Other powerful forces were also at work on the social revolution of the country. The capture of Constantinople by the Turks in 1453 and the flight of the Greek scholars to Italy opened anew the science and literature of the old world, and a stage of development in Italy, extending to nearly half a century, was followed by the diffusion of the "new learning" over other countries in Europe. The discovery of printing, about this time, led to the rapid and widespread distribution of books. This, again, occasioned a vast increase in the number of schools, and more were founded in the last years of the reign of Henry VIII than in the three preceding centuries. The pace thus set was accelerated in the reigns of Edward and Elizabeth.

The translation and publication of the Bible at this time had a marked influence on society. Copies were provided in all the churches, and it thus became, in truth, the book of the people, so that their very thoughts and speech were affected by it. This religious revival, fostered by Luther, Calvin, and Knox, brought about the Reformation with its long and bitter wars.

Meanwhile in England the distress caused by the extension of enclosures, aggravated by the disbanding of the great retinues maintained by the feudal lords, and still further accentuated by the suppression of the monasteries, was disappearing with the increase of prosperity following the commercial policy developed during the comparatively tranquil times of Elizabeth's reign. Companies were founded for trading; and it has been said that in ten years more oak was used for building than had been used in the previous hundred. Manor houses were built not of timber, but of brick and stone, and the mud and wattle and daub huts of the country people were being replaced by dwellings constructed of brick and stone. The abandonment of salted meat and fish, and the greater consumption of fresh meat, pointed to an increase in the refinement of the country people. This general prosperity was held in check during the civil war in England (1642-1652) and during the Thirty Years War on the Continent (1618-1648), but, when these came to an end, a fresh impetus was given to social progress.

In the towns, however, many hovels and much social degradation still remained, and a few remote areas in the country were unaffected by these impulses. Plague, therefore, continued to visit certain parts of Europe after the close of the seventeenth century. Many years were still required to complete the social reformation now well established. Nevertheless, the sting of the disease had by this time been removed and such epidemics of plague as did occur subsequently were generally shorter and more circumscribed. The influence of the agrarian revolution on the disappearance of plague was due to its effects on the housing of the people and on their social habits; the value of the Reformation to this end lay, not in the substitution of one creed for another, but in the new spirit of inquiry, the new freedom of thought and discussion, which it had awakened.

Plague may thus be said to be a disease of primitive civilizations. It can be shown, in like manner, that malaria was banished from England by the great changes which were effected in the country during the second agrarian revolution, which began about 1730 and lasted until 1845; this was the period of "high farming." Other diseases, in addition to plague and malaria, now often called tropical diseases—such as leprosy, relapsing fever, cholera, dysentery, typhus fever, trench fever, and typhoid fever—were at one time common in England, but, like plague, they have been banished as a result of the further development and extension of social reforms, the civilizing principles and the sanitary measures which had their unrecognized beginning in the conquest of the plague.

I shall show in another lecture that a high atmospheric temperature, such as may be said to be a characteristic feature of the tropics, is unfavourable for the development of plague; surely, then, it is misleading to call plague, malaria, and the other diseases I have mentioned "tropical diseases," when in truth they are diseases of a primitive stage of civilization.

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THE TREATMENT OF INFANTILE TETANY BY CALCIUM CHLORIDE.

BY

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THE most common form of treatment for infantile tetany in this country at the present time would seem to consist in the administration of sedatives, of which the most frequently used are chloral hydrate and the various bromide preparations. In severe cases of tetany, where convulsions are a prominent symptom, chloroform anaesthesia is often resorted to, although it is realized that this affords only temporary relief; and it is admitted by most practitioners who are frequently called upon to deal with such cases that these forms of treatment are far from satisfactory.

Calcium therapy has been employed by others on account of the fact that active tetany is frequently associated with a diminished content of calcium in the blood. The salt most commonly employed for this purpose is the lactate, but the results have been disappointing.

During the past year we have had the opportunity of treating many cases of tetany, varying in severity from the latent form in which few distressing symptoms were present to the severe type in which frequent convulsions or severe laryngismus were endangering the life of the patient. We have invariably been successful, by the oral administration of calcium chloride in doses of from 15 to 20 grains at intervals of four hours, in causing not only a rapid cessation of the convulsions, but a complete disappearance of all signs of tetany. The dose to be given depends on the severity of the symptoms and the condition of the patient. In the severe form, where convulsions, laryngismus, or carpopedal spasm are urgent symptoms, it has been our practice to give 30 grains every four hours until these active signs have disappeared. In the cases showing only signs of latent tetany 15 to 20 grains every four hours for three or four days will cause complete disappearance of all the signs of increased mechanical and electrical excitability.

It is not our purpose here to dwell on the various manifestations of tetany, nor to discuss at length the mode of action of the calcium chloride. In another paper we gave evidence to show that acidosis, no matter how produced, would cause the signs of tetany to disappear, and cited cases in which acidosis developing in the course of latent tetany caused a temporary disappearance of all the signs of mechanical and electrical hyperexcitability, both of which returned on restoring the acid base balance to normal by the administration of sodium bicarbonate. Haldane has shown that a relative acidosis can be produced by oral administration of calcium chloride in large doses, and the beneficial action of the salt in tetany appears to depend on this property rather than on the fact that an increased amount of calcium is being administered, since an equally good effect can be produced by the use of ammonium chloride, which also produces acidosis. The latter salt, however, is probably not as suitable for general use, owing to the fact that it may produce toxic symptoms if used in large doses—possibly because the ammonia radicle has to be converted into urea before it can be excreted. Where calcium chloride is used the calcium is merely excreted by the bowel as insoluble calcium phosphate.

The action of these salts in tetany is only temporary; signs of increased electrical and mechanical excitability usually returning in two to three days after cessation of treatment. The administration of cod-liver oil along with the calcium chloride, and its continuation after the calcium has been stopped, will, however, prevent the return of any active symptoms; and we have found that all signs of tetany usually disappear permanently after about three weeks of treatment along the above lines. The great advantage of the administration of calcium chloride is its power of controlling the dangerous convulsions and laryngismus which are the urgent symptoms of active tetany.

The following cases are illustrative of this form of treatment:

CASE I.

C. H., aged 8 months, was admitted with a history of convulsions. The facial phenomenon was markedly positive and there was severe laryngismus, with increased electrical excitability. On February 15th, 1922, administration of calcium chloride, 30 grains every four hours, was commenced. No more convulsions occurred and on February 18th all signs of tetany had disappeared and the electrical reactions were normal. Calcium chloride was accordingly discontinued; cod-liver oil was given, and fifteen days later the patient was dismissed from hospital perfectly well, all signs of tetany being absent.

CASE II.

A girl, aged 11 years, was admitted with late rickets and pyuria. On March 27th, 1924, the patient suddenly developed severe carpopedal spasm, the pain of which caused her to cry out. There was a very marked facial phenomenon and greatly increased electrical excitability, a cathodal opening contraction being elicited with 0.8 milliampère. At 4 p.m. 30 grains of calcium chloride were given by mouth. At 5.10 p.m. carpopedal spasm had entirely disappeared and the child was absolutely free from pain. The facial phenomenon was still very marked, and Trousseau's sign was readily elicited. Calcium chloride was therefore continued, and, on March 19th, there had been no return of the spasm, the facial phenomenon was negative, and the cathodal opening contraction was elicited with 4.5 milliampères. Calcium chloride was discontinued and cod-liver oil commenced. On April 2nd the facial phenomenon had reappeared, but there has since been no other sign of tetany.

CASE III.

M. F., aged 9 months, was admitted with marked laryngismus and positive Trousseau's sign, and gave a history of frequent convulsions. The facial phenomenon was markedly positive. On February 5th, 1924, calcium chloride, 30 grains every four hours, was prescribed, with cod-liver oil in 30-minim doses three times a day. There were no more convulsions. After three doses of the calcium chloride Trousseau's sign was negative, there was no facial phenomenon, and the presence of laryngismus was doubtful. The calcium chloride was stopped, but two days later signs of tetany returned. After three doses of calcium chloride they again disappeared, and six days after the beginning of treatment the patient was discharged from hospital, no sign of tetany being then present.

The following two abstracts illustrate the similarity in the action of ammonium chloride:

CASE IV.

J. M., aged 12 months, was admitted with a history of convulsions. Trousseau's sign and the facial phenomenon were positive, and there was increased electrical excitability. Ammonium chloride 30 grains were given every four hours, and after six doses all signs of tetany had disappeared.

CASE V.

A. Q., aged 11 months. On admission the facial phenomenon was positive and laryngismus and carpopedal spasm were present. The administration of ammonium chloride, 30 grains every four hours, was followed in two days by the disappearance of all signs of tetany.

The following case is of special interest in view of the age of the child, the absence of rachitic changes, and the fact that none of the classical signs of tetany were present on admission, though the subsequent course of events justified a diagnosis of tetany:

CASE VI.

W. B., aged 15 days, was admitted on account of generalized convulsions which were occurring so frequently that they could not be counted. Facial phenomenon and Trousseau's sign were negative; there was no marked increase in electrical excitability, and no history of laryngismus was elicited. The calcium content of the serum on this date was 5.6 mg. per 100 c.cm. Treatment by 10 grams of calcium chloride every four hours was begun. Four mild convulsions occurred after the commencement of the administration of the drug, but within two days they had ceased and have not since recurred. The calcium was discontinued after three days, when the child developed mild laryngismus and a positive Trousseau's sign, thus justifying the diagnosis of tetany.

It is generally recognized that active tetany in the infant is a disease requiring urgent treatment. Deaths from convulsions figure largely in the infant mortality statistics, and it seems probable that many of these convulsions are due to tetany. Treatment of such cases by calcium chloride has been attended with such invariable success in our hands, as well as in the hands of some others, that we feel justified in making a plea for the wider use of a treatment which is simple to use and unattended by any risk to the patient.

REMARKS ON THE DIAGNOSIS AND TREATMENT OF CHRONIC INTUSSUSCEPTION.*

BY

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CHRONIC intussusception in children is a somewhat rare complaint. According to Morison "the chronic variety may be called a disease of adults, and the acute one of children, but there are exceptions to both these statements."¹ Still recently reported four cases of the condition seen in eight years. He draws attention to it on account of its rarity and the fact that the diagnosis is often missed, as the usual idea of intussusception is a case of acute obstruction with bloody stools. He uses the word "chronic" "to mean cases in which the intussusception is present for many days or even weeks without producing any acute obstruction." I quote his excellent description of a typical case in full:

"On a particular day the child seemed to have pain in the abdomen and vomited once or twice. During the next few days he occasionally vomited, generally in association with a colicky pain. The vomiting has become less frequent, only once in two or three days, and the pain is only occasional. The bowels, which before were open daily, have since the onset been less regular; aperients have been necessary, but when given have worked well and the stools have been normal; there has been no blood in the stool, or at most there has been only a streak once or twice, such as might be seen on the stool of any constipated child. The symptom which has troubled the parents most is the wasting; the child after three or four weeks of these vague troubles is obviously getting thin. The temperature throughout has been normal."²

The diagnosis is made by feeling the sausage-shaped tumour, which varies in consistence under the fingers at different times, and by the sense of unnatural emptiness in the right iliac fossa—a negative sign which, personally, I always find difficult to elicit. Dr. Still recommends examination of the child when asleep as of great help in feeling the tumour, but states that the association of the transverse tumour with wasting led to a diagnosis of tuberculous peritonitis being made by one or other who saw the child, in all four of his cases. X rays were used in only one case and did not help in diagnosis. All his cases were operated on and did well; the ages of his patients were respectively 13 months, 14 months, 23 months, and 3½ years, and the corresponding duration of symptoms up to the time of operation respectively 32, 42, 32, and 21 days.

Morison mentions a case in a boy of 3½ years of ten days' duration. The medical attendant made a diagnosis of intussusception, but "this was rejected by an eminent physician who was called in consultation." Blood appeared in the stools on the ninth day. Mr. Morison confirmed the diagnosis and operated; reduction was easy and the patient did well.¹

Schlink reported a case of two months' duration in a girl of 7 years. There was a well marked tumour in the lower abdomen and a mass by the rectum, and emaciation was marked. X rays, after a bismuth meal, showed the case to be an intussusception. No blood had been passed, and the many diagnoses made by the many doctors who saw the girl included malignant disease of sigmoid, sarcoma of kidney, hydronephrosis, enlarged retroperitoneal glands, and malignant cyst of the ovary! Complete recovery followed operation.³

The following is the history of a case I treated recently.

I first saw the child, a girl of 6 years, on February 4th, 1923, on account of epigastric pain and vomiting, present since the previous day. A careful examination of the abdomen revealed nothing abnormal, and the symptoms were attributed to fish taken on February 3rd. On February 5th I saw her again and, as she appeared better, removed her name from my visiting list. On February 27th (I had been away a few days) my locum saw the child and promised I would call the following day. The mother then told me that "the child had not been really well since my visit on February 5th, as, though she was all right some days, on others she had had 'awful agony'; there had been no vomiting, and the bowels had been open daily without aperients; the child, however, had lost her appetite and was wasting to a shadow, and," the mother continued, "she was sure there was something radically wrong as the child had always been so bright before."

I now found that there was marked tenderness in the right iliac

* A paper read before the North Glamorgan and Brecknock Division of the British Medical Association, December 13th, 1923.