

followed by 0.5 c.cm., and adult females had 0.2 c.cm. followed by 0.4 c.cm. Among 210 inoculated nurses only 3 had to go off duty after the first dose of vaccine, none after the second dose. No case of delayed local reaction was observed amongst the 400 subjects who had been inoculated with the reduced dose of vaccine.

Suggested Doses and Recommendations for the Administration of the Alcoholized Vaccine

The alcoholized T.A.B.C. vaccine is equivalent in composition and total bacterial count to the customary vaccine—i.e., it contains 1,000 million *Bact. typhosum* and 500 million each of *Bact. paratyphosum* A, B, and C per c.cm. The following doses of this vaccine are recommended:

	First dose	Second dose
For adult males	0.25 c.cm.	0.5 c.cm.
For adult females	0.2	0.4
For children (male or female):		
From 16 to 18 years	0.2	0.4
" 13 to 15 "	0.1	0.2
" 9 to 12 "	0.05	0.1
Under 8 "	0.05	0.05

These are maximum doses and should not be exceeded: the next smaller dose in the series is advised for subjects in each category who are below average in physical vigour or development.

The interval between the two injections should be three weeks. If this cannot be adhered to and the choice is, say, two weeks or four weeks, it is preferable to choose the longer interval. Revaccination is advisable one year after the primary immunization: a single dose of the size of the first dose mentioned above is sufficient.

General reactions—i.e., languor with slight fever—are as a rule either absent or quite trivial after the small doses of vaccine. If the precaution is taken to make the injections as late as possible in the day—preferably not earlier than six hours before bedtime—any general reaction will go unperceived and only a very small proportion of inoculated subjects will find themselves unfit for work on the following morning.

The local reaction is hardly ever of such a degree as to prevent free use of the arm. This is equally true of the delayed reaction mentioned previously, which was observed in 3 out of 140 subjects who had been given the large dose of vaccine. So far this type of local reaction has not yet been seen in any subject who received the reduced dose of vaccine. It is to be expected, however, that certain persons who are especially susceptible may develop a small fluctuating area even after the injection of a small dose. No treatment of any kind is necessary or advisable for such a local reaction. It is nevertheless emphasized that the quantity of vaccine injected as the second dose must not be increased in these cases. Such susceptible subjects should receive as their second dose only half the quantity of vaccine injected as the first dose.

Summary

A new type of typhoid-paratyphoid vaccine, killed and preserved with alcohol, was compared with ordinary heat-killed T.A.B. or T.A.B.C. vaccine from various sources. Two marked differences were found between groups of subjects inoculated with the two types of vaccine: (1) The alcohol-killed and alcohol-preserved vaccines stimulated demonstrable typhoid Vi antibodies in a relatively high proportion of cases, whereas the Vi antibody response to ordinary vaccines was almost negligible. No significant difference in O antibody response was observed. (2) The reactions produced by the alcoholized vaccine were much milder than those caused by ordinary vaccine. General reactions were as a rule either absent or quite trivial. The local reaction was of a modified type and hardly ever prevented free use of the arm.

No correlation was found between Vi or O antibody response and severity of general or local reactions.

Recommendations are made with regard to the dose of vaccine and the interval between the two injections.

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Clinical Memoranda

An Unusual Injury to the Larynx

The injury in the following case seems to be unusual enough to be worth recording.

CASE REPORT

One night during the black-out a constable, after leaving a brightly lit police station, collided with a pillar-box in the street. The upper edge of this obstruction struck him on the thyroid cartilage. At once he experienced pain in the front of the neck and his voice became husky. The degree of huskiness gradually increased, reaching a maximum four hours after the accident. The next day his voice was still very rough, and there was tenderness to the left of the laryngeal cartilages. An examination of the larynx revealed the presence of a sausage-shaped haemorrhage under the mucosa of the left ventricular band. This haematoma almost completely obscured the view of the left vocal cord, though the extreme edge of this structure became visible when the cords were in full adduction. The possibility of a recurrent laryngeal nerve lesion was eliminated by the fact that both cords moved normally. The condition remained stationary for four days and then gradually improved. On the following day—that is, five days from the infliction of the injury—the voice still sounded deeper than usual. The haematoma was much decreased in size and the ventricular band looked purplish and swollen, but the vocal cord was clearly visible. It took twelve days for the voice to become quite normal, and in eighteen days all signs of the injury had disappeared.

Commentary.—Fatal and non-fatal cases involving injury to the neck are relatively common in police work. This particular case seems to emphasize the necessity for examining the interior of the air passages in all non-fatal medico-legal cases involving injury to the neck. Very often the assaulted person complains of pain and tenderness near or over the larynx, but apart from the tenderness that can be discovered externally there may be no concrete clinical findings that will serve as indisputable proof of injury received. Marks of finger-nails and bruising may be found externally; but this is not invariable, and the bruising may take several days to appear on the surface. In all such cases, therefore, a laryngeal examination might prove valuable.

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An Advanced Case of Cerebrospinal Fever

Remarkable recoveries from cerebrospinal fever are often observed with modern methods of treatment. The following account of a case of unusual severity may be of interest because the patient was completely restored to health although he had been moribund and paralysed for a considerable period.

CASE HISTORY

On May 28, 1940, an Italian café proprietor aged 42 was admitted to hospital. For ten days before admission he had a severe headache, with pyrexia on the third day, and for two days before admission he was comatose.

On admission the patient obviously was desperately ill. The respirations were Cheyne-Stokes in character, the rate being 28. There was no fever. Pronounced neck retraction and a right-sided hemiplegia were present. Lumbar puncture showed the cerebrospinal fluid pressure to be 260 mm., and 20 c.cm. of thinly turbid fluid was withdrawn from which meningococci were cultivated.

Sulphapyridine was given immediately. The dosage is shown in the accompanying table. After twelve hours the

Table of Treatment

Day	Sulpha- pyridine gm.	Serum c.cm.	C.S.F. Pressure	Vitamin B ₁ mg.	Condition
0			260 t.		Bad
1	9	25 B. & W.	260 f.		
2	8	25 "	260 t.		Critical
3	8	30 M.			
4	6	30 "		10	
5	6	30 "	150 c.	10	
6	4	30 "		10	
7	4	30 "	150 c.	10	
8	6	30 "		10	
9	6	30 "		10	
10	6	30 "		10	
11*	6	30 "		10	
12	3	30 "		10	Improvement
13	3			10	
14				10	

B. & W.=Burroughs and Wellcome. M.=Mulford. t.=turbid. f.=floculent. c.=clear. * Blood transfusion.

patient was even worse, and a further lumbar puncture was performed. The pressure was again 260 mm., and 10 c.cm. of fluid was removed; this time it was flocculent. Fluids were administered intravenously, as the man was very dehydrated and it was considered that this fact might be contributing to his grave condition. On May 29 daily intramuscular injections of anti-meningococcal serum were begun, being continued for the next eleven days. Vitamin B₁ was injected daily in doses of 10 mg. for about three weeks, when the dose was diminished to 2 mg.; this treatment was continued until full recovery occurred. The frequency with which lumbar puncture was performed is shown in the table. On the fifth day after admission the cerebrospinal fluid pressure was approximately normal and the fluid was clear.

By the end of the first week of his stay in hospital the patient showed no sign of return of consciousness and the respirations were still grouped; a few days later he developed bronchopneumonia. During the second week, while the temperature, pulse, and respirations were still raised on account of the chest condition, indications of improvement were observed; at times during the day he would take notice of what was going on around him. It was considered that recovery might be encouraged if he were given a blood transfusion. Accordingly 500 c.cm. of fresh blood was administered, following which daily improvement was observed. Some days before he began to talk his sense of humour returned. He now became aware of his incontinence, and this was the first step towards its control; then the plantar response on the right side became flexor and the leg showed signs of returning function. The hand was the first part of the upper limb to manifest improvement, and a week later the shoulder muscles, encouraged by massage, followed suit.

After six weeks he could walk with help and sign his name with a rather childish hand. When last heard of he was completely restored to his normal health.

I am indebted to Drs. A. C. Hampson and W. S. Hunt for permission to publish this case.

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Pulmonary Tuberculosis in Soldiers

The admission of men with pulmonary tuberculosis to the Army is of extreme importance from both the economic and the hygienic points of view, and therefore analysis of the data from the first 100 cases personally examined and "boarded" out of the Army may be of interest, especially in regard to evidence of disease previous to entry and likely factors in causing promotion or exacerbation of symptoms.

The age incidence in this series was: 9 patients under 20 years, 78 from 20 to 30, 9 from 30 to 40, and 4 over 40. Of these, 22 gave a history of active pulmonary tuberculosis in members of the immediate family circle—mother, father, brother, sister, or wife.

There was clear evidence that 18% had been in sanatoria and 15% more were suffering from the disease previous to admission to the Army. In 41% the condition was manifest within a month of recruitment, another 11% within three months, 16% in six months, 16% within a year, and only 16% first showed symptoms after a year. The value of medical supervision and weight recording in the first three months of Army life is therefore obvious. Cooper (1940) says that 5% of recruits to the 6th Division of the A.I.F. were turned down by medical boards on account of phthisis and that another 0.9% were later discovered by microradiography, of which over half appeared to be active. These figures bear out the importance of the recommendations of the Committee of the Ministry of Labour and National Service (1940), presided over by Lord Horder, that (1) medical boards should obtain from recruits a signed statement that to their knowledge they have never suffered from pulmonary tuberculosis; and (2) that district medical officers of health should (a) furnish all men likely to be called up, and known to be suffering from phthisis, with a certificate to that effect, and (b) notify the Ministry of Health of this fact, so that medical recruiting boards might have this information before them.

Analysis of the clinical records of the 100 cases shows that 15 had a definite past history of pleurisy and that in 22 the onset of the condition was made manifest by an attack of pleurisy. In 27 haemoptysis was the first symptom, in 29 cough, in 16 general symptoms of lassitude, loss of weight, etc.; in 7 the onset was acute and was first mistaken for pneumonia, and in 3 the main symptoms were gastric, the cases being sent up to the medical specialist clinic as suffering from peptic ulcer. In addition 1 came under attention with tuberculide, 1 with ischio-rectal abscess, and 1 was diagnosed when admitted for acute appendicitis. When medically "boarded" out of the Army 42 of the men had bilateral and 41 unilateral infection, the right lung being affected slightly more often than the left. In 48 of 78 cases the sedimentation rate was definitely increased, and in only 2 cases in which the sputum was loaded with tubercle bacilli was the sedimentation rate under 10 mm. Westergren at the end of one hour.

Factors in causation suggested by the men were: prolonged exposure to severe weather and damp, 32; heavy work and lack of sleep, 32; poor ventilation due to black-out and housing difficulties, 14; and difficulty in obtaining adequate food (in Belgium), 10. 31 of the men could find no exception to any condition under which they had had to work.

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