

CHILDREN'S COUNTRY HOLIDAYS FUND.

To the Editors of THE LANCET.

SIRS,—May we call the attention of your readers to the needs of the Children's Country Holidays Fund, which sends poor children into the country for a fortnight during their summer holidays? In most of our London schools the fund has now become an institution. Parents and teachers recognise from different points of view the beneficial effects upon the children of a fortnight's residence in the country at a time when even to older persons the heat of London is oppressive. It is hardly too much to say that the Children's Country Holidays Fund has indicated one of the methods by which there is best hope of preventing that deterioration in the physique of our town population, of which the public has lately heard so much. In 1903 the fund sent away 34,000 children and in 1904 over 39,000. The increase in numbers shows that a real demand exists for its services and that it possesses the organisation by which that demand can be met. Only the money is lacking. We hope that when the public realise the work that is being done by the Children's Country Holidays Fund sufficient help will be forthcoming to allow of its maintaining and extending its operations. The address of the fund is 18, Buckingham-street, Strand, and the honorary treasurer is the Earl of Arran.

We are, Sirs, yours faithfully,

ALFRED LYTTTELTON, } Trustees of the Children's
W. F. D. SMITH, } Country Holidays Fund.

Buckingham-street, Strand, W.C., June 3rd, 1905.

A PLEA FOR THE MORE GENERAL USE OF TUBERCULIN.

To the Editors of THE LANCET.

SIRS,—In reference to your annotation in THE LANCET of June 3rd, p. 1526, I feel convinced that many medical men who have used tuberculin will agree that a plea for its more extensive use in tuberculous affections will be a step in the right direction. There is no doubt, as you suggest, that a careful consideration and a thorough re-investigation would be the means of placing tuberculin in a position that it so much deserves. In the minds of those who have constantly used tuberculin there can be but little hesitation in giving a verdict as to its efficacy in lupus vulgaris, tuberculosis cutis, lung, and other forms of tuberculous mischief. I have used this remedy since its first discovery and have not had reason to lose faith in it or be disappointed with the good results achieved by means of its aid.

I could quote various cases of tuberculous ulcers having been permanently healed by this remedy when apparently everything else had failed and such a remedy should not be allowed to become obsolete without a thorough and impartial trial. Trusting your annotation will be the means of again bringing this remedy into prominence,

I am, Sirs, yours faithfully,

C. STANSER BOWKER.

Pontnewydd, Newport, Mon., June 6th, 1905.

RED RUBBER: ITS POSSIBLE CONNECTION WITH APPENDICITIS AND OTHER INTESTINAL DISORDERS.

To the Editors of THE LANCET.

SIRS,—A few notes I have made on this subject may be of interest to your readers. Not long since, at 10 P.M., I called in a shop kept by one of my patients to make a small purchase. Behind the counter was a young girl whom I knew well as a patient and I was surprised to see her looking so ill. She presented a picture of perfect depression. I mentioned the fact to her and she confirmed my observation, saying that she had felt very relaxed and depressed for the last two days and that she was getting worse. Her pulse was scarcely to be felt, she was pale, heavy-eyed, with cold and clammy hands. At 1 A.M., three hours after I was talking to her, I was summoned to her house to see her. I went and

found her suffering from a very acute appendicitis. There was no pain felt prior to 1 A.M. She was removed to hospital next day and soon operated on for the removal of the appendix. This case gave me the idea that the cause of appendicitis was probably a something which produced first of all a general depression, that either the depression or that something causing the depression was the cause of appendicitis. On asking myself the question as to what the something could be my mind became riveted on antimony after dismissing other agents for the want of collateral symptoms. Then another question presented itself as to the source of the antimony. I learned from the girl's aunt, with whom she lived, that she was accustomed to drink daily about half a dozen bottles of non-intoxicating drinks which she bought from a shop next door. I also found that she was the only one out of a family of nine who drank these drinks; she was the only one in the household ever attacked by appendicitis. This occurrence led me to retrace my steps to many of my patients who had been victims of this dire complaint and I learnt from those I revisited—nine in all—that they also had been drinkers of non-intoxicating drinks from bottles fitted with red rubber rings. That this red rubber contains antimony there is no doubt. I have tested several pieces myself. It is insoluble in all solvents of raw rubber and gutta-percha. To confirm my test I took a dozen of these red rubber bottle rings to Mr. R. C. Cowley, Ph.C., analytical chemist, Principal of the Liverpool School of Pharmacy, and in a week I received the following letter:—

DEAR MR. POND,—I have by means of an alkali extracted sulphide of antimony from the rubber rings you left with me last week. I have very little doubt but that alkaline waters and those containing organic acids would have a solvent action on the antimony in the rubber, particularly after the rubber has been worn and its surface roughened. I think it is sufficiently demonstrated that rubber vulcanised by sulphide of antimony (red rubber) should never be used as fittings for aerated waters on account of the strong solvent action of alkalies and organic acids on sulphide of antimony.

I am, yours very truly,

May 7th.

R. C. COWLEY.

After receiving this letter I sent an expert in the rubber trade samples of these red rubber rings, asking him if he would kindly let me know their composition. His reply is somewhat astounding:—

May 11th.

These samples probably contain the following ingredients in this proportion: 20 pounds of rubber, 12 pounds of antimony (sulphide), five pounds of red zinc oxide, one-eighth of a pound of sulphur, and a quarter of a pound of lime.

The composition, you will note, of these red rubber rings contains not much less than one-third its weight of antimony. These red rubber rings are gradually worn down in the process of use from one-eighth of an inch in thickness to the thinness of paper, with jagged edges, and by age present innumerable cracks and become brittle. The small particles of red rubber fall into the bottles and are swallowed with the drink. I have found several particles at the bottom of beer bottles. Beer bottles and non-intoxicating drink bottles are not the only places where these red rubber rings are found. They are in syphons, sparklets, certain pickle bottles, jelly and preserved fruit bottles, &c. I have just taken from the stoppers of two beer bottles the red rubber rings. One is comparatively new, with only a slightly compressed edge but already chipped; the other is much worn as described above. These two rings are the same size in depth, thickness at unworn or upper edge, and circumference. The new one weighs 28 grains, the old one only 19 grains, due to the thinning or wearing away of its lower edge. The difference represents nine grains or its equivalent—namely, nearly three grains of sulphide of antimony.

Now a few words about the probable action. The pieces of rubber are swallowed as a rule at meal time, when the stomach is full of food, and in the process of digestion I take it the antimony is slowly separated from the rubber, is slowly absorbed, and when absorbed produces its secondary action—namely, that of depression and especially as a powerful depressant of the muscle fibre of the stomach and intestines. Now, we have two factors which together are capable of producing appendicitis: (1) a relaxed muscle fibre of bowel with partial or complete paralysis of the circular muscle fibres at the orifice of the appendix; and (2) a loaded bowel (cæcum).

Now under such conditions a slight movement of the body, such as stooping or straining, or a flow of fæces through the ileo-cæcal valve into an already overloaded cæcum deprived of its muscular contractility, is sufficient

to press anything in the neighbourhood of the appendix, on account of its relaxed muscular coat, into its blind canal. Again, we know that ingested antimony is excreted by the skin, kidneys, and all mucous surfaces and that this tends to inflammation of these surfaces; therefore if antimony is being excreted by the mucous membrane in or in the neighbourhood of the appendix the mucous membrane would be in such a condition as to inflame readily on the slightest excitation. I have also noticed that the majority of my patients who have suffered from appendicitis have been seized by the initial pain when in the recumbent position. I do not imagine that one ordinary bottle would produce any noticeable evil results even to the keenest observers, but to produce the results about which I am writing these small doses must be frequently repeated over a length of time and the properties of the antimony must be accumulative. Nor do I believe that every case of appendicitis is produced in this way, but my idea is that antimony is directly or indirectly the cause of a very large number of them.

Another set of cases in which, in my opinion, antimony plays a very important part is the dilated stomachs. These cases are by far more numerous than they were in former years. During the last few years I have met several with the lower border two or more inches below the umbilicus in strong athletic young men and in otherwise healthy girls. In all cases they have been drinkers out of bottles with red rubber fittings. I take it that the frequently repeated small doses of antimony depress and weaken the muscular coat of the stomach, and by filling a stomach in such a condition two or three times a day with food the weight of the food will gradually stretch its walls in their weakened state beyond the limit of active recontraction.

Again, I have formed the idea from observations made in my practice that antimony from the same source is responsible for a class of cases now known as "gastric ulcers devoid of the classical symptom of vomiting." I have had many of these cases pass through my practice during the last few years and I am sorry to say their numbers are increasing. I find these patients also are imbibers of non-intoxicating drinks from bottles fitted with red rubber rings. The muscle fibre of the stomach, I take it, is depressed by frequent small doses of antimony, the depression of the muscle fibre would account for the absence of vomiting, and if the mucous membrane was excreting any of the ingested antimony an inflamed area due to this excretion might form the commencement of an ulcer.

Another case of interest and on account of its connexion with antimony deserves to be mentioned—a case of chronic constipation. This case points rather markedly to the action of antimony relaxing and depressing the muscle fibres of the bowels. A lady sent for me one morning with the message to bring my bag as her maid was about to be confined. I went; the mistress met me at the door and told me that she had noticed her maid increasing in size for some time past and that now she was unable to get up and the pains had come on. I was shown to the girl's room. At first sight I had not the slightest doubt but that the girl was carrying a nine months foetus. On examination I found there was no pregnancy but the swelling was entirely due to an enormous collection of faeces. She was taken to hospital. I heard from her mistress that she was there more than three weeks before she got rid of the original collection. Her mistress had some time since forbidden her to take beer and had in its place supplied her with non-intoxicants in screw-stoppered bottles.

In conclusion, I have endeavoured to show that the result of this ingestion of antimony may lead to: (a) a weakening of the muscular coats of the caecum and vermiform appendix and the resulting appendicitis; (b) weakening of the muscular coats of the stomach and dilation of the stomach; (c) irritation of the mucous membrane of the stomach and intestines and thereby some cases of gastric and intestinal ulcers; and (d) weakening of the muscular coat of the intestines and some cases of chronic constipation.

I am well aware that the views here stated are open to ready criticism and that much investigation has yet to be made, but I put them forward as being a new and a quite possible cause of some of these alimentary disorders, the etiology of which has puzzled and is still puzzling the medical world. Moreover, it is very important that the dangers which may accrue from red rubber should at once become fully recognised.—I am, Sirs, yours faithfully,

F. A. POND, M.R.C.S. Eng., L.R.C.P. Lond.

Upper Parliament-street, Liverpool, June 5th, 1905.

THE GROWTH OF CANCER.

To the Editors of THE LANCET.

SIRS,—The proposition to be discussed is that a somatic cell may undergo functional involution or the converse of physiological evolution and in so doing may resume the characters of the primitive cell or unicellular organism and that a colony of such cells forms what is termed a tumour. The growth of cancer is not merely limitless but, as many observers have noted, the tumour has no nerves, while the cells seem to be relatively independent of their host. The limit to cell reproduction appears to be only conditioned by the nutrient medium. If nature be her own interpreter, in strictness the problem should be looked at from the inductive aspect and the growth of cancer should be compared with cells having limitless growth and an independent existence with no nervous system. The protozoa fulfil these conditions and Weismann, impressed by the vast reproduction of the lower kinds, credited them with immortality. Clinically, the evidence is strong in favour of tumour cells having lost their normal function. A malignant tumour may flourish while all the other tissues are wasting; a fatty tumour may grow while the body-fat steadily decreases; in old people a cancer may arise while the organs are undergoing involution. Chemically, Blumenthal finds that the substance of cancer cells differs from that of somatic cells and that substances are present in cancer cells not found hitherto in the healthy body, while there is an intracellular ferment able to digest the albumin of its own cells and also the cells of the body. This is evidence that cancer cells have not the same function as somatic cells but is no proof that therefore they must be germ cells. The effect of erysipelas on malignant growths when cancer cells have been seen to undergo destruction by cocci suggests a comparison with infection in the protozoa and the struggle between the parasite and the host portrayed by Metchnikoff.¹ In this struggle the intracellular digestion of the protozoon plays a leading part. Further, the coccidium found by Pfeiffer and other observers in cancer when the parasite grows at the expense of the cell is capable of a similar explanation.

From the aspect of reproduction the analogy between tumour cells and the cell communities or colonies still found in the infusoria and rhizopods would seem to be even closer. Most of the forms of cell division found in tumours have been noted in protozoa and the cancer cell might be termed the analogue of the protozoon. Heterotype mitosis might be compared with the following.² "The unicellular animals or protozoa, having obviously no body, are directly comparable to the sex cells of the higher animals. The body is the addition which makes the difference. In a few protozoa, however, the results of the division of a unit remain associated together and a loose colony of cells arises. Such a protozoon is like an ovum or like a primitive male cell in any of the higher animals. The loose colony may be very unstable and may soon resolve itself into its component parts exactly as the primitive male cell, which has divided into a clump of spermatozoa, breaks up and sets these active units free. But the colony may be more stable and retain its continuity (like a segmented ovum), thus bridging the gulf between unicellular and multicellular organisms. In such cases certain cells are set apart as reproductive and eventually set adrift to form a fresh colony. This is the beginning of the differentiation of special reproductive cells." Wilson says:³ "Mitotic division has now been observed in many of the main divisions of the protozoa and unicellular plants. In some of the gregarines and heliozoa the process is of nearly or quite the same type as in the metazoa."

Amitosis is very rare in the higher plants and animals and cytologists think it is a forerunner of degeneration, whereas it is fairly common both in pathological growths and unicellular organisms. A clear instance where a cell having lost its normal function involves to a more primitive type is seen when a fat cell undergoes atrophy: the fat slowly vanishes and the cell becomes connective tissue and this in turn may organise into fibrous tissue. Involution is a phase of life, a lessened functional activity termed by Canstatt senile involution.⁴ The highly specialised

¹ Metchnikoff: Comparative Pathology of Inflammation.

² Article on Embryology, Chambers's Encyclopædia, 1895 edition.

³ Wilson: The Cell in Development and Inheritance, 1904 edition.

⁴ Boy-Teissier: Old Age, Twentieth Century Practice of Medicine, 1897 edition.