one, now another of these glands takes the lead and evokes the antagonism of the others as the rhythm of growth and development proceeds, it is hardly too much to say that, from the chemico-vital aspect, a series of autointoxications, followed by slowly acquired immunities—that is to say, of illnesses and recoveries—is the normal course of events. Dentition, puberty, adolescence, menstruation, sex life, the climacteric, afford, even in the healthiest individuals, common ground for the physiologist and the pathologist. There is a pathological factor in all health, and a physiological in all disease; the two conditions

overlap, and merge into one another by imperceptible gradations.

So preventive and curative medicine meet when a disease due to functional inhibition of a given set of glands is treated by the administration of full doses of the missing internal secretion, thus affording immediate relief of symptoms as well as the interval of rest required by the damaged organs. Much of modern surgery belongs equally to the preventive and curative spheres. Metchnikoff has gone so far, I believe, as to advocate the systematic removal of the large intestine, which he regards as a retrograde, functionally useless structure, and a source of real danger to its possessor. Professor Keith declines to follow him all the way in this drastic proposal, so that I think we may not promise our surgeons this fine field of adventure in the near future. But obviously such common procedures as the removal of adenoids from the nasopharynx, of a chronically inflamed appendix, even of an early malignant growth, are items of preventive practice. And the scope and possibilities of such preventive surgery are extending yearly.

A very important branch of preventive practice, in regard to which a satisfactory theoretical basis is, however, still mainly to seek, is the regulation of diet. We all have our notions about diet; we all accept, because we cannot do otherwise, the responsibility of forbidding this or that to our gouty, rheumatic, rheumatoid, pyrexial, or diabetic patients, and permitting other things. But how many of us are prepared to justify on scientific grounds either our sanctions or prohibitions? The voice of the food reformer is loud in our midst; his proposals become every year more iconoclastic. There is hardly a single article of common food, not excepting the "staff of life" itself, which has not been condemned as deleterious to health by one or another section of lay opinion. But so far as we as a profession are concerned, with the exception of one or two individuals like Dr. Haig and Dr. Campbell, there are no signs of any live interest in this very important and indeed urgent subject. Surely it is high time that an organized effort were made to grapple with some of the many problems connected with dietetics and to solve them satisfactorily. It seems to me pre-eminently a matter for collective investigation; and now that our Association is to some extent relieved from the uncongenial task of a quasi-political campaign, I hope that it will take up this kind of work in earnest. It is probable that, not merely for every kind of work, but also for every constitutional type, there is a diet conducive to maximum health and efficiency. Some kinds of food may be conducive to mere longevity, others to mental or muscular energy, others again to reproductive or combative power. Such generalizations, if they could be arrived at and justified, would be of the greatest possible aid to every practitioner, and of real national utility.

No paper dealing with the preventive aspect of medicine could omit mention of the all-important problems connoted by the term "Eugenics." For prevention begins too late if it begins only at birth; it must aim at the eradication and replacement of those morbid inborn tendencies of which actual disease is the issue. The term "Eugenics" is at present used to designate both the scientific study of heredity and the application of its principles to the improvement of a given stock. It would be better to apply the term "Genetics" to the purely scientific branch of such investigations. "Eugenics" is the name proposed by Galton for the systematic attempt at the betterment of the human stock. Genetics is a science; Eugenics is, or may become, an art based thereupon. And Eugenics may be subdivided into two forms, negative or positive, according as it aims merely at the prevention of unfit or the promotion of desirable births. Into the subject of Genetics it is impossible for me to enter here, but those interested therein will find an excellent account of some typical research work in a volume entitled *Heredity and Eugenics*, recently published by five investigators connected with the University of Chicago. It was reviewed in the BRITISH MEDICAL JOURNAL for November 30th, 1912. With regard to the eugenic ideal, the first desideratum, according to Sir James Barr, is the frank recognition of the need of a new racial morality and of the responsibility of medicine for the interests of the race, as well as and in precedence of those of the individual. Galton went even further, insisting that the task of

deliberately and systematically furthering human evolution should be regarded as a religious duty; and, in my opinion, rightly; for where the control and guidance of so powerful an instinct as that of reproduction is in question nothing short of an appeal to the deepest of all motives is likely to prove effectual. Morality is based upon religion; and the first cannot be changed unless and until the second has been modified. In the sphere of negative eugenics something may no doubt be done by legislation, by prohibiting reproduction in cases of sheer imbecility and idiocy. In fact this is already being attempted. But this is a rudimentary matter; on the other hand, the new racial morality advocated by Sir James Barr will, if I be not greatly mistaken, prove a much more formidable proposition. It will winnow the community, and in particular our profession, from top to bottom, severing the husk from the grain.

That the transition from the curative to the preventive aim in medicine will be a slow and gradual one goes without saying; so far, then, as the immediate future is concerned it admits of no laxity in regard to matters therapeutic, but, on the contrary, demands from the practitioner, in addition to all past requirements, a new alertness as to the possibilities of personal hygiene, mental and emotional as well as physical, an intelligent interest in sociology, and the cultivation of an evolutionary conscience, based on study of the conditions that will make or mar the future of the race. Preventive practice is not likely to prove easier than curative practice, nor less attractive to a high type of personality.

A CASE OF CHRONIC PLUMBISM IN WHICH MULTIPLE ANEURYSMS OCCURRED.

By R. GODWIN CHASE, M.B., B.C.CANTAB.,
HONORARY SURGEON TO THE CHESTERFIELD AND NORTH DERBY HOSPITAL.

THE following notes of an interesting case that died in the Chesterfield and North Derbyshire Hospital bring out in a very remarkable way the close association between the occupation of painter, attacks of colic, chronic interstitial nephritis, atheroma, aneurysm, and the simulation of intestinal obstruction.

I am indebted to the house-surgeon, Mr. F. C. Pridam, for the following facts, which he obtained from the patient and his friends upon admission and subsequently, and also for making of the *post-mortem* examination, at which I was present.

The patient was a man 44 years old, whose occupation for thirty years had been that of a painter. He stated that he had had several attacks of lead colic, evidenced by severe headache, constipation, and abdominal pain of a colicky nature, relieved by pressure. He thought he was healthy except for the fact that micturition was frequent during night time.

On February 18th, 1912, he was attacked with severe pain in the head and abdomen. He vomited and became giddy. Two days later he had a slight attack of haematemesis, and later on melaena was present. The bowels had previously not acted since February 18th. This pain and constipation continued until his admission into hospital on February 25th as a case of subacute intestinal obstruction.

He was a pale, anaemic-looking man. He was apathetic, lying on his back listlessly, and appeared indisposed to answer questions, though he did answer when spoken to.

The apex beat was in the fifth space just external to the nipple line; it was forcible. The exact area of cardiac dullness was not noted. There was a loud systolic murmur at the apex traceable outwards towards the axilla, and a loud systolic murmur heard best at the aortic cartilage, but traceable down the sternum. Capillary pulsation was absent; there was no dullness over the second and third cartilage. There was evidence of emphysema, but no other pulmonary abnormality.

The pulse was high in tension and poor in volume. The walls were not felt to be thick. The tension of the left posterior tibial artery was thought to be greater than the tension in the right.

The abdomen was thin; the skin on its surface was easily picked up and lacking in elasticity. A tumour, which was thought to pulsate, was felt below and just to the right side of the umbilicus; marked pulsation could be felt above the umbilicus. Mr. Pridam was of opinion that both these pulsations were expansile. The intestinal coils were slightly distended; nothing abnormal could be detected on percussion; the liver and spleen were not felt. On auscultation a loud systolic murmur, traceable upwards and downwards on the abdominal wall, was heard over the tumour.

The nervous system, as far as it was examined, was normal; Argyll Robertson pupil was not present; the teeth were absent from the upper jaw, and there was pyorrhoea in the lower. There was no blue line. Urine: specific gravity 1015, acid, no sugar, no albumen, and no incontinence. There was no sign of specific disease nor any history thereof.

We had to decide whether the patient was suffering from some slow-growing neoplasm, causing abdominal pain for some time, and then producing more obstruction, leading to vomiting, blood in the motions, and afterwards to constipation, with distended small intestine. The lump in the region of the caecum, if not the neoplasm itself, might have been due to the secondary enlargement of glands, the pulsation of the right common iliac artery being transmitted through it.

If this diagnosis were accepted, immediate laparotomy would be called for. The alternative diagnosis was an aneurysm of the right common iliac artery. The man's occupation was one which predisposes to arterial degeneration; the aortic murmur suggested much atheroma of the aortic orifice, and he was, therefore, a likely subject for aneurysm. Mr. Pridam was quite certain the tumour was expansile, as an aneurysm would be, and though I could not myself be quite definite on this point, there was no mistaking the systolic bruit over it, nor the difference in the pulsations of the two posterior tibial arteries. Melaena may occur in patients with abdominal aneurysm, and hence this symptom did not necessarily weigh in favour of growth. As the bowels were moved twice as a result of two enemata soon after admission (the motions contained a little mucus) I decided on the diagnosis of aneurysm of the right common iliac artery.

He was kept at rest in bed and given potassium iodide gr. x three times a day. This produced a rash which cleared up when the dose was doubled, leaving a little erythema.

He lay in bed, taking very little interest in anything, until March 1st, when it became more difficult to induce him to answer questions. Next day he was still more drowsy and apathetic; he fainted on sitting up, and showed a tendency to mental wandering. The iodide was stopped.

On March 5th hiccough commenced and he was much more drowsy. The rate of the pulse was increased but its volume diminished. The abdominal tumour still felt and the amount of urine passed was scanty. On the next day the abdomen became tender and swollen. The pulse at times was scarcely perceptible. The heart sounds were as before except that the aortic systolic murmur was more difficult to hear. Urine 1015, acid; no reduction of lead salts with potassium iodide. The patient had had incontinence for several days.

On March 7th, at 3 a.m., after a feed the pulse disappeared and respiration, which had been slow, stopped. After about ten minutes the pulse started again for one or two beats, but death then ensued.

Post-mortem Examination.

The lungs were emphysematous. Pleura very adherent at bases and posteriorly. Apices free.

Heart.—Left ventricle thickened; muscle wall very hard. Right ventricle large and flabby. Very little blood in any part of heart. The aortic, tricuspid, and pulmonary valves were competent. Mitral regurgitation was present. The aorta was markedly atheromatous, and there was present a large dissecting aneurysm extending the whole length of the ascending arch, which was itself much elongated. Vessels were filled with old and new clot. There was an aneurysm of each common iliac artery filled with clot. The left external iliac artery was very much thickened and hard. The inferior vena cava contained recent blood clot past the renal veins to the common iliac veins.

The liver was large and fatty; the spleen was small.

Kidneys.—Soft capsule, stripping fairly easily; cortex diminished in size.

Intestine.—Bluish-black. The large intestine was distended up to the splenic flexure, where there were a few adhesions. There was no growth and no obstruction.

Specimens of intestine and kidney were sent to the Clinical Research Association, which reported on them as follows:

"A minute trace of lead was found present both in portion of kidney and of intestine. Histologically, the kidney shows a very marked condition of chronic interstitial nephritis. There is a great increase of intertubular fibrous tissue. The glomeruli show typical changes and some minute cysts are formed. These appearances are consistent with those seen in the kidney of those suffering from chronic plumbism."

This patient was therefore proved by *post-mortem* examination to have suffered from: Chronic plumbism, chronic interstitial nephritis, mitral regurgitation, marked atheroma of the aorta, dissecting aneurysm of the arch of the aorta containing old and new clot, two aneurysms of the common iliac artery, thrombosed inferior vena cava, fatty liver, and a trace of metallic lead in kidney and intestinal tissues.