one of this group showed marked symptomatic improvement, and all but one improved in their general condition, as denoted by gain in weight and ability to take exercise without rise of temperature. One has been under treatment sixteen months, two eleven months, and they have shown such marked improvement that a bad prognosis has been changed to a good one, and we can be hopeful in each case of a permanent arrest of the disease. The others have only been under treatment from four to six months, but they are all showing marked improvement. Their improvement has been more rapid with pneumothorax than it was under exactly the same conditions without it.

Our experience in this group may be illustrated by one typical case:

A. R. G., male, aged 25, physician, had always had good health until onset of present illness. Onset of illness, December 1st, 1913, with rather severe haemoptysis. Admitted to the sanatorium January 14th, 1914. Weight, 120 lb. Average afternoon temperature, 99.4°; pulse, 90. Examination of chest showed: Right, consolidation of upper lobe, and infiltration of upper part of mid-lobe; left, thickened pleura at the apex and some fibrosis, probably due to an old lesion. There was also a suspicion of some laryngeal involvement. The patient did well for a time under sanatorium treatment, but then had another haemoptysis in April, developed an afternoon temperature of 100°, and examination of chest showed extension of the disease. In June, after five months' sanatorium treatment, practically a bed patient all the time, the patient showed upper two-thirds of right lung involved, with signs of cavity in upper lobe. There were a few fine crepitations at left base. He also developed a fistula in ano, which was discharging quite freely. June 26th, 1915, artificial pneumothorax was done on the right side. There was no difficulty in finding the pleural cavity, and a fluctuation of negative 2 cm. to negative 4 cm. (water) was obtained at once; 850 c.c.m. of gas was injected the first time. Six days later he was given 1,100 c.c.m., twelve days later 1,250 c.c.m., and in two weeks 1,500 c.c.m. There was evidence of a good collapse, and since then he has received refills of from 600 c.c.m. to 900 c.c.m. at four to six weeks' intervals. He showed marked improvement from the beginning: temperature became normal; he had no more haemoptysis, except on two occasions slightly streaked sputum. In January last his condition was so far improved that he was operated on for the cure of the fistula in ano. He took the anaesthetic well, and stood a rather extensive operation well. Since then his improvement has been rapid. At present date his general condition is good; temperature normal, pulse 90; weight, 130 lb. (normal weight for him). There is a good collapse of the right lung; x-ray examination showed a slight amount of fluid present. His throat condition has cleared up, and the fistula in ano was healed.

I have given a rather lengthy account of this patient as I consider this the type of case in which we are likely to get good results from pneumothorax treatment. My regret in this case is that we did not compress the lung at the beginning.

Conclusion.

To draw conclusions from so limited a number of cases is somewhat dangerous, and it would be absolutely unfair to judge the merits of the treatment from the results obtained from these 18 cases. Of the first 12 of the series 9 were failures and only 3 showed partial benefit. This was because they were long-standing cases, in which there was an absolutely bad prognosis any way. To obtain good results we must, I am convinced, use this treatment in those of recent origin.

The moderately advanced case of recent onset, with the disease confined almost altogether to one side, is the type of case in which we should produce a pneumothorax at once. Many of these progress rapidly, and at the end of six months must be classified as far advanced, so that by the use of artificial pneumothorax we have a most valuable adjunct to our treatment. Incipient cases, with severe haemoptysis, should also be treated by pneumothorax at once. In so many of these there is such a rapid extension of the disease after haemoptysis that it is better to give them the benefit of this treatment. I cannot go as far as some and advocate that all incipient unilateral cases be treated, as our results with ordinary sanatorium treatment are good. My great complaint is, like that of all men in sanatorium work, that so few of these cases are sent for treatment. On the other hand, my experience does not encourage me to hope for much benefit from pneumothorax in the far-advanced, long-standing cases. I would distinguish here the far-advanced case which has recently become so, and that in which the disease has been of some years' standing.

A case of recent onset, which from physical signs we must classify as far advanced, but which from general condition is still moderately advanced, is eminently suited for pneumothorax, provided, of course, the disease is mostly unilateral.

Artificial pneumothorax is, then, a valuable addition to our methods of treating tuberculosis, but unfortunately its application is restricted to not more than 5 per cent. of cases which have come under my observation.

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OUR PRESENT POSITION WITH REGARD TO THE PRESCRIPTION OF PROPRIETARY FOODS IN INFANT FEEDING.*

BY

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In the artificial feeding of infants we must recognize two types of diet, and if we keep the distinction clearly in mind we shall be saved from a good deal of the confusion which at present hangs around the subject. In the first place we must recognize that for the normal healthy infant, who is unfortunate enough to be deprived of his mother's milk, there exists what we may call a standard substitute diet.

1. Cow's Milk as the Standard Substitute Diet.

It is the experience of all those who are best qualified to judge that in cow's milk we have the most suitable standard diet available in a form that is cheap and easy to procure. It does not matter whether we use the cow's milk undiluted with the addition of a little sodium citrate, and we shall then obtain both the good effects and the bad effects of a diet of cow's milk in the purest and most pronounced form, or whether we dilute the milk by the admixture of water or barley water and add very small amounts of sugar. It does not even matter very much, broadly speaking, whether we use fresh milk or substitute for it a preparation of condensed milk—so long as we choose an unsweetened variety with all the cream retained—or one of the many preparations of dried milk which have now been placed upon the market. In every case the result which we shall attain will be very much the same.

The infant fed upon cow's milk in one form or another will show in his growth and development the marks of the character of his diet. If he does not rival the child at the breast in agility, in rapidity of growth and in resistance to infective catarrhs, at least there is much in his condition with which we may be well satisfied. A critical eye may note at times a laxity and flabbiness of the muscles; the skin may be a little pale, although this is often masked by a fixed colour in the cheeks due to a slight eczematous infiltration over the malar bones and at the point of the chin; the abdomen is sometimes too distended, and the umbilical cicatrix may be unduly stretched; constipation is common and the putrefactive changes in the bowel are apt to be more prominent than the fermentative changes, and to make themselves evident by the characteristic smell of the evacuations; sweating is often excessive and micturition profuse; there may be some tendency to the appearance of transitory urticarial and erythematous skin eruptions. But these are small drawbacks to a diet which gives in general good results, and which can claim that it possesses one all-important advantage. Upon a diet of cow's milk the digestive processes of the infant are comparatively stable, and the infant runs little risk of such violent, dangerous, and even fatal attacks of diarrhoea and vomiting as are common enough in children whose food contains a high percentage of starches and sugars. I am not here speaking of the possibility that the contamination of the

* An address delivered at the Child Welfare and Mothercraft Exhibition at the Passmore Edwards Settlement, Tavistock Place.

milk with virulent organisms of disease may produce in the child a severe or even a fatal infection of the bowel. That is a possibility which must always be borne in mind, although I would protest against the view, which appears to be widely held at the present time, that the origin of most severe cases of diarrhoea in infancy is to be found in accidental infection of the bowel wall by organisms conveyed in the food. To me it seems proved without doubt that the truth lies with those who contend that the origin of the majority of alimentary disturbances in infancy is to be found in a bacterial fermentation of the food, both within and without the alimentary canal, by which not the bacteria themselves but the decomposition products of the food constitute the dangerous factor.

Nevertheless, it is to be conceded that the chief drawback to the use of cow's milk as the standard substitute diet in infancy lies in the readiness with which it is infected in its passage from the udder of the cow to the child's mouth, and that although the vast majority of contaminating organisms are harmless to the child, there exists always the possibility of an accidental infection with virulent organisms capable of producing enteritis. It is clearly the part of those who would attempt to reduce the high infant mortality from diarrhoeal diseases in this country to do all they can to safeguard the purity of the standard diet. Such a society as the National Association for the Prevention of Infant Mortality and the Welfare of Infants rightly does all in its power to raise the standard of the milk supply of this country, and it busies itself in framing directions for the preservation of milk in the homes of the people, and for its administration to infants. In such an effort the assistance of the lay public and of all those who are interested in the care of the health of the nation is of the first importance.

2. Carbohydrate Foods as Therapeutic Diets.

The practising physician, however, must carry the matter a stage further. He must not only be familiar with the standard substitute diet and the effects produced by it, he must be prepared to recognize certain diets which, for want of a better term, I may perhaps call therapeutic diets. The physician must be prepared to deal with that minority among children in which the ill effects of a cow's milk diet are unusually prominent and call for correction, and he must be prepared to deal with infants who are suffering from intercurrent infective disorders and illnesses of all sorts during which cow's milk may not be well borne. To achieve good results in such cases it is necessary to know how to change the character of the diet in order to modify and control certain unfavourable symptoms. Half a century ago and more it was clearly recognized by the physicians of the day that there were certain infants who, for the time being, refused to thrive except when their diet contained a much larger carbohydrate component than is contained in cow's milk. They therefore devised certain foods with a generous admixture of malted or dextrinized flour, and they gave to the world certain simple recipes for making these preparations in the kitchen. Our grandmothers were taught to prepare, and no doubt often did prepare, for our fathers and mothers a preparation of dextrinized flour, known as "Baked Flour." Dr. Cheadle constantly recommended a preparation of dextrinized flour which is known by the name of "Cheadle's mixture." Liebig showed the success which can often be obtained in the treatment of wasted infants by the use of his celebrated *Malzsuppe*—a mixture of milk, malt, and flour. I might multiply these examples, but these three must suffice to make my point clear. Those who first recommended them understood clearly that their use was only temporary; they had recourse to them to produce certain effects and to control certain unfavourable symptoms in the child, and recognized that they were remedies potent for good in suitable cases but capable of disastrous results if used ignorantly or carelessly—in other words, they did not set them forth as substitutes for the standard diet, but as therapeutic diets to be used in certain contingencies.

3. The Objections to the Use of Carbohydrate Proprietary Foods.

In more recent times these recipes have been utilized by the manufacturers of innumerable proprietary foods. A recent investigation by Dr. Coutts and Mr. Julian Baker

for the Local Government Board goes to show that, of 106 foods examined, over 70 per cent. consisted of "baked flour." Liebig's malt soup has become the progenitor of a number of preparations described as malted milk or malted food. At least one largely advertised food seems to be practically identical with Dr. Cheadle's mixture. The price of these foods is very high, owing no doubt to the large sums spent upon advertisement and the large profit to the proprietor. A packet of baked flour which contains twopence worth of baked flour may be sold at a shilling or even more. The malted foods are still more expensive.

It is not only because of their high price that exception is taken to the extensive use of these infant's foods at the present time, but even more because of the misleading character of the advertisements which extol their merits. These advertisements commonly claim that the particular food concerned excels and should supersede the standard milk diet. Their net must be spread as widely as possible and the praise of their own merits must be coupled with an attempt to bring the use of cow's milk into discredit. In this attempt they are assisted to some extent by the steadfastness with which medical opinion has adhered to the view, of which Biedert was the foremost champion, that the protein of cow's milk presents unusual difficulties to the digestion of the infant. Although Biedert's views were based upon faulty observations—as, for instance, when he confused the common soap curds in infants' stools with casein curds—and although his theories are not supported either by the careful researches, from the chemical side, of his successors in the German school, or by the clinical observations of Budin and many others both in France and in this country, nevertheless the belief that the difficulties of infantile digestion revolve around the question of the coagulability of the casein clot and around this alone remains imprinted upon much of the writing and teaching upon the subject in this country. The extreme emphasis which has thus been laid upon a peculiarity of the protein element of cow's milk has been utilized by the vendors of proprietary foods to encourage the popular distrust of the use of cow's milk.

As the permanent diet of the child the majority of these foods are quite unsuitable. An exception may possibly be made in the case of the foods composed of dried milk and malted flour. As compared with Liebig's original recipe, the amount of added carbohydrate which they contain is in most cases small. Speaking in terms of pharmacology they contain relatively little of the active principle—namely, the malted flour. They are thus, relatively speaking, much better adapted for use as a permanent diet, although their therapeutic effects are correspondingly less marked. Nevertheless, the practitioner who understands the use of a malted flour in controlling the occasional ill effects of a diet of cow's milk will probably prefer himself to add the prescribed amount of malted flour to the milk, and to keep the control of the dosage in his own hands.

4. The Reasons for the Occasional Success of their Use.

No doubt even when the proprietary food is adopted by the mother haphazard and in complete ignorance of its nature and composition, good results follow in not a few cases. The foods achieve success by reason of the contrast which their composition presents to that of cow's milk, to their low content of fat, and to their richness in carbohydrate of one form or another. For this reason they not infrequently succeed when the use of cow's milk has been something of a failure. Moreover, they are often better digested during the course of some intercurrent infective disorder. Upon such lucky chances their reputation depends, and the grateful mother henceforth attributes to them powers which she would never claim for an identical mixture made in her own kitchen, and is not slow to recommend her favourite preparation as a panacea for all infantile disturbances of digestion however produced. In practice one has often occasion to observe how faulty is the reasoning which attributes recovery to the fortunate prescription of a patent food. A mother brought her baby to me with the story that some five weeks before the breast had suddenly begun to disagree. The child had therefore been weaned, and two different kinds of

food had been tried only to be discarded. Of these the mother professed the poorest opinion. When, however, a third largely advertised food was begun improvement had been immediate, and of this her praises were loud. An examination of the baby showed that its illness had been due to anterior poliomyelitis, which had paralysed the extensor muscles of the right leg. Because of the obvious paralysis in this case it was easy to prove the point that the alimentary disturbance had been secondary to the infective disorder and had disappeared when the infection declined, and that, as many diets had been tried, the last was bound to bear off the credit. In most cases, however, the infection which underlies the symptoms of digestive disturbance will subside leaving no trace by which we may confute such claims.

In observing the course of an alimentary disturbance which is secondary to infection of parts remote from the bowel—which is secondary, for example, to influenza, naso-pharyngitis, bronchitis, otitis media, pyelitis, and so forth—it is obviously a matter of great difficulty to estimate the part played in improvement by changes in diet, and the inherent tendency of the infant to recover from the infection must not be taken as evidence of the success of any dietetic modifications which may have been introduced. The frequency of these obscure and often undetected infections in infants, and especially in artificially fed infants, accounts for the apparently discordant results obtained in the treatment of infantile diarrhoea and vomiting by dietetic measures, and while it explains many of the successes which have followed a haphazard change to a proprietary food, it teaches us at the same time how little importance is to be attached to the deductions of nurses and mothers which appear in the testimonials and advertisements.

5. The Dangers of their Prolonged Administration.

The child which is permanently deprived of the standard substitute diet, that is to say, cow's milk, and receives only one or other of the proprietary foods which contain a high percentage of starch and sugar, is in a condition of unstable equilibrium. For a time the greater intake of carbohydrate may appear to have achieved nothing but good. The rate of growth may become more rapid, and the agility and vigour of the child may increase. When the tolerance for carbohydrate is exceptionally good these benefits may even be permanent. For the majority of infants, however, the risk of fermentative dyspepsia is too great to be lightly disregarded. Especially in times of great heat, when both the need for carbohydrates and the tolerance of them rapidly diminish, a very large proportion of infants fed in this way will develop severe diarrhoea.

The dyspepsia of infants fed upon cow's milk to which no large proportion of carbohydrate has been added resembles that of the breast-fed infant in its relatively mild type. In the infant whose diet contains a relatively high percentage of starch or sugar dyspepsia may become a formidable disorder with intense diarrhoea, severe prostration, and a great and rapid loss of weight. Although the risk is not equally great with all proprietary foods, nevertheless it remains true that their permanent use is fraught with dangers which are too considerable to be neglected. With the baser kinds of foods, which consist chiefly of unaltered starch, their tendency to cause diarrhoea becomes an important factor in the production of our present high rate of infant mortality.

But the danger of a too high percentage of sugar or of starch is not confined to the risk of severe and even dangerous fermentative diarrhoea. It is, perhaps, of even greater significance that the use of such a diet is often accompanied by a profound lowering of the child's resistance to infective processes of all sorts, and that the infant fed in this way is not only more prone to nasal, respiratory, or intestinal catarrhs, but during the attack suffers more severely, and shows more constitutional disturbance than the child whose diet is better adjusted.

6. Conclusions.

The danger to the nation of the unrestricted sale of carbohydrate foods or of foods containing a very high percentage of carbohydrate is not lightly to be disregarded. The great movement which is now afoot, and which has as its object the lowering of our high infant mortality, is checked on all sides, not only by the ignorance and apathy

of the poor and by the difficulty of securing a reasonably pure milk supply, but also by the blind, unquestioning belief of the public in the misleading claims of the vendors of proprietary foods. Although in appropriate cases their temporary use under strict supervision may achieve excellent results, nevertheless, if it were possible wholly to do away with them, only good would result, because they contain nothing which cannot be adequately replaced by a simple combination of milk, malt, and flour, and because their advertisements deliberately encourage in the public mind distrust of the standard substitute diet, cow's milk.

In France—a country forced by the stern necessity of a fast declining birth-rate to interest herself in the welfare of infancy—the Roussel law prohibits the administration of any solid food to infants under the age of 12 months without the express direction of a medical man. In Australia a regulation is general which demands that starch-containing foods shall bear upon a label the words, "Not suitable for infants under the age of 6 months." In this country no such safeguards exist, and no attempt is made to curb the vast sale of foods unsuitable for young infants, nor is it likely that legislation will shortly supply the deficiency.

There is but one suggestion which it seems worth while to make. The undoubted therapeutic effect of the use of carbohydrate foods can be achieved equally well by preparations of baked flour or malted flour made in the home; and if among the poor the want of facilities for cooking prove an obstacle to this, then I do not see why it should not be possible to have something in the nature of a pharmacopoeial preparation of dextrinized flour and a pharmacopoeial preparation of malted flour, which, dispensed in a plain wrapper, could be prescribed without fear of the effects of misleading advertisements.

CALCULI OF THE PROSTATE.

BY

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IN the BRITISH MEDICAL JOURNAL of January 6th, 1912, I reported a case in which two calculi of the prostatic urethra were removed by the suprapubic route from a youth of 20. I there called attention to their faceted arrangement and the resemblance they bore to the scaphoid and semilunar bones of the wrist.

I now report two other cases of calculi of the prostate, from one of which twelve faceted calculi were removed, and from the other forty-six seedling calculi.

Prostatic calculi usually occur in middle life and old age. In the three cases that have so far come under my notice, the largest stones occurred in youths of 19 and 20, and small seed calculi in a man of 35.

As to the origin of prostatic calculi we know that, though lodged in the region of the prostate, they may have three modes of origin and formation:

1. They may be formed in the substance of the prostate gland itself. They have then as their basis the corpora amylacea with varying amounts of calcium phosphate and carbonate deposited round them, giving rise to stones varying in size from grains of sand to large calculi.

2. They may be formed in pouches, congenital or acquired, that communicate with the prostatic urethra, catching up deposits from the urine, and eventually forming stones that are more or less the moulds of the pockets that lodge them.

3. They may have their origin in the kidney or bladder, and become lodged in the prostatic urethra secondarily, where successive phosphatic deposits cause an increase in their size and mould them to the shape of the passage or diverticulum that gives them lodgement.

CASE I.—One Vesical Calculus and Twelve Prostatic Calculi Removed by Suprapubic Cystotomy: Subsequent Perineal Drainage: Recovery.

W., 19, Cingalese, agricultural labourer, was admitted into the General Hospital, Colombo, on September 5th, 1912, complaining of great difficulty in micturition, accompanied by a burning sensation in the urethra during the act, and of pain in the hypogastrium and penis at all times, but worse at night. He was in a highly nervous state, and was continually trembling.