One of the most notable bacteriological differences between the epidemic occurring in Egypt and Palestine and in Europe has been the almost complete absence of bacilli corresponding to the Pfeiffer type. During examination of film preparations of sputa at all stages of the disease, Gram-negative micro-bacilli of Pfeiffer type were only observed in twelve cases, and in three cases only has anything corresponding to the *Bacillus influenzae* been isolated in culture, although media recommended by observers in England as specially suitable for the isolation of this micro-organism, including that of Matthews,¹ and the "K" medium quoted by Fildes, Baker, and Thompson, have been repeatedly used. I find also on inquiry that these results as regards the almost complete absence of *B. influenzae* correspond with those of other laboratory workers in the district.

Many *post-mortem* examinations have been made, but as results coincide with those detailed by other observers, they have been omitted from this article. In this connexion I would like to thank Major P. H. Bahr, D.S.O., R.A.M.C., for his assistance and many valuable suggestions.

CONCLUSIONS.

1. There is no valid reason for assuming that the primary cause of influenza in Egypt and Palestine differs from that of the recent pandemic.

2. There is no justification for regarding *Bacillus influenzae* (Pfeiffer) as the primary cause.

3. From the work of various investigators, it is more reasonable to regard both the influenza bacillus and the strepto-diplococcus as secondary invaders, the former being the predominant organism in Europe, the latter in Egypt and Palestine.

4. In this case it is more than possible that the primary etiological agent is ultramicroscopic and is a filtrable virus, which renders the individuals infected hypersensitive to organisms which formerly only possessed a low degree of pathogenicity.

It is hoped that the favourable results achieved by the vaccine treatment will dissipate—in part, at any rate—the diffidence felt by many medical men to the employment of vaccine in acute pulmonary cases and will stimulate further investigations on this branch of therapeutic bacteriology. Work is now being conducted with a view to producing an antiserum in horses to this strepto-diplococcus.

REFERENCES.

¹ Abrahams, Hallows, and French: *Lancet*, January 4th, 1919.
² Matthews: *Ibid.*, July 27th, 1918. ³ Fildes, Baker, and Thompson: *Ibid.*, November 23rd, 1918. See also W. F. T. Haultain, *BRITISH MEDICAL JOURNAL*, April 26th, 1919, p. 517.

AN ADDRESS ON GOITRE.*

BY

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It is a very difficult thing for a man in an ordinary country practice to write a paper that would interest any number of the medical profession. He is in a totally different position from the surgeon, the consulting physician, or the bacteriologist. If he meets with a very interesting case—occasionally he does—he rarely if ever has anyone to consult, nor can he compare notes with any other practitioner.

A disease the frequency of which has been puzzling me for some time in a portion of my neighbourhood is goitre, and I thought an account of a few facts I have noted might not be inopportune on this occasion. I do not claim to have discovered anything new either in cause or treatment, but I think there are some differences between the symptoms in the majority of the cases I have met with and what I have seen described in books, notably in the time of onset and the proportion of males and females affected.

In July, 1918, there was a garden party at Hillsborough for the purpose of raising funds for a neighbouring church, and a number of young women from a district, to which I shall refer later, were present. In the evening I happened to have a good view of them as I occupied a seat on a

platform facing the audience. In the front row there were twenty-two young women, and out of these I counted sixteen with enlarged necks. I drew the attention of three persons who were sitting beside me to what I had observed, and asked them to tell me how many they thought were affected. They all arrived at about the same number.

I do not, however, wish it to be believed that anything like 70 per cent. of the young women are affected, but on this particular occasion they happened to be congregated.

Twenty or twenty-five years ago goitre was almost unknown in this district, but at the present time I know of and have seen between sixty and seventy cases. It is quite possible there may be a few more, as I am rarely consulted about it unless there arises some difficulty in breathing or swallowing. All the cases, with one exception, are of the female sex, and in over one half the right side of the gland is larger than the left. In no case have I seen the left larger, whilst, in the only male case that I know, the left is the side most affected. Why the left side should be larger in the male and the right in the female is an interesting problem; it seems to indicate that sex plays an important part in the susceptibility of different lobes of the thyroid to disease.

The gland in most cases begins to enlarge when the girls are about thirteen or fourteen. Now Dr. McCarrison in his book says that school children are more susceptible than adults when they are subjected to goitrogenous influences, and that the most susceptible age is 9 in the case of boys, and 10 in the case of girls, and that up to the age of puberty both sexes are affected equally. I do not know of a single child attending school showing any symptoms of the disease. I have spoken to several national school teachers on the subject, and in no case have they noticed a swelling or prominence in the necks of any of the scholars. The majority of children leave these schools when they are about thirteen or fourteen years of age.

Dr. McCarrison also says that in the localities where goitre is not supposed to be endemic the thyroid enlarges during pregnancy in nearly half the cases. I know of two cases that developed in the past year during pregnancy. The enlargement was first noticed by the patients about the fifth or sixth month. In one of these cases the enlargement was much the same when I saw it last, about four or five months after the child was born. In the other it had decreased; she has a sister with a fairly large goitre of sixteen years' standing, and their mother informs me that she herself had one which disappeared about twenty-two years ago, shortly after her last baby was born.

I see from several books I have consulted that defective or improper food, insanitary dwellings, bacterial and other toxins, infectious diseases, constipation and intestinal stasis, fright, mental worry, consanguinity, and heredity, are all given as exciting causes.

The majority of these causes are out of the question in this locality. There is not much wrong with the food; the people are as well fed—better, I believe—than ever they were. The dwellings are far more sanitary than they were thirty years ago—the old mud walls, thatched roofs, earthen floors, and small windows that did not open, are things of the past; and the filthy cesspools and stagnant water holes have almost disappeared. There had been no serious epidemics before the late outbreaks of influenza. Intestinal toxæmia is, I suppose, much as ever it was, while constipation is not a common condition in girls of 13 or 14.

The water supply in the labourers' cottages built by the rural council is different. Before these cottages were built shallow wells, from which the water could be lifted with a can, supplied the drinking water. Now a deeper well, with a pump, is the rule, and it is quite possible that the water now used is not the water originally supplied, but comes from some distant and polluted source. We have a few cases in the village of Hillsborough where the water supply is almost the same as it was forty years ago. The majority of the people are supplied from pumps. I have had the water from these analysed at various times, and several of the samples were certified to be contaminated with sewage.

The district in which the disease is most prevalent, and where the girls I saw in Hillsborough came from, lies along the banks of the Lagan Navigation Canal and the river Lagan. It is low lying, from 110 to 150 feet above sea level, and is bounded on the north and south by fairly

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high hills; the northern, in County Antrim, are composed, according to the geological survey map, of basalt, chalk or limestone, with flint and red marl. On the southern side the hills are upper silurian with an outcrop of rhyolite and patches of thick and thin greenish grit, with beds and layers of grey slate and also yellow and brown sandstone. The valley itself lies over new red sandstone, with a few thin bands of white earthy magnesian limestone. Thus we have limestone on the one side, and underneath it magnesian limestone, which is repeatedly associated with goitre.

Bircher considers that the extinct flora and fauna of limestone rocks provide the organic constituents which help to produce goitre. Dr. McCarrison's explanation is that "these rocks are amongst the most porous, and most freely cultivated and inhabited, and that their porosity favours the excitants of the disease to unprotected water supplies. Water derived from such rocks may contain an excess supply of lime, the ingestion of which may throw an additional burden on the function of the thyroid. The presence in the soil of decaying animal and vegetable matter may convert any soil into a suitable habitat for the contagium vivum of the disease."

It is a common idea in my neighbourhood, especially amongst the elder women, that the wearing of light blouses by the young girls and the exposing of their necks in all weathers are the principal causes. There is a possibility that an alternating increased and decreased blood supply might be caused by running in and out of doors in cold weather.

There are three cottages in this district, built several years ago by the district council. They are good cottages, kept clean, and are apparently sanitary. They were built on new ground where there was no probability of any contamination from sewage. The gardens, however, are close to the house, and as these are manured there is a possibility of some deleterious matter coming from them. The well, on the other hand, is fairly deep, and I am informed the spring comes from below. These cottages are supplied by one pump. In two of them eight cases of goitre developed. The original occupiers of the other cottage have left. They were, however, oldish people beyond the susceptible age, so I did not take the trouble of looking them up. The present occupiers are a man and his wife with a young family. So far none are showing any symptoms.

I got the district council to have the water from this well analysed, stating that I suspected it of producing goitre. The report I got from the analyst was: "It is a satisfactory water, quite safe for domestic use; and, although I would classify it as a hard water, I could not say it would be the possible cause of goitre."

I afterwards gave Mr. Kirk, who noticed the goitre in one of these houses, a sample from the same pump. He very kindly got it examined by Professor Symmers, who declared it to be full of micro-organisms very similar to those McCarrison describes in his book. The material excavated from this well was principally sand of a greyish-yellow colour, and the water at times had so much suspended matter that it had a slight tinge of that colour.

This well has not been used for four or five months. The occupants carry from another well a few hundred yards distant, and boil all the water used, and at present in every individual case the size of the neck has greatly diminished.

There were two deaths in the past year amongst goitrous patients. One died from tuberculosis, and I noticed that, although before death this young woman had gone to a mere skeleton, there was no diminution in the size of the goitre. It became more prominent, though I do not think there was much increase in size; it was more noticeable owing to the wasting of the other parts. She had diarrhoea for a long time, continuous sweating, and constant thirst, and, in consequence, drank large quantities of water, which, if it produced the disease, probably kept it up to its original size.

The other death occurred in an exophthalmic case, which seemed an ordinary case for years; but within nine months of her death the protrusion of the eyeballs and the palpitation of the heart first became noticeable. The pulsations were visible over the whole chest, and could easily be seen when covered with the bedclothes. I have seen the bed shake and could hear the sounds of the heart at a distance of nine or ten feet from the patient. Her

mother informed me that frequently at night when all was still she could hear it distinctly in the next room. At present two of her sisters, one 16 and the other 14, have ordinary goitres. In the case of the elder it is fairly prominent.

I know of five mothers suffering from goitre who have grown-up families, and in every case some of the daughters are affected. This at first sight looks as if inheritance played an important part in the disease, but it is quite possible that the source from which both mother and daughters got the disease was the same. Again, it is also possible that the mother herself may be the carrier and may contaminate the food or drink in some unknown manner. I know of one case in which a woman from Cookstown settled in my neighbourhood. She had a large goitre when she came. Since then her daughter has developed one. The original cause could not be guilty in this instance.

When two or three girls are affected in one house I have noticed that the one who drinks most water has generally the largest goitre, from which it might be concluded that water is the important factor, and that the growth is in proportion to the material supplied. On the other hand, some are showing the enlarged gland who declare they never taste water unless in the form of tea, coffee, or cocoa, in all of which beverages the water has been boiled. If the statement of these girls can be relied on—and why should it not?—it would seem that there must be some other vehicle than water which conveys the infection, or, if it is only from water, that the micro-organism causing the disease must be capable of surviving a few minutes' boiling. If not, the old theory of mineral constituents held in solution or suspension naturally occurs to the mind.

I have kept an eye on the domestic animals of the neighbourhood—horses, cattle, dogs, and cats—but so far I have never seen the slightest trace of goitre in any of them.

About three weeks ago I was attending in her confinement a woman who suffers from goitre. Immediately labour began she had great difficulty in breathing which she compared to a cord constricting her neck. This was so severe that at times I was greatly alarmed, and she herself was so much frightened that she never noticed her pains. After the baby was born the breathing improved, and the next morning all difficulty had passed away.

Treatment, as a rule, is not very satisfactory. It is generally tedious. The patient gets tired or careless or gives up hope. Young women object to painting their necks with iodine or blistering with red iodide of mercury. They may take iodine or potassium iodide internally for a time, but will not persist long enough for the drugs to produce much effect. Thymol I have tried frequently, but have never seen any results from it. Thyroid extract I have certainly found of value, and I frequently combine it with the iodides. I notice that when once the gland begins to decrease in size the diminution generally goes on even after the treatment is stopped.

The cases, if they come early, are, I believe, quite amenable to treatment; at least I have found it so in several cases. Whether the decrease is due to the medicine, the boiling of the water, or getting it from another well I cannot say—possibly a little of all combined.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

ACRIFLAVINE IN TREATMENT OF GONORRHOEA.

DR. WATSON, in a memorandum in your issue of June 28th, offers a few suggestions as to the best method of diagnosing anterior gonorrhoeal urethritis and states that a considerable percentage of error must occur, the disease having spread to the posterior urethra. In my experience the number of days since the appearance of the discharge cannot be relied upon in the differential diagnosis, as in some cases the posterior urethra is infected at a very early date; in a few cases which have received little treatment it escapes. Frequency of micturition may not be present even when the posterior urethra is affected, and when present may be due to other causes. The two urine glass test is open to fallacies. It is better in cases of doubt to