Clinical and other Notes

axilla, and the breath sounds were generally harsh on the left side. He died at 6.25 p.m. this day.

Autopsy.—Surgical emphysema of face, neck and thorax. Left chest contains small amount of blood. Entrance wound in left posterior axillary line. Pericardium contains small amount of blood and small tear on the posterior inferior aspect. There was an exudate of fibrin over the anterior and left lateral walls.

Heart.—A small hole, surrounded by haemorrhage into the myocardium, on the posterior wall of the left ventricle. The interior of the left ventricle was clear except that there was a ragged tear on the septal wall, and the cordae tendineae of the aortic valve were also torn. The heart muscle was very pale and full of gas.

The liver and spleen were very congested and full of gas. In the left lung there was a small hemorrhagic infarct with fragments of indriven rib; the right lung was normal.

The foreign body was found at the bifurcation of the left common iliac artery surrounded by dark red clot, the intima was apparently undamaged. There was no tear of the intima at the aortic bifurcation.

Since the second time of screening on the 11th, the missile must have moved down the left common iliac artery and became lodged at the bifurcation. At the time of the second screening there was no difference noted in the femoral pulses, but the missile most probably moved down the aorta, passing through the aortic valve, within half an hour of the first screening, when the phenomena in the left leg were noted. The patient died of general gas gangrene after having lived five days with a piece of shell free in his arterial circulation.

A METHOD OF INCREASING THE YIELD OF MENINGOCOCCUS AGGLUTINATING SERUM FROM THE RABBIT.

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AND

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In October last it became evident that the necessary supply of rabbits for the production of diagnostic meningococcal serum was going to be difficult to keep up, more especially in view of the increasing demand for these products.

Up to that date the method elaborated by Major T. G. M. Hine was followed and no change has been made in the method of the preliminary injections.

Under the system then in vogue, 2.5 cubic centimetres of serum was produced per 100 grammes rabbit weight.

The death-rate of rabbits is high, partly on account of the toxicity of the organism, partly from the necessity of using only young animals (from 1,000 to 1,400 grammes), these alone producing a satisfactory quantity of agglutinins.

As up to nearly half a litre of serum is issued per month, it was felt to
be imperative that the quantity yielded per rabbit should be increased if the demands were to be met.

Various methods were tried, but none gave satisfactory results, the most promising being the injection of peptone into the peritoneal cavity a few hours before killing. The resulting exudate of serum contained agglutinins in fair amount, but unfortunately the titre of the blood serum was lowered correspondingly; a case of robbing Peter to pay Paul.

The following method of intermittent bleeding was finally devised. Intermittent bleeding with large animals is a commonplace and for the method to be justified with an animal the size of a rabbit the gain in serum obtained must be considerable and the time taken inconsiderable. The writers claim to have achieved these results.

The following is the new procedure: On the eighth or ninth day after the first injection, when the rabbit shows a titre of 1 in 400 the rabbit is bled, twenty cubic centimetres being taken from the ear. This yields about fourteen cubic centimetres of serum. This operation is repeated next day and the animal killed the following day. The titre for agglutinins tends to rise, though the rise is but slight in this case and not invariable, the highest titre of a series being generally at the second bleeding. The blood when the animal is killed is often milky in appearance, but this does not interfere with its agglutinating properties.

By the above method the serum yielded per rabbit is doubled; but if it is desired to obtain more after the second bleeding an injection of dead cocci is given. This dose must be very much smaller than that injected before or the animal will probably die. After five to ten days interval the animal may then be subjected to a further series of bleedings.

This method tends in the case of the meningococcus, but by no means invariably, to introduce group agglutinins and must be used with care.

A further advantage of the method is that that most annoying of accidents does not happen, i.e., killing an animal when its agglutinating curve is on a downward grade, and finding oneself left with a sample of serum of 1 in 200 instead of 1 in 400 titre. The writers invariably test each sample of blood immediately it is drawn, so that they know early the next day whether to proceed or to stop and give further injections.

The technique is as follows and should be followed accurately, otherwise the operator will find himself taking half an hour to extract ten cubic centimetres of blood: Shave the outer side of the ear on the hairy or lower edge, i.e., the margin not generally used for injections. A large vein is thus laid bare which puncture proximally to the entrance of a branch vein with a splinter of glass obtained from a broken microscope slide; this splinter should, if possible, have a spine which fixes the vein and prevents it rolling to one side. Then warm the ear by holding it near a carbon filament lamp. In this way a test tube can be filled in five minutes. We have obtained ninety cubic centimetres of blood from five animals in twenty-six minutes and this example is merely quoted to show the time taken by this method.

Give the rabbit a warm bran mash after bleeding and keep it for a couple of hours in a box heated with an incandescent carbon lamp and bed down with plenty of straw. Treated like this a rabbit remains lively and does not even lose
weight. The following figures are remarkable but illustrate the point. The titre of this serum was high and never varied, i.e., 1 in 800.

<table>
<thead>
<tr>
<th>Date</th>
<th>Jan. 19</th>
<th>Jan. 20</th>
<th>Jan. 21</th>
<th>Jan. 22</th>
<th>Jan. 23</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight in grammes</td>
<td>1,550</td>
<td>1,580</td>
<td>1,600</td>
<td>1,610</td>
<td>1,600</td>
</tr>
<tr>
<td>Amount of blood taken</td>
<td>16 c.c.</td>
<td>12 c.c.</td>
<td>12 c.c.</td>
<td>21 c.c.</td>
<td>14 c.c.</td>
</tr>
</tbody>
</table>

rabbit still lives.

We have ventured to publish this method which is both rapid and effective as the scarcity of animals renders the productivity of serum of real importance. In any serum in which the question of group agglutinin is not of paramount consideration, quantities much in excess of those mentioned may be obtained. With us a 1,500 gramme rabbit gave 125 cubic centimetres of highly specific serum of a titre of 1 in 200 and this could probably be exceeded. We may state that although we supply large quantities of normal serum per month no animal has been killed in the laboratory in the last ten weeks for this purpose, it having been procured by this method of bleeding.

NOTES ON THE SYMPTOMATOLOGY AND MORBID ANATOMY OF SO-CALLED “SPANISH INFLUENZA,” WITH SPECIAL REFERENCE TO ITS DIAGNOSIS FROM OTHER FORMS OF “P.U.O.”

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The recent outbreak of a number of cases of what appears to be a new form of so-called “influenza” has greatly added to the number of cases admitted to the base hospitals with the provisional diagnosis of “P.U.O.” and some months’ experience in the medical wards of a large base hospital in France has suggested to me that it would be useful to attempt to classify the chief diagnostic feature of some of the principal conditions which are admitted to hospital with this diagnosis.

The term “P.U.O.” although useful, and in some cases necessary, is at the same time too loose, and too much lacking in scientific exactness, to be wholly satisfactory. Moreover a more exact diagnosis is desirable, both from the point of view of prophylaxis, and if necessary isolation, and also for the purpose of prognosis as to the probable duration of the patient’s unfitness for military service.

Certain of the conditions liable to be included under this heading have but to be remembered to be excluded in the majority of cases, by appropriate clinical or bacteriological examination. Among these may be mentioned: (1) Malaria; (2) Bacillus coli infections, particularly coli bacilluria; (3) malignant endocarditis. But a smaller group remains, comprising (4) the trench fevers; (5) the enteric group, including typhoid and paratyphoid fevers, which for my purpose may be considered together; and (6) the influenzal group, including true influenza and the recent epidemic, which in the present condition of uncertainty as to its bacteriological causation, may be provisionally termed “Spanish” influenza; and (7) certain aberrant cases of cerebrospinal meningitis.

The symptomatology of “Spanish” influenza is characteristic and in view of the extreme prevalence of this disease at present, it will be useful to first consider