

had a slight attack in June, and one, whose duties were chiefly of an administrative character, in November; the two orderlies in charge of the scabies block had influenza mildly. Most of the men in the camp in June and July were also stationed there during the more severe times in October and November, but there were only two relapses, both severe.

Summary of Military Cases.—In May, 7; average strength of troops 1,350. In June, 5; strength 700. In July, 86; pneumonia 1; strength 490. In August, 3; strength 500. In September, none. In October, 11; pneumonia 4; strength 650. In November, 13; pneumonia 7; relapses 2; effusions 2; strength 600. In December, 5; streptococcal throats 2; strength 1,008. Total military cases treated 130. Pneumonia 12; relapses 2; streptococcal throats 2; deaths 0.

I am indebted to Major E. U. Bartholomew, R.A.M.C., S.M.O. I.W. and D.R.E., under whose administration the work was carried out, for permission to publish these notes. The nursing orderlies exhibited remarkable endurance, and to their many acts of unselfish devotion the record of no deaths is largely due.

The good results in the military cases were due, I believe, to the better surroundings, the preventive spraying, and the possibilities of close observation permitting of very early isolation.

OBSERVATIONS ON THE INFLUENZA EPIDEMIC IN THE BRISTOL GENERAL HOSPITAL.

WITH SPECIAL REFERENCE TO THE USE OF "N. PANE'S STERO ANTI-PNEUMONICO" FOR PROPHYLAXIS AND TREATMENT OF PULMONARY COMPLICATIONS.

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SINCE October 11th, 1918, seventy-six cases have been admitted under Dr. G. Parker and Dr. J. O. Symes, seven of which we have lost. Thirty-seven of the cases had double pneumonia and the rest had influenza.

INCUBATION PERIOD.

From the appended table and from the June epidemic the approximate average incubation period is seen to be about forty-eight hours.

Patient.	Probable Date of Infection. Date when Influenzal Case was Admitted into the Ward.	Onset of Illness.	Approximate Incubation Period.
Nurse A ...	Oct. 11, evening	Oct. 14, morning	60 hours
Nurse B ...	Oct. 15, evening	Oct. 17, evening	48 ..
Nurse C ...	Oct. 20, morning	Oct. 22, morning	48 ..
Nurse D ...	Oct. 25, morning	Oct. 27, morning	48 ..
Nurse E ...	" "	" "	48 ..
Nurse F ...	" "	" "	48 ..
Nurse G ...	" "	" "	48 ..
Nurse H ...	Oct. 25, 1 p.m.	Oct. 27, afternoon	50 ..
Patient A ...	Oct. 18, afternoon	Oct. 19, 11 p.m.	30-33 hours
Patient B ...	Oct. 20	Oct. 22	48-55 ..
Patient C ...	Oct. 22, morning	Oct. 23, evening	32-35 ..
Patient D ...	Oct. 29, afternoon	Oct. 31, morning	42-46 ..
Patient E ...	Oct. 30, morning	Nov. 1, evening	50-56 ..
Patient F ...	Nov. 2	Nov. 4	45-50 ..

IMMUNITY.

One of the main characteristics of the present epidemic has been the escape from infection of the entire male staff, while the female staff suffered heavily. Of one hundred and four of the regular nursing staff thirty-six developed influenza, and about twenty maids out of a total of about forty were affected. This, no doubt, was due to the fact that in the June epidemic all the male staff and only six of the nursing staff were afflicted, and it is to be assumed that they must have acquired immunity from their previous attacks.

The question then arises, How have the remaining sixty-two nurses escaped infection? The prophylactic measures adopted consisted of gargling and the administration of a vaccine, consisting of ten millions each of pneumococci and streptococci, and fifteen millions each of *Micrococcus catarrhalis* and *Bacillus influenzae*. The injection was repeated a week later.

Of the vaccinated nurses, six developed reactions amounting to a mild form of influenza which lasted only for twenty-four hours.

SYMPTOMS, CLINICAL COURSE OF THE DISEASE, AND TREATMENT.

To facilitate the description of treatment the cases will be divided into three groups:

- Group A. Simple influenza.
- Group B. Simple influenza with commencing pulmonary complications.
- Group C. Influenzal pneumonia.

Owing to the exigencies of space the symptoms and treatment of simple influenza will not be described here.

From the appearance of the respiratory system in three autopsies and from the symptoms often presented in influenzal cases, one would surmise that a descending acute dry inflammatory process occur in the respiratory system in cases which showed a tendency to pulmonary complication.

In cases occurring under Group B it is to be gathered that the inflammation has spread to the smaller bronchi and the surrounding lung tissue, so that small and deep-seated bronchopneumonic patches develop either in one or both lungs, while later, such as in the cases under Group C, these deeply seated bronchopneumonic patches rise to the surface, becoming confluent with neighbouring patches, form quite a considerable patch of consolidation, but as both lungs are usually involved, patches of consolidation varying in size are usually present in both lungs. The importance of Group B is from the prophylactic point of view, but, unfortunately, the symptoms and physical signs are so vague that they are liable to be overlooked.

The symptoms and signs which we depended upon as indications that this stage has been reached are as follows:

1. Persistency of the cough.
2. Gradual rise of temperature or a sudden rise of temperature after the previous temperature has reached normal, associated with a rise in the respiration rate usually to over 25.
3. One of the following signs in the chest: deficiency in the entrance of air over one portion of the lung; signs of generalized bronchitis, or the presence of dry or moist râles localized to some portions of the lung or lungs.

Charts 1 and 2 illustrate the beneficial effect of Pane's antipneumococci serum in cases under Group B. The serum apparently retarded the progress of the development of the respiratory complication, as indicated by the sudden drop of the temperature, also of the pulse and respiration rate, and the disappearance of the signs found

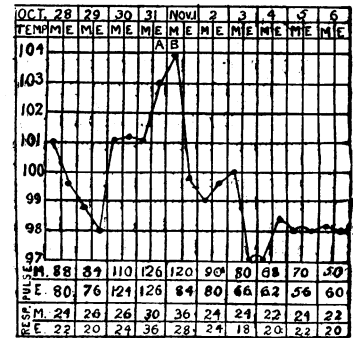


CHART 1.—This chart and Chart 2 illustrate the effect of antipneumococci serum in cases under Group B. A. Serum 5 c.cm. B. Serum 10 c.cm.

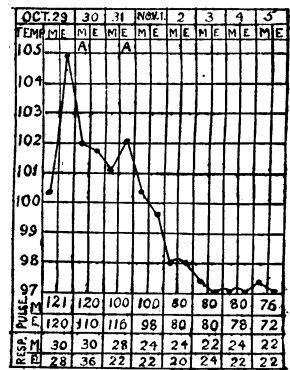


CHART 2.—A. Serum 5 c.cm.

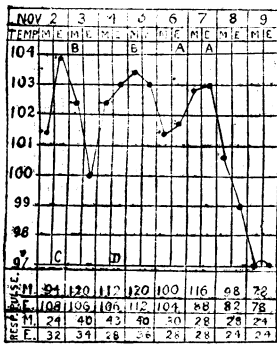


CHART 3.—A, Serum 5 c.cm. B, Serum 10 c.cm. C, Ninth day of illness; consolidation of right base. D, Consolidation of left base.

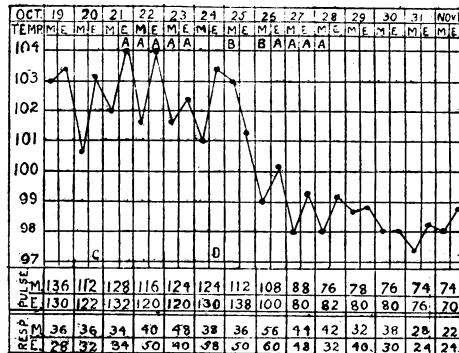


CHART 4.—A, Serum 5 c.cm. B, Serum 10 c.cm. C, Generalized bronchitis and consolidation of left base. D, Consolidation of right base.

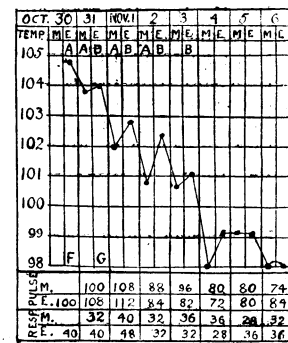


CHART 5.—A, Serum 5 c.cm. B, Serum 10 c.cm. C, Ninth day of illness. D, Consolidation of both bases.

CHARTS ILLUSTRATING THE EFFECT OF SERUM TREATMENT IN CASES UNDER GROUP C.

in the chest. The symptoms and physical signs presented in cases under Group C were those of lobular rather than those of lobar pneumonia; and in some cases, in addition to these, the symptoms and signs of severe capillary bronchitis with well marked cyanosis were predominant; in others the signs of severe toxæmia were well marked. Thirty-seven of our cases had definite signs of consolidation in both lungs.

Charts 3, 4, and 5 illustrate the effect of the serum treatment in these cases. In addition to the serum the ordinary routine treatment of pneumonia was also used.

being so, no time should be lost in commencing treatment with a view to preventing heart failure.

4. The timely injection of 5 c.cm. Pane's antipneumococci serum apparently retarded the development of pulmonary complications and therefore should be used as a prophylactic measure.

5. The use of the serum for this fatal form of pneumonia apparently reduces the temperature and the duration of

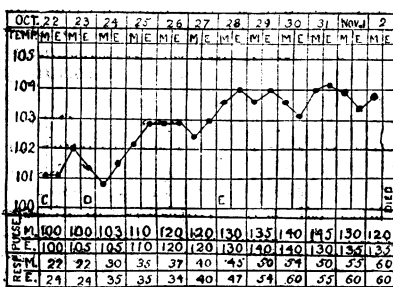


CHART 6.—C, Sixth day of illness. D, Consolidation of left base. E, Consolidation of right base.

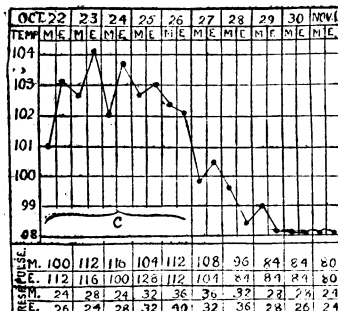


CHART 7.—C, Consolidation of right base.

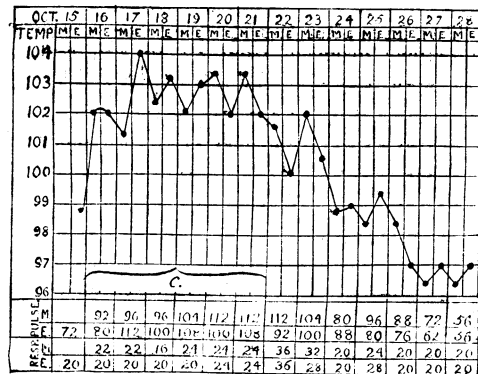


CHART 8.—C, Consolidation of right base.

CHARTS ILLUSTRATING CASES IN WHICH NO SERUM WAS USED.

Charts 6, 7, and 8 illustrate cases in which no serum was used.

In comparing the above charts it is assumed that the effects of the serum are:

1. To lessen the pyrexia; for in most of the cases it was noticed that the pyrexia was reduced by one to two degrees twelve hours after the injection, and the succeeding rise never reached the height of the previous temperature, while in cases untreated by serum the high fever was maintained and exacerbation of the previous temperature occurred on the development of a new patch.

2. Although the serum does not prevent the development of new patches of consolidation yet it seems to shorten the duration of pyrexia due to the new patch or patches, while in cases untreated by serum the duration and course of the disease is uninterrupted.

3. To prevent the occurrence of toxæmia, which only occurred in cases admitted from outside, where no serum was used.

CONCLUSIONS.

The conclusions which may be drawn from these observations are as follows:

1. That the incubation is from thirty to sixty hours, with an average of about forty-eight hours.

2. That immunity can be acquired from a previous attack or from the injection of a suitable vaccine. The duration of this immunity is certainly over three months.

3. The pulmonary complication of this influenza takes the form of a rapidly spreading bronchopneumonia; this

the disease, and prevents the occurrence of other unfavourable complications.

In conclusion I wish to thank Dr. Parker and Dr. Symes for permission to publish the above cases and also for their ungrudging and most valuable advice and guidance.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

ON THE USE OF FORMALIN SPRAYS IN CHECKING AN EPIDEMIC OF INFLUENZA.

In the recent epidemic of influenza among the troops at No. 1 Centre, The College, Isleworth, and among the Q.M.A.A.C. of the Hounslow, Osterley, and Isleworth area, I found that the spraying of all billets, messrooms, and canteens by a fatigue party of eight men under the charge of a non-commissioned officer appeared to be followed by an immediate check in the spread of the epidemic.

At a later date—November 4th—a severe outbreak of the epidemic occurred among the prisoners of war billeted in the rooms of a house at Ridless, Warton Road, Isleworth, and I there had an opportunity of testing this simple method of combating the disease.

The sprays, three in number, which were used twice daily from the second day of the epidemic, were Heppell's hand fly sprays with a capacity of 1½ pints of fluid in