

THE INFECTING AGENT IN INFLUENZA:

AN EXPERIMENTAL RESEARCH.

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DURING the past winter influenza caused the loss of many lives in Japan. According to official statistics, up to the end of January, 1919, there were nearly 30,000,000 cases, of which 170,000 proved fatal. Inasmuch as 52 of our friends, doctors and nurses, offered themselves as subjects for experiment, we have been able to solve some important questions relating to this infectious disease. The experiments and results now recorded were made between Dec. 1st, 1918, and the end of March, 1919.

Experiments.

1. An emulsion of the sputa from 43 influenza patients was made in Ringer's solution. This emulsion was injected into the nose and throat of 12 healthy persons.

2. A filtrate (by Berkefeld filter) of the same emulsion was injected into the nose and throat of 12 other healthy persons.

The results of these experiments are very significant; among the subjects treated were six persons who had already had influenza, and all six showed no symptoms of illness. But all of the other 18 subjects, both those who had received the emulsion and those who had received only the filtrate, were attacked by the disease, after an incubation of two or three days. Their fever was sometimes slight ($37.5^{\circ}\text{C}.$), sometimes very severe ($39^{\circ}\text{C}.$ or more). The subsequent symptoms were headache, sore-throat, lumbago, cough, and the like.

3. A filtrate of blood of influenza patients was injected into the nose and throat of 6 more healthy persons. The results were precisely the same as in the previous experiments.

4. We inoculated subcutaneously 4 healthy persons with the filtrate of the sputa emulsion and 4 others with a filtrate of the blood of influenza patients. They all, with the exception of one who had previously had influenza, developed the disease after two or three days' incubation.

5. A pure culture of Pfeiffer's bacillus and a mixed preparation of the pure Pfeiffer, along with pneumococci, streptococci, staphylococci, diplococci, and many other like microbes common in the sputa of influenza patients, were injected into the throat and nose of 14 healthy people who had not had influenza. There were no symptoms of illness following these injections.

Summary.

1. The germ of influenza cannot be removed by filtering (filterable virus).

2. The germs can infect through the mucous membrane and also by inoculation.

3. The germs can be found in the sputum and the blood of influenza patients.

4. The known bacilli, such as Pfeiffer's bacillus, pneumococci, and some diplococci are not the cause of influenza.

5. We observed experimentally that all people who have previously had influenza or received the sputa emulsion or its filtrate are immune to the disease.

TREATMENT OF BONE SINUSES BY SOLID METAL DRAINS.

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AMONGST the methods in vogue for dealing with sinuses in bones one which has not been mentioned is the use of metal drains. For over 25 years I have employed both hollow and solid metal drains, and of late have used them in these troublesome sequelæ of fractures and gunshot injuries. The great value of the method deserves to be widely known.

The Benefits of Solid Drains.

In a paper read before the Medical Society of London (Vol. XXXIV.) I described the satisfactory drainage obtained by solid drains, and full particulars were given. The metal prevents closure of the orifice, which neither a rubber tube

nor gauze packing will do. It also rapidly reduces the septic changes, and by preventing retention of pus, with consequent decomposition and infective osteitis permits the formation of new material and closure of the cavity. Rubber and gauze both cause irritation, and the latter always some bleeding, which increases septic changes.

The rod is smooth, has a rounded end, and can be removed and inserted without any injury. When substituted for gauze the beneficial effects are at once evident in the disappearance of the surrounding dermatitis and marginal granulations (both due to infection) and the decrease in the discharge. Pain, where existing, rapidly subsides and very soon a retraction of the orifice is seen. The patient can go about with a tube *in situ*; indeed, one of my early cases wore a tube in the lower end of the tibia and drove a motor bus in London. Aluminium answers well and rods can be formed out of splinting material. Of late we have used glass rod, bent to any desired angle.

An Illustrative Case.

Such rods have been used frequently to drain cavities, the result of gunshot injuries, in the tibia, femur, os calcis, and tarsus generally, and also in the carpus. Most striking is the diminution of the discharge, so that the foot and hand can be put up in plaster-of-Paris at once.

To illustrate by one case, an officer came from the first battle of Ypres with a large ragged wound through the carpus, with much swelling of the hand. For three weeks he was treated with baths and a splint. Then, for the first time, the wound was gently curetted so as to remove loose fragments only. A rod of aluminium was passed through and the hand and arm put up in plaster-of-Paris. At once pain disappeared, the dressings were reduced in frequency, and the general condition improved. The rod was left untouched for a month and then reduced in size. The combination secured a rapid recovery.

Other illustrative cases could be given. Enough to say that I am convinced that this is the only method of securing uninterrupted recovery in the majority of bone sinuses where the cavity cannot be "dished out."

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FISTULA OF THE PAROTID

IN WAR WOUNDS OF THE FACE AND JAWS.

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With a Note on RADIATION TREATMENT,

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FISTULA of the parotid gland or its duct is a relatively rare complication of facial wounds. Throughout a period of nearly four years, during which time wounds of every grade of severity have come under my care, only some 16 cases have been noted. These fistulæ may be conveniently classified thus:—

Fistulæ of the duct	Incomplete.
"	" gland.	Complete.

The differentiation of incomplete fistula of the duct from fistula of the gland is difficult, and the diagnosis is sometimes a mere probability based on the position of the fistula. Operative verification has not been available, for both have a tendency to heal. Should healing be delayed, the application of radium or X rays is indicated. Gland fistulæ and incomplete fistulæ of the duct have never failed to respond to radiations.

Complete fistula of the duct is incurable except by operative methods. These methods may be grouped into three classes:—1. Seton operations. 2. Atrophy operations. 3. Reparative operations.

Seton operations are mentioned only to be condemned. They usually fail and render more difficult any subsequent reparative procedure. Atrophy operations aim at inhibiting secretion by cutting off the secretory nerve impulses to the gland. These secretory fibres run in the auriculo-temporal nerve, and are destroyed either by resection or avulsion.