ARCHIVES OF DISEASE IN
CHILDHOOD.

INTRODUCTION

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The study of children's diseases differs from the study of other specialties of medicine, because its association with general medicine is more intimate and continuous than is the case in other specialties. This applies all along the line, to research, to clinical observation, to teaching and to practical therapeutics. A fair case indeed could be made for treating this subject as an integral part of general medicine, but for convenience of reference it deserves a notable place amongst special branches.

In an important address given some years ago by Dr. Gee on the history of the study of children's diseases, the claim was made that the great landmarks in the subject had been discovered and expounded by general physicians rather than by specialists. But during the last decade such important steps have been achieved in bacteriology, biochemistry and in clinical observation likewise, that the soundness of Gee's dictum, so far as the present generation is concerned, may now be disputed.

What reasons can be urged for the publication of "Archives of Disease in Childhood" in this country?

(1) Because of the necessity that the conclusions obtained by various workers and scattered through various publications should be rendered available; (2) because there ought to be an opportunity for keen workers in the many departments of children's diseases to publish and submit for criticism and verification their varied observations and experiments; and (3) because of the need to set forth in concrete and detailed form the results of new discoveries in diagnosis and treatment with a view to their employment in practice for the public good.

When we reflect on the generalisation which applies to the symptomatology of disease in child life and on the responsiveness of the child's nervous system we must deprecate any marked dichotomy of specialism in so far as the organs of the child are concerned. A more desirable classification in spheres of labour would seem to be based on the different periods of child life.

Pre-natal life; infancy reckoned from birth to the age of two years; early childhood, from two years to five years of
age; late childhood, from five years to puberty, would seem to be a fair division.

Of these the pre-natal period in many ways seems the most important and far-reaching; obscure and limited as it is, some valuable additions have lately been made to our knowledge concerning it. The nutrition of the mother, considered exclusively as it affects that of the foetus, may be very important indeed. It has been denied that there is any true foetal rickets apart from osteogenesis imperfecta and achondroplasia. These two categories as well as early *fragilitas ossium* may be classified with developmental vagaries and associated with congenital malformations. But does true rickets sometimes begin in the foetal period? It is noteworthy that in families in which several members are successively rickety the early children are least so, and the later children are increasingly so. This suggests that the mother's gradual failure in nutrition during successive pregnancies may play some part in the aetiology. The date at which the earliest tangible evidence of rickets becomes manifest may throw light on this question.

The trend of clinical observation and of therapeutic experience seems after all to point to the rickets with which we are concerned as mainly a post-natal and predominantly a food disease. The experiments on puppies performed by Dr. Mellanby would seem to place rickets amongst the "deficiency" diseases, the deficiency being in protein and absorbable fat and probably therewith the activating fat soluble vitamin A. The most efficient of all foods in the prevention of rickets in the infant period is admittedly mother's milk, but fresh cow's milk, cream, butter, suet, egg, dripping and animal fats have all to be reckoned with as useful and efficient substitutes under certain limitations. Animal fats are definitely superior to vegetable fats, butter being far better than vegetable margarine and cod liver oil than olive oil. The premature addition of carbohydrates to the infant's food would appear also to be a definite factor in this disease, and the dilution of cow's milk to which Dr. Still has drawn special attention, has probably been more responsible than we were at one time prepared to admit. Budin's contention with regard to infant feeding in favour of undiluted cow's milk—albeit in quite small quantities at a time and at more frequent intervals than the arbitrary "four hourly feeds"—demands careful reconsideration by English physicians.

Condensed milk, both sweetened and unsweetened, has been definitely condemned as an undoubted factor of rickets. Dried milk, on the other hand, appears to have secured a place as one
of the fairly good substitutes in infant feeding, though further experience is desirable, especially in relation to infantile scurvy.

The cases of entirely breast fed infants who contract rickets would probably repay further investigation. Dr. Still attributes the rickety outcome in these cases to the extreme thinness of the mother's milk.

We now agree that Parrot's cranial bosses are truly rickety periostoses, though it is granted that the co-existence of the congenital syphilitic infection may render these and other rickety bone changes decidedly more pronounced. In the study of the pathology of rickets considerable attention has rightly been given to the changes in the epiphysial junction areas; but the rôle of the periosteum in the membrane-formed bones is equally important and, indeed, also the rôle of the periosteum of the shafts of the long bone. Hereditary syphilis is not the only co-operant form of lowered nutrition in the causation of rickets. Cretinism often shows marked combinations with rickety characters. Infantile scurvy is often grafted on rickets, and the occurrence of the complex of scurvy-rickets has been responsible for the delay in the accurate recognition of true scorbutic signs. Intercurrent acute specific illnesses, bronchitis and chronic gastro-enteritis, often cause aggravations and relapses of rickets.

Other important factors of this disease, namely, lack of sunlight and fresh air, and the sum total of what we describe as the results of overcrowding, have been long acknowledged, but the experience of Dr. Hess and his colleagues, and the post-war work of Miss Chick with the Vienna poor children, have given definiteness and emphasis to these factors. The remarkable therapeutic experiences of Dr. Hess and others, showing that the radiation of the mercury vapour quartz lamp can to some extent substitute direct sunlight in the cure of rickets, will probably have important results on practice. The recognition of the effect of ultra violet radiation in activating green vegetables and milk may likewise prove helpful.

With respect to infantile scurvy, in Great Britain the occurrence of this disease in a baby entirely breast fed is extremely rare, but there are records of foreign cases in which this occurrence seems to be undeniable. As in the prevention of rickets, it is very desirable that the pregnant mother should be able to secure for herself milk from cows fed on fresh grass and living largely in the open rather than stall fed, and that the food of the mother should also include a plentiful supply of fresh vegetables.

With respect to maternal syphilis, if there is the least reason to believe that there has been any former infection, a
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Wassermann test ought certainly to be made, and if positive ought to be followed by definite treatment. The results of inoculation of the mother, with one of the arseno-benzol preparations given regularly from the earliest period of pregnancy up to the time of delivery, have proved strikingly beneficial by way of immunisation to the infant.

When artificial feeding has to be adopted either wholly or in part, the question of boiling cow's milk requires decision. Repeated boiling, like repeated sterilisation, is certainly wrong. When infantile scurvy has become manifest in a given case any boiling whatever probably reduces the anti-scorbutic efficiency of milk, and unboiled milk in small quantities can be tolerated often with remarkable success. But a single boiling, just before the feed is given, is generally safe and wise. With regard to the anti-scorbutic additions, potato roasted in the skin and the mealy part of the potato scraped and sieved into milk, has proved satisfactory as the initial measure. Orange juice or grape juice are useful adjuncts, and good meat gravy, or home-made meat juice, are likewise of service as additions to the milk. Boiled yolk of egg is a useful standby. With regard to proprietary foods and their relation to infantile scurvy, there is little new to be said, except that they retain their supremacy as amongst the chief offenders in the causation of the disease.

Amongst the practical problems of the period of infancy (that is from birth to two years of age) artificial infant feeding is surely the most insistent and most difficult to carry through on anything like sound lines. None of the alimentary problems has commanded more zeal and patient investigation than what we have provisionally agreed to describe as congenital hypertrophy of the pylorus or otherwise as hypertrophic stenosis of the pylorus. Dr. Cameron has indeed pointed out in his admirable Lumleian lectures that neither of these names is satisfactory or indeed strictly correct. Further knowledge is needed in order to define in any accurate descriptive title the true notes of the disease.

No doubt Hurst's original work some years ago, on the mechanism of the alimentary canal and his contention for what he has called Achalasia (which has been defined as the absence of relaxation) gave a direction to enquiry, although he was not specifically concerned with this disease.

The two doctrines held as to the pathology of hypertrophic stenosis of the pylorus may be defined as (1) that of Hirschsprung supported by Cautley, according to which there is a primary hypertrophy of the pylorus; (2) that of John Thomson, according to which there is inco-ordination of the muscles
concerned in contraction and consequent propulsion of the food content and the relaxation beyond, which permits of the initial propulsion becoming operative; in other words, there is disharmony and inco-ordination between the stomach wall and the pylorus. With regard to Hirschsprung's and Cautley's contention it may be said that hypertrophy independently of antecedent obstruction or resistance is not in harmony with what we know of pathology in other regions. With regard to Thomson's ingenious hypothesis (which it may be mentioned he has also applied to the explanation of hypertrophic dilatation of the colon), it may be observed that it carries the difficulty back to the enquiry what then is the cause of this disharmony and inco-ordination and how is it brought about? But although the pathology of this disease is still doubtful we owe a great debt to the British school for the elucidation of its natural history and for the important fact that we no longer regard it as a hopeless and insoluble mystery, but as a morbid entity which is capable in very many instances of complete restoration. Dr. Nicoll, of Glasgow, had the great merit of introducing in his case in 1900 Loreta's operation of dilatation of the pylorus which was successful; according to Dr. Thomson this patient made such a good recovery that eighteen years afterwards he was passed as a sound life for the Army.

Thomson, Still, Cameron and Cautley, with the invaluable help of their surgical colleagues, Stiles, Burghard and Dent, have added a real chapter to medicine, nor can we forget the important contributions of Holt, Hirschsprung, Dufour and Fredet, and on the surgical side the brilliant contributions of Rammstedt.

It is most important, and indeed invaluable, that the indefatigable workers at this disease have established the two clinical features which are imperative in the diagnosis, namely, (1) the demonstration of a visible stomach peristalsis, and (2) the palpation of a definite resisting tumour due to the pylorus which is in a state of spasm. Grasping these fundamental conditions, what are the chief indications for medical treatment of an early and moderate case of this disease? (1) The maintenance of breast feeding, maternal if possible, or that of the wet-nurse; (2) small feeds and, if necessary, at shorter intervals than normal; (3) the employment of stomach lavage once or twice daily, but guided as to frequency by the varying incidence of stomach dilatation and food delay. In a fair number of cases these methods have proved successful. The real trouble being caused by what is equivalent to a mechanical difficulty, alteration in the composition of the feed is not indicated, and
it is noteworthy that in the typical favourable case signs of food toxæmia in the early stage are conspicuously absent. If under these methods there is no amelioration, and the vomiting increases in severity with rapid wasting and threatening of toxæmia, then surgical aid should be invoked. Also, if from the onset the case is acute, primary surgical operation would appear on the whole to give the best chance.

Some of the surgical procedures which were employed in the early cases, for example gastroenterostomy, have now been negativated, and there remain two from which excellent results have been obtained, (1) Laparotomy, followed by Loreta's method of dilatation of the pylorus (Burghard and Stiles); (2) Laparotomy followed by longitudinal incision of the peritoneum over the pylorus and of the muscular fibres down to but not through the mucous membrane, so that no opening is made into the stomach (Rammstedt).

Rammstedt's operation seems at present to command most confidence, but this is a matter in which the personal equation and experience of the operator must count for a great deal.

There is not adequate space in this introduction to refer to many other important additions which have been made during the last decade to the paediatric outlook, both medical and surgical. The juvenile type of acute and sub-acute rheumatism requires a chapter of its own, and supplies in fact a fuller and certainly more interesting survey than the ordinary rheumatic fever attack of the adult. This is one of the cases in which the study of children's diseases contributes illumination to general medicine. The work of Poynton and Payne challenges candid re-consideration. What valid objections can be raised to their technique and to the soundness of their general contentions? The treatment of the convalescent period of acute and sub-acute rheumatism in the child and the precautions to be taken regarding the insidious incidence and increase of endocarditis merit patient enquiry and therapeutic experiment.

Great progress has been made in the orthopaedic surgery of the deformities left by poliomyelitis. The subject of immunisation which began long ago with diphtheria, has made bold strides and has a great future. The recent work associated with the names of Schiff and Dick will at once occur to the modern reader.

The fields indeed are white unto harvest; the husbandmen are ready and skilful; the workers of bygone days hand on to them the sickle and wish them good luck and God speed. "He that soweth and he that reapeth shall rejoice together."