I

THE "NON-VENEREAL" OR CLIMATIC BUBO*

A CLINICAL STUDY OF A SERIES OF CASES OCCURRING IN A NAVAL HOSPITAL AND ON BOARD SHIP, WITH A DISCUSSION OF VIEWS OF RECENT AUTHORITIES

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PART II

(9) THE TREATMENT

THIS can be considered under two headings, local and general treatment.

A. THE LOCAL TREATMENT

Local Applications to the Glands

Manson Bahr¹⁷ advises soothing applications to the glands during the acute stage, and elastic pressure after the tenderness has gone; Hanschell¹⁰ uses thermogene wool locally on the glands; others advise local heat; and others again X-ray treatment for gland masses.^{14 17 33 36} Frei and Hoffman¹¹ state that X-ray treatment may be used for the glands, but it is not satisfactory.

X-ray treatment was not used in my series, but the following local treatment was found to be of some assistance.

(1) Thermogene wool from the outset with elastic pressure if the patient could stand it; for this purpose a sand-bag on the top of a thick layer of thermogene wool was found to be effective.

(2) If the skin had become involved and was inclined to break, ether, acetone, iodine and a dry sterile white gauze dressing were applied.

(3) If there was a considerable amount of periadenitis, boracic fomentations, with wool inside, between the layers

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BRITISH JOURNAL OF VENEREAL DISEASES

of lint was useful, and kept the heat in longer than the ordinary fomentations.

B. OPERATIVE MEASURES

Aspiration, with or without the injection of modifying fluid. Hanschell¹⁰ and Low and Cooke⁵ recommend aspiration of the pus whenever possible, before the skin is broken. Others inject modifying fluids before or after aspiration; for this purpose De Bellard and Uribe³³ used iodine or iodoform in paraffin or xylol, and Duff⁴⁵ iodoform in ether; Chastang⁷ a mixture of xylol, iodine or iodoform and vaseline. This proceeding has a double object in attempting to sterilise the abscess cavity and making the contents more liquid and so easier to aspirate through a needle.

In this connection, Bouffard²⁷ advises local drainage with "Crins de Florence," and washing out the abscess with an alcoholic solution of iodine.

Incision advised by Wilmott²⁰; but Manson Bahr¹⁷ states that, if opened surgically, these suppurating glands become infected secondarily and heal slowly. Hanschell¹⁰ and Bouffard²⁷ are against incision for the same reason. The former advises, if the glands are burst or already incised when first seen, certain trimming operations; open up sinuses freely and cut away all undermined skin and dress with eusol.

Excision is advised by most authorities.^{17 18 19 20 25 41 44} Bouffard²⁷ does not advise it for the same reason that he dislikes incision, and Hanschell¹⁰ considers excision is bad treatment, as a large gap is left in the groin which becomes infected secondarily. "Thorough surgery," he continues, "tries to extirpate all the glands, but in one case after an extirpation of the glands in both groins, elephantiasis of the penis and one leg developed during the three years following the operation." The risk of pseudo-elephantiasis is also referred to by De Bellard and Uribe,³³ who, nevertheless, in early cases, advise early extirpation of the glands and sterilisation of the cavity with hydrogen peroxide and mercurochrome.

In my cases it was my object to avoid operation if possible, and if pus was present attempts were made to evacuate this by aspiration, repeated if necessary. Successful results of this treatment were frequent, but by

THE "NON-VEREAL" OR CLIMATIC BUBO

no means invariable. Modifying fluids were injected if reaccumulations were frequent or if the pus was too thick to aspirate with the needle. The modifying fluids were (1) tincture of iodine; (2) equal parts of ether and tr. iodine; (3) ether thymol and camphor mixture. Ether is painful for a time after injection, but helps to liquefy the pus in a remarkable manner.

As regards incision, this was found to be satisfactory for small collections of pus, especially those which reaccumulate frequently after repeated aspirations. Twenty-one patients were treated by incision of abscess cavity, 10 had not been treated by protein shock, and 7 of these completed their treatment in hospital with an average number of days in hospital of 64.5.

Excision of gland masses was carried out in 11 patients; of these, 7 were first treated by protein shock with an average stay in hospital of sixty-one days, and 4 were not treated by protein shock with an average time in hospital of seventy-three days. As regards the technique used, at first complete enucleation was attempted and the wound treated with Rutherford Morrison's BIPP routine, but the results were not satisfactory: the best results were obtained by a complete enucleation of all the glands, paying especial attention to the deep inguinal glands, which were frequently more enlarged than the superficial ones, the wound was cleansed with Tr. iodi. after removal of all the gland masses, and the original incision was completely closed up, the "dead space" being obliterated as completely as possible by mattress sutures which were left *in situ* five or six days; drainage for lymph was provided for by stab wound, and some dental rubber well below the incision. Wounds, if open, were dressed with—

(a) Sterilised 40 per cent. magnes. Sulphate solution or magnes. sulph. crystals for forty-eight to seventy-two hours.

(b) After this, iodoform gauze dressings, which were thoroughly soaked in eusol or Dakin's solution, were applied.

(c) Sinuses were treated once a week by the old Rutherford Morrison BIPP routine with success; they were cleaned out first with 1 in 20 carbolic solution, and then dehydrated and further cleansed with S.V.R., and finally a small amount of the bismuth iodoform paraffin paste

BRITISH JOURNAL OF VENEREAL DISEASES

was rubbed in. The sinus was then left for a week without being touched and the treatment repeated when necessary.

Local Treatment of the Primary Cause when Found

Hanschell¹⁰ advised swabbing under the prepuce with methylated spirit to cure balanitis or small herpetic ulcers. I have used ether for the same purposes with satisfactory results. Any skin condition in the lymphatic water shed, if it can be so described, should receive appropriate treatment; for example, dhobie itch should be treated with half strength B.P. Ung. Chrysarobin bis die., etc.

GENERAL TREATMENT

General Measures.—Manson Bahr¹⁷ advises rest in bed for an unspecified time. Hanschell¹⁰ states that the rest in bed should be complete for fourteen days.

In China it was found necessary to keep even the most straightforward cases in bed for at least sixteen to eighteen days. During this period they were kept on a low diet, meat foods especially being restricted.

Oral Medicinal Treatment.—De Stephano and Vaccarezza³⁶ advise iron and arsenic as a tonic, and Mist. Pot. Iodide by the mouth. Yatren has been given by Frei and Hoffmann,¹¹ but they were not very enthusiastic about the results.

I have not tried any of these drugs, but tried for a time as a routine small doses of calomel daily ($\frac{1}{2}$ gr. t.d.s.) with a small dose of salts every morning. The object of this proceeding was an attempt to eliminate toxins by the bowel, and also to counteract the inevitable constipation associated with a more or less prolonged period in bed.

The disadvantages of this treatment were twofold:—

(1) Occasionally a patient complained of abdominal discomfort; this was so uncommon that it would not have deterred me from continuing its use, as the condition was transient and easily controlled.

(2) Two patients, after treatment with protein shock and calomel by mouth in small doses, developed an acute ulcerative gingivitis, and from the pus around the gums Vincent's organisms were found in large numbers. After stopping the calomel, the condition required somewhat energetic local treatment before it finally cleared up. It seemed probable that these ratings were somewhat

THE "NON-VENEREAL" OR CLIMATIC BUBO

intolerant of mercury (perhaps partly as a result of high febrile reactions from protein shock treatment), and were developing mercurial stomatitis in its earlier stages.

SUBCUTANEOUS MEDICATION

Emetine has been tried by a number of observers subcutaneously. This drug was probably used as the result of Ravaut's observation³⁰ of large amœboid cells seen in the pus from one patient's glands. Ravaut himself apparently treated 3 cases with emetine with excellent results, but he failed to cure a fourth case.

Günther,¹⁴ De Bellard and Uribe³³ and Destenhana and Vaccarezza³⁶ do not appear to have been favourably impressed, as they only mention emetine among a number of other drugs used.

The dosage used is 4 to 10 c. gm. daily (approximately $\frac{1}{2}$ to $1\frac{1}{2}$ gr.) for about ten days to a fortnight.

Vaccine Therapy has been successfully employed by Delbet⁴⁰ in 2 cases. The details of his work have already been given.

Neither emetine nor vaccine treatment was used in any of my patients.

Intravenous Therapy.—From the large number of drugs advised it is evident that a specific for this disease has yet to be discovered.

Intravenous Methylene Blue.—One per cent. solution, 5 to 10 c. gm. daily, was used by Aravjo⁴⁸ in 3 cases; 2 out of 3 refractory cases cured within a month. One of the successful cases had a very severe reaction after one injection.

Intravenous Lugol's Solution was used by De Bellard and Uribe³³ in a number of cases, but later it was abandoned by De Bellard⁴⁹ and surgical extirpation or intravenous stibenyl used instead.

Intravenous stibenyl was recommended, among other drugs, by Günther.¹⁴ Later, De Bellard^{49 50} found intravenous stibenyl was effective in curing early stages of the disease; for later cases he advised excision, followed by a course of stibenyl the day after the operation. He advised giving the drug on alternate days and in increasing doses for the first four doses (5 c. gm., 10 c. gm., 15 c. gm., 20 c. gm.), and then continuing two more maximum doses, and in 1 case,

BRITISH JOURNAL OF VENEREAL DISEASES

after twelve days' treatment the glands disappeared completely.

Intravenous tartar emetic has also been frequently recommended. This and the former antimony preparation were probably first used on the assumption that the disease was parasitic in origin, on the analogy of the "varicose groin glands," which are seen in filariasis. Frei and Hoffmann¹¹ were not very favourably impressed with the results of this line of treatment; Pardo Costello⁴¹ pointed out that tartar emetic solutions should not be sterilised by heat, but advised filtration through a Chamberland filter. De Stephana and Vaccarezza^{36 43} have given an extended trial to this line of treatment; injections were given every three or four days.

1st dose: 5 c.c. of 1 per cent. solution in saline (*i.e.*, about $\frac{3}{4}$ gr.).

2nd dose: 8 c.c. of 1 per cent. solution in saline (*i.e.*, about $1\frac{1}{4}$ gr.).

3rd dose: 10 c.c. of 1 per cent. solution in saline (*i.e.*, about $1\frac{1}{2}$ gr.).

After this, subsequent injections were given twice a week till a cure was effected. The number of injections varied with the stage of the disease—8 injections were sufficient in 46 cases, 15 injections in 19 cases, and 16 to 32 injections in 8 cases.

Protein shock therapy was first used for this disease by Hanschell¹⁰ and has been advised by Manson Bahr¹⁷ and Low and Cooke,⁵ who report successful results with the treatment. Hanschell used intravenous T.A.B. vaccine as a convenient method of producing protein shock and one in which the intensity of the reaction could be readily controlled. He advised giving the injections at three or four day intervals, starting with 100 million, and increasing the doses with successive injections; 2nd dose, 150 million; 3rd dose, 200 million; 4th dose, 300 million.

Low and Cooke, on the other hand, started with 50 million and continued with 100, 200 and 250 million.

After this, as Hanschell states, the fever vanished quickly and the inguinal glands subsided.

In my series, the only form of above-mentioned intravenous therapy used was the protein shock treatment as advised by Hanschell, the T.A.B. vaccine being used; 48 cases were treated, of these, 7 were not followed

THE "NON-VENEREAL" OR CLIMATIC BUBO

through to the termination. Of the remaining 41, 11 cases received a course of T.A.B. (supplemented in three cases by a course of N.A.B. as well). No surgical measures employed. Average number of days in hospital, 34·7.

Eighteen cases subsided after treatment with T.A.B. (supplemented in 6 cases with courses of N.A.B.), aspiration with or without some form of modifying fluid being the only surgical treatment necessary. Average number of days in hospital, 43½.

Twelve cases were T.A.B. failures; in most of these aspiration had proved ineffective and further surgical proceedings (incision or excision of the glands) were necessary. In four of these, courses of N.A.B. had been given. Average number of days in hospital, sixty-four. It is worthy of note that the total period of treatment on an average appears to have been shortened by some ten days even in these failures if compared with a similar series of patients not treated by protein shock.

The duration of the hospital treatment of these patients is perhaps longer than would have been the case in a civilian hospital, as the patients, on discharge, must be fit to carry on with their duty, which in many cases is strenuous work; the first part of their convalescence is, therefore, carried out in hospital.

The two charts show satisfactory results of T.A.B. treatment; the reactions were not severe, but in both cases the fever subsided well after the first injection, which produced a forty-eight hour reaction; subsequent injections produced only twelve to twenty-four hour reactions. In satisfactory cases the course was usually as follows:—

(1) After the first reaction (forty-eight hours) the fever ceased, if it was present before the injection.

(2) After the second injection (twenty-four hours' reaction) the glands which were previously tender became painless to touch.

(3) After the third injection (twenty-four hours' reaction) the size of the glands became greatly reduced.

Size of Dose.—It was found that, as a rule, 50 million T.A.B. was a suitable initial dose. This gave a good reaction and allowed subsequent doses to be made larger without so quickly becoming unwieldy in size. To get suitable reactions later, the doses have to be increased in arithmetical progression (*i.e.*, first dose,

BRITISH JOURNAL OF VENEREAL DISEASES

50 million ; second dose, 100 million ; third dose, 200 million) in order to obtain reactions of the same magnitude. If fourth doses were indicated, I found 300 million was usually sufficient.

In the earlier stages I started with initial doses of 100 million T.A.B., but the reactions were severe ; in several cases the temperature nearly reached 105° , and in one patient it actually reached 106° , though no permanent harm resulted from these brisk reactions, they were unpleasant to the patients, and the results obtained, as far as the glands were concerned, were in no way superior to the results of less heroic treatment.

*N.A.B. Treatment.**—This was at first given in my series to patients in whom the Wassermann reaction was found to be positive, but some patients appeared so much benefited that very soon it was given empirically, irrespective of the Wassermann result, to those patients who failed to give a satisfactory response to T.A.B. protein shock treatment. During the last eight months, however, the empirical use of N.A.B. in these cases was practically discontinued for other reasons, so that these cases act as a measure of control for the earlier cases.

During the first period, 33 patients were treated ; 13 N.A.B. courses given, 8 operations were done, and 15 patients required aspiration, with an average of 2.5 aspirations per patient ; average number of days in hospital per patient, forty-three.

During the second period, 15 patients were treated ; 1 N.A.B. course was given, 8 operations were done, 9 patients needed aspirations, with an average of 4.6 aspirations per patient ; average number of days in hospital per patient, fifty.

In order to make the series comparable as strictly as possible, from the first period 10 other patients were excluded, as 2 were admitted before protein shock treatment was used, and the other 8 were not traced throughout the whole of their illness ; and from the second period 4 patients were omitted, who were not traced throughout the whole of their illness.

It will be seen that during the first period :

(a) Eight out of 33, *i.e.* about 25 per cent., required operations ; this I considered was a sign of the failure of the treatments.

* N.A.B. = Novarsenobillon, a chemically equivalent product to "914."⁵¹

THE "NON-VENEREAL" OR CLIMATIC BUBO

(b) Fifteen out of 33, *i.e.* rather less than 50 per cent., required aspiration, and these had on an average only $2\frac{1}{2}$ aspirations per patient.

(c) Patients forty-three days in hospital on an average. During the second period :

(a) Eight out of 15, *i.e.* rather over 50 per cent., required operations (this includes incisions or excisions of gland masses in both cases).

(b) Nine out of 15, *i.e.* 60 per cent., required aspiration, with an average of 4.6 aspirations per patient.

(c) Patients fifty days in hospital on an average.

I have rather laboured these points, as it does appear to me that the N.A.B. courses had a beneficial effect, though again a larger series is required to establish this.

Four patients, all with positive Wassermann reactions, received N.A.B. treatment alone without protein shock. Average duration of treatment was forty-three days in hospital. Technique of N.A.B. course used consisted of 6 injections, administered intravenously twice a week.

First injection	0.45 gm.
Second and third, and sometimes fourth	0.6 „
Fourth, fifth and sixth	0.9 „

Emetine Therapy.—This was not tried on my series, because I had never read of its use at the time these cases were treated. At the same time, pending establishment of the amoeba theory of the disease, it would appear that this line of treatment has no rational basis, and such good as is obtained from its use might conceivably be the result of protein shock. There is, however, a definite risk in using this drug, especially if there is need to push it, and the following syndrome was noted after patients treated for dysentery and amoebic hepatic abscess :—

(a) Cardiovascular depression (hypopiesis) comes on early, seven to ten days after the course is started ; it is accompanied by a well-marked fall of the blood pressure, especially systolic. In one patient blood pressure was 142 systolic and 80 diastolic before emetine course—fourteen days later the blood pressure was 108 systolic and 80 diastolic, and a few days later still, 97 systolic and 75 diastolic. (This patient suffered from an acute amoebic hepatic abscess.)

(b) Mental depression. This appears somewhat later

BRITISH JOURNAL OF VENEREAL DISEASES

than the cardiovascular depression—about ten days to three weeks as a rule.

(c) A neuritis mainly affecting the shoulder girdle muscles and to a less extent the legs. This is associated with great muscular weakness and wasting of the muscles affected, and in one patient gave rise to the diagnosis of "progressive muscular atrophy of the Aran Duchenne type, starting in the Deltoid muscles." It commences

CHART I.

Name, J. C. G.

Disease, Right Inguinal Adenitis.

about one month to five weeks after the emetine course is started.

For these reasons it is considered that emetine should not be used unless a more definite indication is forthcoming than is at the present the case.

Tartar Emetic Intravenously.—This also was never used in my series for the same reason as emetine. It is another drug that is not without risk, as has been pointed out by Christopherson⁵² in the treatment of bilharziasis in Egypt. He gives the following list of acute toxic symptoms which may be observed:—

- (1) Local blush on face or neck (during the injection).
- (2) Painful dry cough.
- (3) Metallic taste in mouth.

THE "NON-VEREREAL" OR CLIMATIC BUBO

- (4) Constriction of the throat.
- (5) Tightness of the chest.
- (6) Colicky pains in the abdomen.
- (7) Giddiness and headache.
- (8) Vomiting.
- (9) Diarrhœa.
- (10) Rheumatic pains in the muscles.

In 1 case of probable bilharziasis a course of intra-

CHART II.

venous tartar emetic was started, but after the third injection (gr. $1\frac{1}{2}$) there was a very violent reaction for twenty-four hours (*vide* Chart). Three-quarters of an hour after the injection there was a severe rigor, and after this the temperature rose nearly to 105° and pulse to 144. The patient then vomited, had incontinence of urine and fæces (the former lasted for thirty-six hours), complained of a headache and dry throat and giddiness.

It is worthy of note that the tartar emetic was administered in distilled water and not in saline, which perhaps had something to do with the reaction; also the solution was not sterilised, by passing it through a Chamberland's filter, as advised by Pardo Costello.⁴¹

BRITISH JOURNAL OF VENEREAL DISEASES

(10) PROGNOSIS AND COMPLICATIONS

Very little is said on this subject in writings consulted. The disease is very rarely fatal, records of only 1 case that came to autopsy having been discovered.⁴² Müller and Justi,¹⁸ however, state that the disease is progressive without treatment, and does not tend towards recovery. The duration of the disease with treatment is variously described as taking ten days to several months, or even years.

Of complications I have found nothing except a so-

HOURLY CHART. Reaction after $\frac{1}{2}$ injection of gr. $1\frac{1}{2}$ Tartar Emetic.

called secondary attack reported by Kitchevatz.⁵³ A male, aged twenty-six, in August, 1926, suffered from a left inguinal adenopathy with no genital lesion. He was treated by incision and the wound healed in ten months. In August, 1928, he was again under treatment with a double inguinal adenitis and two small lesions on his prepuce. On this occasion he had marked general symptoms. There was no evidence of syphilis and gonorrhœa, and the specific intra-dermal reaction for climatic bubo (non-venereal bubo) was strongly positive, and that for soft sore mildly positive. The author considered that this patient suffered from either a superinfection or a reinfection after being sensitised by his previous attack.

THE "NON-VENEREAL" OR CLIMATIC BUBO

The evidence, however, is not conclusive to read as the intradermal reaction to soft sore was mildly positive, so that the second attack might conceivably have been *ulcus molle* especially; as Frei has pointed out,²² "The skin reaction in climatic bubo is obtained many years after infection."

In my series the duration of the disease seemed to be considerably affected by the treatment employed. The longest period of treatment was one of the earlier cases, 120 days in hospital. This patient suffered with *erysipelas* and *eczema* of the scar during convalescence. The shortest period of treatment was nineteen days. The average length of residence in hospital of fifty-one patients who were under observation throughout their treatment was 46.2 days.

Complications, i.e., concurrent affections. The most important of these in my series were:—

(1) Syphilis or a positive Wassermann reaction present in 14.

(2) Skin affections present in 13.

An analysis of these showed:—

Dhobie itch (*tinea*) . . . 3 cases.

Eczema . . . 2 "

Sudamina (*prickly heat*) . . . 3 "

Boils and pustules . . . 5 "

(3) Vincent's disease of the gums 2 "

Sequelæ or Subsequent Affections.—Three more or less important sequelæ which I have not seen previously noted were the following:—

(1) *Erysipelas* arising from the wound or scar. This was noted in 2 cases, in 1 before the wound of an excision had completely healed; the other case was readmitted to hospital for this condition two and a half months after his wound had healed.

(2) *Ulceration of the Scar.*—This occurred in 3 cases; in all of these almost immediately after the wounds were healed.

(3) *Residual abscesses* occurred in 4 cases about a month after their discharge from hospital. They were small and yielded readily to treatment by local incision or aspiration.

The post-operative sequela of elephantiasis, referred to by Hanschell¹⁰ and De Bellard and Uribe,³³ has already been discussed.

BRITISH JOURNAL OF VENEREAL DISEASES

(II) CASE HISTORIES

CASE NO. I.—AGE 29. EX-LIGHT CRUISER,
HONG KONG

History.—There was a short history of a swelling in the left inguinal region of 24 hours' duration. There was no past history of venereal disease and no primary focus was discernible near the anus, on the legs or external genital organs.

Physical Examination.—Locally, there was a large mass of glands in the left inguinal region, partly adherent both to the skin and deep fascia and with local softening in places.

General Examination.—Temperature 102, pulse 76. Examination of the mouth, throat, chest and abdomen were negative. There was no general adenitis and the liver and spleen were not enlarged. No primary focus was visible, and Wassermann reaction was negative.

Treatment.—The gland mass was excised under general anæsthesia 19/5/26. The wound was cleaned out thoroughly with 1/20 carbolic lotion, and Spirit Vini. Rect., and Rutherford Morrison's bismuth, iodoform, paraffin paste (BIPP) applied, and then the wound sewed up. The mass of glands removed consisted of acutely inflamed glands and others which were undergoing necrosis and suppurating.

Clinical Course.—The constitutional symptoms remained severe for two or three days (temp. 101 to 102), then the wound broke down and septic blood clot and serum were evacuated from the cavity from which the glands were removed.

The wound was then treated with, in turn, iodoform gauze soaked in eusol, 40 per cent. magnes. sulphate gauze, and boric fomentations with a eusol drain.

The temperature subsided about 8/6/26, about three weeks after the operation. Subsequent convalescence protracted, the wound healing slowly.

Complications.—On 22/7/26 an attack of erysipelas set in, starting from the wound in the left groin, which was not quite healed yet. Temp. 102.8, pulse 108. The condition reacted quickly to treatment with 50 per cent. ichthyol in water applied as a paint to the edge and on lint over the inflamed area twice a day. In 48 hours the constitutional symptoms had disappeared and the local condition cleared up shortly afterwards.

THE "NON-VENEREAL" OR CLIMATIC BUBO

The wound finally healed 15/8/26, 87 days after the operation, but the patient was retained in hospital for another month for the treatment of eczema in the region of the scar.

CASE NO. 2.—AGE 27. EX-LIGHT CRUISER,
HONG KONG

History.—This rating was admitted to hospital 20/12/26 with a history of a lump in the right side of the neck of 3 days' duration. He was sent in as a case of lymphatic leucæmia, and there was said to be a differential leucocyte count of 50 per cent. small leucocytes in the blood. There had recently been some herpes or impetigo of the right hip and a boil on the right elbow.

Physical Examination.—On admission, temperature was normal and pulse 80, weight 12 stones 12½ lbs. Patient was a well-developed and athletic man.

Tongue clean, tonsils slightly enlarged and oral mucous membranes healthy.

Chest.—Heart not enlarged. Heart sounds thumping, but no murmurs present.

Lungs.—There was a slight cough, and examination revealed a few crepitations at the left base behind.

Abdomen.—Moved freely and no rigidity or resistance present. Liver and spleen not enlarged.

Blood System.—The right supraclavicular glands were enlarged and matted together and fixed deeply. There were small glands present in the right axilla and left posterior triangle. No enlarged inguinal glands. No obvious anæmia present.

Blood Count.

Red cells.	.	.	.	4,500,000
White cells	.	.	.	13,125
Hæmoglobin	.	.	.	76 per cent.
Colour index	.	.	.	·78

Differential Leucocyte Count.

Polymorphonuclear leucocytes	.	.	.	70 per cent.
Lymphocytes	.	.	.	24·5 "
Mononuclears	.	.	.	3·5 "
Eosinophils	.	.	.	1·5 "
Basophils	.	.	.	0·5 "

BRITISH JOURNAL OF VENEREAL DISEASES

Wassermann reaction, negative, 26/1/27.

Skin.—On the right elbow there was a scar of a recently healed boil, and on the right lower lip the scar of a newly healed herpes or impetigenous lesion.

Urine.—1,020, acid. No sugar, albumin or deposit.

Treatment.—At first symptomatic. Later, protein shock therapy intravenous T.A.B., first injection, 50 million, 30/12/26; second injection, 100 million, 9/1/27.

Clinical Course.—For a few days the condition remained more or less stationary, but 26/12/26 the glands in the right supraclavicular region became more enlarged and the patient complained of pain in the region of the left shoulder. E.T. 100.4, P. 84. The following day there was a small boil on the left side of the nose (E.T. 102, P. 96). On 30/12/26 the first protein shock injection was administered. The reaction was brisk, the temperature reading 104 and remaining up for two days. The glands became smaller, but the left shoulder became worse, and the upper arm could not be raised actively to a right angle from the trunk owing to the pain. The joint itself was not affected and passive movements were free and painless. On January 4th a swelling appeared over the posterior border of left scapula. This swelling was acutely tender and the skin was œdematous over it. It was explored with a needle 5/1/27, but no macroscopical pus was found. Microscopically in the drops of fluid found there were a few pus cells and cocci present, but cultural examination was negative. After treatment with fomentations for a few days the swelling over the left scapula disappeared, and the arm movements became quite free at the shoulder again, and the temperature subsided to normal by 7/1/27. The right supraclavicular glands, however, remained enlarged. On 9/1/27 the second protein shock injection was given. There was again a severe general reaction (T. 104) and also a marked local reaction, and there was redness and œdema over the glands, and a slight irritable cough developed. On 12/1/27 the glands appeared to fluctuate, and they were explored with a needle, but blood only was obtained. After this the glands subsided rapidly. At this time the weight was 12 st. 1 lb., a loss of 11½ lb. in about three weeks.

After this the convalescence was uneventful; the weight by 31/1/27 was 12 st. 10 lb., a gain of 9 lb. in

THE "NON-VEREAL" OR CLIMATIC BUBO

just under three weeks. The glands in both supra-clavicular fossæ were small, but quite palpable.

Blood Count, 29/1/27.

Red cells.	.	.	.	4,700,000
White cells	.	.	.	9,687
Hæmoglobin	.	.	.	75 per cent.
C.I.	.	.	..	79

Differential Count.

Polymorphs	.	.	.	65 per cent.
Lymphocytes	.	.	.	25 "
Large lymphocytes	.	.	.	4 "
Mononuclears	.	.	.	5 "
Eosinophils	.	.	.	1 "

He was discharged to duty 1/2/27 feeling quite well.

Summary.—It would appear in this case that the enlarged glands in the right supraclavicular fossa were due to the combined toxic absorption from the septic foci on the right arm and right lower lip. It is possible that the boil on the left side of the nose and the left scapular region were of the nature of pyæmic abscesses, from the enlarged mass of glands. The whole condition appears to have been affected favourably by protein shock therapy.

CASE NO. 3.—AGE 22. EX-LIGHT CRUISER, HONG KONG

History.—There was a 14 days' history of a swelling of the left inguinal glands, but no primary focus was found on the anus, genitals or limbs. There was no past history of venereal disease, but he had had sexual intercourse with a Chinese woman at the beginning of August, 1926 (about 6 weeks before the glands started to swell).

Physical Examination.—On admission 1/10/26.

Locally.—There was a large mass of glands in the left inguinal region, matted together by periadenitis. The mass was adherent to the skin and there was some softening of the central portion.

General Examination.—T. 99.6, P. 62. Tongue clean, fauces and buccal mucous membrane healthy. Examination of the chest and abdomen were negative. The liver and spleen were not enlarged. The skin was healthy

BRITISH JOURNAL OF VENEREAL DISEASES

except for a slight degree of prickly heat. Wassermann reaction positive 22/10/26.

Treatment.—Bed for 24 days.

Protein Shock Therapy.—Intravenous T.A.B.

1st injection, 100 million, 3/10/26.

2nd injection, 100 million, 10/10/26.

3rd injection, 150 million, 15/10/26.

4th injection, 200 million, 19/10/26.

Local.—Aspiration of pus 7/10/26 and sun baths locally to skin over glands, one hour daily, starting 24/10/26.

A course of N.A.B., 6 injections at 4-day intervals, starting 27/10/26.

Clinical Course.—After the first injection of T.A.B., 3/10/26, two rigors occurred, one at 11.55 a.m. (about 2 hours after the injection) and one at 9 p.m. Temp. 104.5 and 105, respectively, after each, and T. 100 all day the next day, but did not subside after this and was 100.2 on October 9th. Pus was aspirated from the glands 7/10/26, after which the glands subsided somewhat.

After the second injection, which was not increased owing to the severity of the first reaction, a two-day reaction occurred (highest temp. 103.6), after which the temperature subsided to normal. Herpes facialis developed after this.

The third injection, 150 million, also produced a two-day reaction (highest temp. 104.2). The glands were not much affected by this.

The fourth injection, 200 million, produced only a one-day reaction (highest temp. 104). Next day the temperature was normal and the glands were smaller.

As the glands did not subside completely and the W.R. was positive, a course of N.A.B. was started 27/10/26; after the completion of this course the glands subsided completely, and this patient was discharged to duty 15/11/26.

Summary.—This case demonstrates well the use of an N.A.B. course as an adjuvant to treatment.

CASE NO. 4.—AGE 23. EX-LIGHT CRUISER, HONG KONG

History.—There was an 8-day history of swelling of the left inguinal region, and a few days prior to this he

THE "NON-VEREREAL" OR CLIMATIC BUBO

had suffered from blisters of his left foot, which cleared up readily. There was no venereal history.

Physical Examination.—On admission 28/12/26.

Local Examination.—There was a large mass of glands in the left inguinal region; some periadenitis was present, but not much local softening at first. Group of glands affected: transverse subinguinal group (femoral group appeared to be intact).

General Examination.—T. 97·8, P. 88, on admission (later, T. 99). Tongue slightly coated, tonsils enlarged; heart, lungs and abdomen examination revealed no abnormality. There was no general adenitis. *Per rectum* there was some tenderness on the left side of the prostate. No primary focus found on the anus, genital organs or limbs at the time of admission. Wassermann reaction negative on two occasions. Patient uncircumcised.

Blood Examination.—4/2/27 (about 6 weeks later).

Red corpuscles.	.	.	4,300,000
White corpuscles	.	.	7,187
Hæmoglobin	.	.	75 per cent.
Colour index	.	.	0·87

Differential Leucocyte Count.

Polymorphs	.	.	61·5 per cent.
Lymphocytes	.	.	33·5 "
Mononuclears	.	.	4·5 "
Eosinophils	.	.	9·5 "

Treatment.—Rest in bed 23 days at first, and later another 14 days.

Protein Shock Therapy.—T.A.B. intravenously.

1st injection, 27/12/26, 50 million.

2nd injection, 4/1/27, 100 million.

3rd injection, 11/1/27, 150 million.

Locally.—At first, thermogene wool till this became too irritating. Later, boric fomentations, followed by ether, acetone and iodine and dry sterile dressing locally. Ether was used to clean under the patient's foreskin.

Clinical Course.—After the first protein shock injection (50 million T.A.B.) a severe two-day reaction occurred (highest temp. 105, pulse 112), and patient vomited during the following night. After the next two injections the reactions were less severe and the effect on the glands was good, by January 12th the mass being much reduced

BRITISH JOURNAL OF VENEREAL DISEASES

in size. The patient was allowed up January 20th, but by January 28th the left external iliac glands became enlarged and tender; at this period the thermogene wool appeared to be somewhat irritating and was discontinued. Patient was put back to bed, and by February 7th the skin over the glands in the left groin became red and the glands themselves soft and fluctuating and adherent to the skin; nevertheless, with rest and boric fomentations, and later ether, acetone and iodine and a dry sterile dressing, they subsided almost completely and the patient was discharged to duty 28/2/29.

Summary.—This case shows how an initial good result of protein shock was not maintained completely; it also demonstrates how enlarged and apparently suppurating glands will subside without active surgical treatment; enlarged external iliac glands have never needed surgical treatment in this series, as is also exemplified by this case.

CASE No 5.—AGE 23. EX-LIGHT CRUISER, HONG KONG

History.—There was about 14 days' history of enlarged painful glands in the right groin; no obvious primary source of infection, though later on he developed boils. Past history of gonorrhœa in 1925.

Physical Examination.—On admission 11/5/26.

Locally.—There was a large mass of glands in the right inguinal region, with periadenitis and local softening.

General Examination.—T. 102, P. 96. Examination of mouth, throat, chest and abdomen negative. Skin examination showed a number of boils to be present, the worst on the left buttock; these were said to have come on subsequent to the swelling of the glands. Wassermann reaction strongly positive 13/7/26.

Treatment.—Enucleation of glands 13/5/26.

Locally, fomentations later when wound broke down. A course of N.A.B. was administered, starting 16/7/26.

Clinical Course.—After the enucleation of the glands 13/5/26, there was a severe reaction on May 17th—T. 140, P. 88. The wound suppurated freely and new boils formed on the trunk and thighs; after opening of the wound and treating it on antiseptic principles, and after administration of vaccines and S.U.P. (the symmetrical

THE "NON-VEREAL" OR CLIMATIC BUBO

para urea body of McDonagh) the boils were much improved. Subsequently, May 31st, the temp. rose again, and on June 2nd large glands appeared in the right external iliac region; after treatment with fomentations these subsided considerably.

On July 16th a course of N.A.B. was started, on the completion of which the glands had almost completely resolved and he was discharged to duty August 15th, 1926, after 96 days' treatment in hospital.

Summary.—This case shows an unsatisfactory result of surgical treatment.

CASE NO. 6.—AGE 26. EX-RIVER GUNBOAT, WEST RIVER

History.—No definite history can be obtained and this rating cannot be traced. There was no venereal history, but a swelling of some days' duration in the right inguinal region.

Physical Examination.—On admission 2/6/27.

Locally, a large mass of glands was present in the right groin, matted together with periadenitis, slight local tenderness and an area of softening in the centre.

Generally.—T. 100.2, P. 76 (later, T. reached 102°). The tongue was slightly coated and there were some follicles visible on the left tonsil. There was no general adenitis. Examination of chest and abdomen was negative. *Per rectum,* prostate and vesiculæ appeared healthy. Patient not circumcised. Urine contained no albumin, sugar or pus. Cutaneous examination revealed no primary focus of infection on legs, anus or genital organs, but there were recently healed scars of boils in the sacral and coccygeal region, which were possibly the cause of the trouble. Wassermann reaction neg. 22/6/27.

Treatment.—Bed for 34 days.

Locally.—Fomentations and elastic pressure to the glands by means of a sandbag over the top for 14 days and ether and dusting powder to the penis under the foreskin.

Protein shock therapy was started 17/6/27. Intraven.

1st injection, 50 million T.A.B. 17/6/27.

2nd injection, 100 million T.A.B. 21/6/27.

3rd injection, 200 million T.A.B. 25/6/27.

Clinical Course.—With rest and local treatment only,

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BRITISH JOURNAL OF VENEREAL DISEASES

there was but slight subsidence of the glands; glands aspirated with negative results on two occasions.

After the first intravenous injection of T.A.B. there was a two-day reaction (highest temp. 103). After this the patient's temperature fell to normal. After the second injection a more severe reaction occurred (temp. 104). During this reaction there was a severe headache and pains in the limbs; the reaction itself, however, only lasted for 24 hours, and after the temperature had subsided the glands ceased to be tender on pressure; they still remained large, however. After the third injection there was a rigor between 4 and 5 hours later and the temperature rose to 103.4; P. 96. The next day the temperature was normal and the glands had almost completely subsided.

On July 6th the patient was allowed up out of bed, but the first few days after this the glands swelled up again slightly and the skin over them became inflamed and red. The foreskin treatment with ether was continued, and ether, acetone and a dry sterile dressing were applied to the groin; after this the glands subsided rapidly again without breaking down and the patient was discharged to duty 13/7/27.

Records of this patient's weight were interesting. On admission he weighed 10 st. 1 lb. On 23/6/27 he weighed 9 st. 9½ lb. after 2 injections. On 7/7/27 he weighed 10 st. 4 lb.

Summary.—This patient exhibits two interesting points. In the first place, he shows that a certain robustness of general constitution is required for successful protein shock treatment, as a considerable strain on the patient's resources is demanded; that this is so, is indicated by the loss of weight which occurred during the treatment. In the second place, he demonstrated clearly the favourable course of protein shock treatment.

CASE NO. 7.—AGE 24. EX-SLOOP, HONG KONG

History.—There was a history of a swelling in the left groin of 24 hours' duration. No venereal history or signs were found.

Physical Examination.—On admission 16/7/27.

Locally.—There was a small tender right pubic sub-inguinal gland.

THE "NON-VENEREAL" OR CLIMATIC BUBO

General Examination.—Nothing noteworthy was found in his mouth, chest, or abdomen. There was some prickly heat, more or less generalised, and a degree of balanitis (patient not circumcised). The Wassermann reaction was negative. Leucocyte count 14,175, with 70 per cent. of polymorphonuclear leucocytes.

Treatment.—First, local treatment to the groin was attempted; elastic pressure and ether, acetone and iodine, with calamine lotion for the prickly heat and ether for cleansing the foreskin.

Later, protein shock therapy with three intravenous injections of T.A.B. at four-day intervals from 26/7/27. As the glands were not affected by this, excision of the whole mass was carried out 9/8/27.

Clinical Course.—As the temperature and glands were apparently little affected by the protein shock treatment, excision of the gland mass, with block dissection of all the glands from the deep fascia superficially, was carried out. The wound was cleansed with iodine and sewn up completely with a series of deep mattress sutures and drained by a separate stab incision below the wound. These mattress sutures were only left in 48 hours, which was insufficient time considering the size of the cavity, and on their removal the wound broke down throughout its whole length. After this progress was slow and the wound granulated up slowly, aided by treatment with sunlight for two hours, alternate days, and boracic fomentations over a Dakin's solution dressing. By the end of September, 1927, the wound had healed with a jagged scar and he was discharged to duty October 10th, 1927, after a total of 86 days in hospital.

Summary.—This case showed glands that were resistant to protein shock treatment, also he demonstrated the necessity for keeping in deep sutures for a considerable period after the operation of excision is carried out in order to maintain apposition of the walls of the cavity from which the glands were removed.

CASE NO. 8.—AGE 28. EX-SUBMARINE DEPÔT SHIP, HONG KONG

History.—There was a past history of consistent, frequent attacks of tonsillitis, chiefly on the right side, and a number of boils on the right shoulder and neck. On

BRITISH JOURNAL OF VENEREAL DISEASES

September 13th, 1927, a right supraclavicular adenitis developed.

Physical Examination.—On admission 18/9/27.

Locally.—There was a large mass of glands in the right supraclavicular fossa, adherent to the skin in one place and fixed to deep structures. There was no redness but considerable periadenitis, the glands apparently merging into one another. The neck movement was limited. There was a large gland in the right axilla, none on the left side or in either groin.

General Examination.—Temp. 100·2, P. 88. Patient was a strong, well-developed athletic man. The throat appeared healthy and the tongue was slightly coated. Heart, lungs and abdomen appeared healthy. He could not sleep well at night, owing to the discomfort caused by the glands. There were scars of boils on the head, neck and shoulders, chiefly on the right side. Leucocyte count, 12,500, with 75 per cent. polymorphonuclear leucocytes.

Treatment.—Bed for 14 days. Protein shock therapy. Intravenous T.A.B. at five-day intervals from September 20th.

Clinical Course.—After the first protein shock injection (50 million) there was a brisk reaction and temperature reached 104, P. 96, but it gradually subsided during the next four days and glands became smaller. After the second injection (100 million) there was a less severe reaction (T. 102, P. 100), and the temperature was normal the next day and the glands subsided still further. After the third injection the glands disappeared completely and the temperature remained normal. After October 2nd the patient was allowed to get up gradually, and convalescence proceeded slowly with the exception of an attack of right-sided tonsillitis, which subsided readily under treatment and did not cause a recrudescence of the gland swellings. He was discharged to duty 20/10/27.

Summary.—This demonstrates an excellent result of protein shock therapy in a case of adenitis of the right supraclavicular region in which the portal of entry of the infection was presumably the right tonsil, aided probably by a lowering of the resistance of the local glandular tissue by the toxic absorption from the large number of boils in the vicinity.

THE "NON-VEREAL" OR CLIMATIC BUBO

CASE No. 9.—AGE 23. EX-SUBMARINE DEPÔT
SHIP, HONG KONG

History.—There was a past history of eczema of the toes of both feet and a strain on lifting an oil drum 3 months before the glands appeared, which is unlikely to have any bearing on the case. There was a 13-day history of enlarged glands in the right side of the groin. Unfortunately, I have been unable to trace this rating for a detailed history, especially as regards venereal disease and exposure, but there was no obvious or recent history of gonorrhœa.

Physical Examination.—On admission 12/11/27.

Locally.—There was a large tender mass of glands in the right groin; the skin over them was not red, but periadenitis and local softening were present.

General Examination.—Temperature 99.4, pulse 108. Nothing abnormal was found in the mouth, heart, lungs or abdomen, and no obvious primary focus could be seen. *Per rectum*, the left side of the prostate was slightly enlarged and tender. Wassermann reaction negative.

Treatment.—Bed for 18 days. Calomel $\frac{1}{2}$ grain t.d. for 11 days.

Locally.—Fomentations to the glands with elastic pressure from a sandbag over the top and local aspiration of pus 23/11/27.

Protein Shock Therapy.—Intravenous T.A.B. carried out November 17th, 21st and 26th, with good reactions.

Clinical Course.—After the first T.A.B. injection there was a two-day reaction (T. 103.6, P. 100), and then the fever disappeared. After the second injection (100 million) there was a smart reaction (T. 104.6, P. 108); the gland tenderness disappeared, but the patient complained of sore gums. The calomel was therefore stopped and a carbolic mouth wash given. After the third injection (200 million), T. 102.6, P. 126, the reaction lasted only one day and the glands almost disappeared, but the gums were still sore. Three days later (November 29th) there were ulcers present in the cheeks on both sides, and a swab of these ulcers showed Vincent's organisms in large numbers. This condition was treated with a mouth wash containing H₂O₂, glycerine, Vini. Ipecac. and arsenic t.d. with excellent results. The glands remained small and

BRITISH JOURNAL OF VENEREAL DISEASES

patient was allowed to get up at the end of November, and returned to duty 17/12/27.

Summary.—This case demonstrates another good result of T.A.B. protein shock treatment. It also shows the danger of mercurial stomatitis arising from the continual use of small doses of calomel in a susceptible person. Possibly, protein shock treatment was a contributing factor to this. It would also appear, if this can be considered a case of early mercurial stomatitis, that Vincent's organisms may be infecting organisms in mercurial stomatitis.

CASE NO. 10.—AGE 25. EX-DESTROYER, HONG KONG

History.—There was a history of the swelling of the glands of the left groin for 11 days before admission to hospital, and three weeks before the glands swelled there was a history of sexual intercourse with a Chinese woman. No history of venereal disease.

Physical Examination.—On admission 19/11/27.

Locally.—There was a large mass of glands in the left groin, with considerable periadenitis and local softening.

General Examination.—T. 99·2, P. 72. Tongue slightly coated; heart, lungs and abdomen negative except for enlargement of the left external iliac glands. There were also some small glands in the right axilla. Wassermann reaction weakly positive 9/12/27 and negative 4/1/28. Patient was not circumcised.

Treatment.—Bed about 5 weeks.

Locally.—Aspiration of a few minims of pus and blood 20/11/27.

Protein Shock Therapy.—Intravenous T.A.B.

1st injection 21/11/27, 50 million. Reaction, T. 104, P. 84.

2nd injection 26/11/27, 100 million. Reaction, T. 103, P. 74.

3rd injection 11/12/27, 200 million. Reaction, T. 103·6, P. 84.

4th injection 6/12/27, 300 million. Reaction, T. 103·8, P. 88.

Course of N.A.B. started 15/12/27.

Clinical Course.—After the first injection of T.A.B. the temperature subsided in 3 days to normal, but after

THE "NON-VEREAL" OR CLIMATIC BUBO

4 injections there was still some left inguinal adenitis, and left external iliac glands were still enlarged. In view of this and the weakly positive reaction of Wassermann test, a course of N.A.B. was commenced 15/12/27. After this the glands subsided completely and patient was discharged to duty 5/1/28.

Sequela.—He returned to hospital 30/1/28 with a small suppurating gland in the left groin. This was very local, and was opened under ethyl chloride (local application) and pus evacuated 31/1/28.

Subsequent History.—7/6/28 there was a chancroid and a venereal bubo which occurred 11 days after sexual intercourse, and for which he remained two months on the sick list. On December 5th, 1928, W.R. was negative. December 20th, 1928, he developed gonorrhœa 9 days after sexual intercourse. After this there was no further trouble and his general health was good in February, 1930.

Summary.—This again demonstrates the usefulness of a course of N.A.B. in conjunction with but after a course of T.A.B. ; it also shows the difference in incubation period between a bubo of venereal origin and a climatic bubo in the same patient.

CASE NO. II.—AGE 25. EX-AIRCRAFT CARRIER, HONG KONG

History.—This rating was exposed to infection with a Chinese woman at the beginning of December, 1927. He reported sick 4/1/28 with enlarged glands in the left groin, for which no primary cause could be found. There was no venereal history. Glands incised in the ship before admission to hospital.

Physical Examination.—On admission to hospital 8/2/28.

Locally.—There was a large mass of glands protruding through a healthy granulating wound in the left groin.

General Examination.—T. 99.6, P. 80. Right tonsil was enlarged, otherwise nothing abnormal was found in chest, abdomen or elsewhere. Wassermann reaction negative 1/3/28.

Treatment.—Rest in bed. Calomel, gr. $\frac{1}{2}$ t.d. Operation 12/2/28 and enucleation of the glands performed. The wound was left open and packed with iodoform

BRITISH JOURNAL OF VENEREAL DISEASES

gauze soaked in Dakin's solution. The skin was well pared down.

Clinical Progress.—The wound granulated up moderately quickly, and this patient was discharged to duty 13/3/28 after 33 days in hospital; examination of this patient 2/3/30 showed him to be in excellent health, no glands were visible and the wound healed with a healthy scar. There has been no venereal history either before or since this illness, and the patient is a healthy, athletic individual.

Summary.—This case is detailed to show that the disease has occurred in my series completely apart from other venereal disease either before or after the occurrence of the bubo.

CASE NO. 12.—AGE 35. EX-AIRCRAFT CARRIER, HONG KONG

History.—This patient was admitted with a history of enlarged glands in the left groin of 10 days' duration. There was no venereal history, but he was exposed to infection with a Chinese woman 25/12/27.

Physical Examination.—On admission 8/2/28.

Locally.—There was a mass of confluent glands in the left groin, with well-marked periadenitis and the skin slightly involved over the glands. There was a septic sore covered with a white slough below and external to the glands. This was due to a burn caused by a fomentation and treated with carbolic.

General Examination.—T. 100.2, P. 84. Mouth, throat, heart and lungs negative. *Per rectum* nothing abnormal felt. On the penis there was a lesion like a small herpes under the foreskin and slight balanitis. Wassermann reaction negative. External iliac glands felt on the left side 17/2/27.

Treatment.—Bed for 24 days.

Locally.—Foreskin cleansed with ether; the herpetic lesion healed rapidly. Glands in the groin treated with fomentations.

Protein Shock Therapy.—Four injections T.A.B.

1st, 13/2/28, 50 million (subcutaneous accidentally). Reaction, T. 101.4, P. 90.

2nd, 17/2/28, 50 million (intravenous). Reaction, T. 103.4, P. 112.

THE "NON-VEREAL" OR CLIMATIC BUBO

3rd, 24/2/28, 100 million (intravenous). Reaction, T. 102.4, P. 116.

4th, 1/3/28, 200 million (intravenous). Reaction, T. 103.6, P. 130.

N.A.B. course of four injections, starting 3/3/28.

Clinical Course.—As a result of treatment the temperature subsided 3 days after the 2nd T.A.B. injection (1st intravenous inj.). After the 3rd injection the glands became a little smaller but did not subside completely. The balanitis was treated by keeping foreskin clean with ether, and later a course of four injections of N.A.B. was given with good results. He was discharged to his ship, which was leaving the station, much improved 19/3/28.

Sequela.—About 14 days after his discharge a gland in the left groin broke down and was incised, leaving a sinus which persisted till his arrival in England about a month later. Since this time he has been in good health, and 3/3/30 there were almost no inguinal glands palpable though slightly enlarged and tender left external iliac glands still remain. Wassermann reaction consistently negative.

Summary.—This case was seen with a transient herpetic lesion on his penis; there has never been a suspicion of other venereal disease before or after his climatic bubo. It shows a not very satisfactory result to T.A.B. treatment.

CASE NO. 13.—AGE 25. EX-H.M. GUNBOAT, HONG KONG

History.—This rating was admitted with a history of a bubo in the left groin, starting 25/1/28 (one month before admission) following a strain. Later on a history of sexual intercourse with a Chinese woman, prior to the appearance of the glands, was elicited. No venereal history.

Physical Examination.—On admission 25/2/28.

Locally.—There was a small tender mass of glands in the left inguinal region, skin not involved; no external iliac glands.

General Examination.—T. 98.2, P. 72; subsequently some pyrexia. Heart, lungs and abdomen negative; there was an ulcer on the right of the frænum (patient uncircumcised) resulting from an attempt at the removal

BRITISH JOURNAL OF VENEREAL DISEASES

of a wart with Argenti Nitras ; this was possibly subsequent to the glandular enlargement. *Per rectum*, prostate not enlarged, but left seminal vesicle enlarged, tender and hard. W.R. negative 1/3/28.

Treatment.—Rest in bed 16 days. Ether and iodoform to ulcer near frænum, which healed quickly. Sandbag and thermogene locally to glands.

Protein Shock Therapy.—Three injections with good reactions.

Clinical Course.—After the first injection the slight, irregular fever disappeared ; after the second the tenderness of the glands went ; after the third injection the glands subsided markedly. Patient was allowed up gradually March 13th, and after removing the wart with nitric acid patient was discharged to duty 20/3/28 with no adenitis.

Subsequent History.—Gonorrhœa and urethritis four times from May to September, 1928. Syphilis and bubo November, 1928 ; gonorrhœa 1930 ; otherwise this patient was in good health in 1930.

Summary.—This shows another good result for protein shock therapy in an apparently typical case of climatic bubo.

CASE NO. 14.—AGE 19. EX-SUBMARINE DEPÔT SHIP, HONG KONG

History.—A swelling first appeared in the left groin 4/3/28, and a week later it became painful. There was no venereal history and no obvious primary focus, but a history was elicited of connection with a Chinese woman one month before the bubo first appeared.

Physical Examination.—On admission 15/3/28.

Locally.—There was a small mass of confluent glands in the left inguinal region. These glands were tender on manipulation.

General Examination.—T. 100, P. 76. Tonsils slightly enlarged. Chest and abdomen negative on examination. Both external iliac glands enlarged and palpable ; there was no general adenitis. *Per rectum*, left seminal vesicle enlarged but not tender (after protein shock treatment it became tender). There was a patch of eczema on the right leg. Urine : S. gravity 1024, acid ; no sugar present, but a trace of albumin was present, and micro-

THE "NON-VENEREAL" OR CLIMATIC BUBO.

scopical examination showed a few pus and epithelial cells. Leucocyte count, 13,750.

Differential Count.

Polymorphs .	70 per cent.	On March 26th, nearly a
Lymphocytes	20 „	fortnight later, total leu-
Mononuclears	6 „	cocyte count and poly-
Eosinophils .	2 „	morph. percentage both
Basophils .	1 „	lower.

Treatment.—Bed, low diet ; calomel, gr. $\frac{1}{2}$ t.d. ; mag. sulph., 2 drs. o.m.

Locally.—Thermogene wool and elastic pressure by means of sandbags.

Intravenous T.A.B. for protein shock, 2 injections—1st, 19/3/28 ; 2nd, 24/3/28.

Clinical Course.—Reactions were brisk (T. 104.8) after each injection, 2nd reaction lasted only 24 hours, and temperature was normal after it, and the glands subsided considerably and became less tender. The examination of the leucocytes before and after the injections showed a definite reduction, both of the total count and polymorph. percentage after the injections, and the left seminal vesicle, which before the injections was large and painless, after the injections became slightly but definitely tender. The patient was discharged to his ship 27/3/28, before the completion of his treatment, as it was sailing for England.

Subsequent History.—This patient was well for the rest of the year, but developed a chancroid in April, 1929. He had syphilis in June, 1929, and in March, 1930, he was again in hospital with cerebral syphilis ; Wassermann reaction strongly positive.

Summary.—This patient showed no primary lesion for his enlarged left inguinal glands, but there appears to have been some infection of his deep urethra which gave rise to a double external iliac adenitis, as well as some degree of infection of his left seminal vesicle. The whole condition appears to have been favourably affected by protein shock therapy.

CASE NO. 15.—AGE 26. EX-SUBMARINE DEPÔT SHIP, HONG KONG

History.—There was a ten-day history of swelling of the left groin, with no venereal history and no obvious primary lesion.

BRITISH JOURNAL OF VENEREAL DISEASES

Physical Examination.—On admission 15/3/28.

Locally.—There was a large mass of confluent glands in the left groin, very tender and attached to the skin. No fluctuation was present.

General Examination.—T. 100, P. 84. Gen. exam. was negative except for the glands being present in the left iliac fossa (left external iliac glands), and on rectal examination the left seminal vesicle was large but not tender, after protein shock therapy, slight tenderness developed in this region. Urine, S.G. 1014; reaction acid; no albumin, sugar or deposit.

Treatment.—Bed and light diet.

Local.—Aspiration of pus 23/3/28; antiseptic dressing applied.

Protein Shock Therapy.—Two injections of T.A.B. intravenously.

Clinical Progress.—The glands became smaller after the protein shock treatment and the temperature subsided, when the patient was prematurely discharged owing to his ship leaving the Colony. There were signs of breaking down of the glands, the skin being red and pus being aspirated the day before the patient's discharge.

Summary.—This patient is recorded as he demonstrates a moderately common syndrome found in cases of climatic bubo, viz., left inguinal adenitis; left external iliac adenitis; left seminal vesicle enlargement.

CASE NO. 16.—AGE 30. EX-SUBMARINE DEPÔT SHIP

History.—There was a past history of a number of boils over the body and a blow on the left shin 3/2/28. The glands became enlarged first 17/2/28, three days before admission to hospital. There was no venereal history and no obvious primary cause.

Physical Examination.—On admission 20/2/28.

Locally.—There was an enlarged mass of femoral and inguinal glands in the left groin. The skin over the glands was red.

General Examination.—T. 101 to 103, P. 80 to 96. Tongue coated, throat healthy. There was some bronchitis in his chest, and on abdominal examination the left external iliac glands were found to be enlarged. *Per*

THE "NON-VEREAL" OR CLIMATIC BUBO

rectum, there was swelling near the left seminal vesicle. Wassermann reaction positive 1/3/28.

Treatment.—Bed 16 days. Calomel, $\frac{1}{2}$ gr. t.d.; Mag. Sulph., 3 dr. o.m.

Locally.—Thermogene wool to the left groin with elastic pressure over it by means of a sandbag.

Protein Shock Therapy.—Three injections given 23/2/28 after waiting two or three days to treat the bronchitis. There were good reactions.

Clinical Course.—The fever was rapidly reduced by the first injection and the glands subsided rapidly. The patient was allowed up 8/3/28, a course of N.A.B., advised on account of the Wassermann reaction, being refused. He was about to be discharged to duty 19/3/28, when a boil appeared on his left knee, which delayed his departure a few days and necessitated further treatment. In spite of this the glands in the left groin remained small throughout.

Summary.—This patient is recorded because again the same syndrome was present as was noticed in Case 15. Left inguinal glands, left external iliac glands and left seminal vesicle swelling. The glands reacted well to protein shock.

CASE NO. 17.—AGE 26. EX-GUNBOAT, HONG KONG

History.—There was a history of a swelling in the left groin, starting 13/2/28; no primary focus was found and no history of venereal disease obtained. This rating cannot be traced for further particulars, unfortunately.

Physical Examination.—On admission 7/3/28.

Locally.—There was a red, tender, fluctuating swelling in the left groin. The skin over it was slightly oedematous.

General Examination.—T. N., P. 68. The heart, lungs and abdomen appeared healthy. *The penis was circumcised* and looked healthy. There was a slight general adenitis in both posterior triangles, both axillæ, right epitrochlear and right groin. There were a few small pustules on both buttocks, and on rectal examination the left seminal vesicle appeared enlarged.

Treatment.—Rest in bed 19 days.

Local.—Aspiration of the pus 3 drams, 7/3/28, and smaller amounts on March 9th, 14th and 18th.

BRITISH JOURNAL OF VENEREAL DISEASES

Protein Shock Therapy.—Three injections given with good reactions.

Clinical Course.—The glands subsided quickly and completely after protein shock therapy and 4 aspirations, and this rating was discharged to duty 5/4/28.

Summary.—This case is recorded as being a possible case of climatic bubo in a circumcised man, who was treated successfully by protein shock and aspiration. It is not considered that the pustules were sufficient to account for the inguinal adenitis.

CASE NO. 18.—AGE 22. EX-GUNBOAT, HONG KONG

History.—This was a two days' history of enlarged glands in the left groin; prior to these glands developing, this rating had had sexual connection with a Chinese woman. There was no obvious primary focus and no venereal history.

Physical Examination.—On admission 12/3/28.

Locally.—There was a large mass of confluent glands in the left groin.

General Examination was negative except for some enlargement of the left external iliac glands, and slight tenderness in the region of the left seminal vesicle on rectal examination. Wassermann reaction negative 3/4/28.

Treatment.—Bed and low diet for 28 days.

Locally.—Aspiration and needling of the glands (no pus found) and thick fomentations.

Intravenous T.A.B. vaccine for protein shock (3 injections), a course of N.A.B. following on the T.A.B. course.

Clinical Course.—The glands were resistant to treatment and but little affected by either the T.A.B. or N.A.B. courses. On discharge to duty 25/5/28 there was still a palpable mass in the left groin.

Subsequent Course.—Patient suffered from chancroids 4/9/28, and gonorrhœa 14/6/29, and chancroids again 18/10/29. Wassermann reaction positive from 9/8/29 to 10/2/30. There has apparently been no recurrence of the bubo up to date.

Summary.—The same syndrome as Case 15 is again apparent in a patient who showed a great resistance to all forms of treatment employed.

THE "NON-VENEREAL" OR CLIMATIC BUBO

CASE NO. 19.—AGE 23. EX-DESTROYER,
HONG KONG

History.—There was a history of ringworm or prickly heat since June, 1927, of varying intensity. On admission this rating had enlarged left inguinal glands of one week's duration. No venereal history obtained.

Clinical Examination.—On admission 4/4/28.

Locally.—There was a mass of large left inguinal glands.

General Examination revealed eczema of both buttocks and patches of tinea circinata over the trunk and thighs. The left external iliac glands were enlarged, and on rectal examination there was a large left seminal vesicle. Wassermann reaction positive 1/4/28.

Treatment.—Bed and low diet. Protein shock course, T.A.B. three injections intravenously. Operation. An enlarged gland was enucleated and the wound allowed to heal by granulation. A course of N.A.B. was then given.

Clinical Course.—This case was resistant to protein shock treatment, but after enucleation of the largest gland mass the remaining glands subsided rapidly during a course of N.A.B. The tinea condition disappeared on treatment with Ung. Chrysarobin half strength b.d. for a few days, but the eczema condition remained more or less stationary, and on June 9th, 1928, he was discharged to Wei-hai-Wei for convalescence.

Summary.—This was another T.A.B. resistant case, showing the syndrome of Case 15. It is unfortunate that this patient also cannot be traced in order to get further details of his history.

CASE NO. 20.—AGE 28. EX-DESTROYER,
HONG KONG

History.—There was a 14 days' history of a swelling in the right groin, with no obvious primary focus and no venereal history.

Physical Examination.—On admission 25/5/28.

Locally.—There was a large mass of glands in the right groin.

General Examination.—There was slight bronchitis, and on

Rectal Examination slight tenderness of both seminal

BRITISH JOURNAL OF VENEREAL DISEASES.

vesicles, mostly so on the right side. The urine contained a trace of albumin and some pus and epithelial cells in the deposit. *Wassermann reaction positive.*

Treatment.—Thirty-six days in bed. Protein shock therapy, a course of 3 injections. Enucleation of the glands 12/6/28. A course of N.A.B. later.

Clinical Progress.—After protein shock therapy the glands subsided at first, but they soon swelled up again and broke down. On 12/6/28 enucleation performed under general anæsthesia. The mass was dissected off the deep fascia and a clean sweep made of all the inguinal glands. The cavity was disinfected with ether and iodine and sewn up completely with deep mattress sutures and continuous silk suture to approximate the skin edges, a drain being placed in through a separate hole below the incision. The deep mattress sutures were removed on the 3rd, 4th and 5th days respectively, and the continuous silk suture on the tenth day, and the wound healed by first intention, though there was a considerable amount of discharge from the hole below the wound for about 3 weeks. On July 1st the patient was allowed to get up, and he was discharged to duty 7/7/28 after 43 days in hospital.

Summary.—Another case of T.A.B. resistant bubo is described, and a method of enucleation is demonstrated in which a chance of healing of the skin wound by first intention is offered. In this case again the seminal vesicle on the side of which the inguinal glands were affected (the right) appears to have been more affected than its fellow of the opposite side.

CASE NO. 21.—AGE 19. EX-SLOOP, HONG KONG

History.—A swelling of the left groin had been noticed for 16 days, mainly at night. No obvious primary focus seen and no venereal history obtained.

Physical Examination.—On admission 23/6/28.

Locally.—There was a mass of discrete glands in the left inguinal region. No tenderness noted.

General Examination.—T. 99.2, P. 72. Tongue slightly coated; tonsils enlarged; heart, lungs and abdomen appeared healthy. There was a slight adenitis of the right groin; no general adenitis. There were a number of sudamina on the buttocks, mostly on the right side.

THE "NON-VEREAL" OR CLIMATIC BUBO

Per rectum, the left lobe of the prostate was large and tender and the right lobe smaller and slightly tender. W.R. negative.

Treatment.—Bed for 29 days. Light diet.

Locally.—Thermogene wool and elastic pressure. Protein shock therapy, July 3rd to 19th (3 injections).

Clinical Course.—After protein shock therapy the glands subsided rapidly to the same size as those on the right side. On rectal examination the tenderness and swelling of the left side of the prostate disappeared. The patient was discharged to duty 30/7/28.

Summary.—A case of left inguinal bubo is described which reacted well to protein shock therapy, and at the same time as the glands subsided the left lobe of the prostate appeared to return to its normal size and condition.

CASE NO. 22.—AGE 33. EX-DESTROYER, HONG KONG

History.—There was a lump in the right groin of 7 days' duration ; no obvious cause, no venereal history, and no history of sexual intercourse with Chinese or other coloured women.

Physical Examination.—On admission 1/6/28.

Locally.—There was a large mass of tender glands in the right inguinal region.

General Examination.—T. 100.2, P. 84. Heart, lungs and abdomen negative. There were a number of small external iliac glands felt on the right side, and the rectal examination revealed that both vesicles and the prostate were tender, more so on the right side than on the left side. Urine acid ; no albumin or acetone found. Smear from prostatic massage fluid showed the presence of a few pus cells. This patient was not circumcised.

Treatment.—Bed 18 days.

Local Treatment.—Thermogene wool and elastic pressure. Aspiration of pus from glands carried out 26/6/28 and 1/7/28. On the first occasion cavity washed out with ether and iodine, and on the second with 1 c.c. of ether, camphor and thymol mixture.

Protein shock therapy, intravenous T.A.B., 3 injections.

1st injection, 6/6/28, 50 million. Reaction, T. 104, P. 96.

BRITISH JOURNAL OF VENEREAL DISEASES

2nd injection, 11/6/28, 100 million. Reaction, T. 106, P. 120.

3rd injection, 16/6/28, 150 million. Reaction, T. 103.6, P. 98.

Course of N.A.B. started 29/6/28; 4 injections only given.

Clinical Course.—After the first 2 injections of protein shock therapy the glands became smaller, and after the 3rd they became soft, and aspiration and washing out the cavity with modifying fluids carried out on two occasions. A course of N.A.B. was then started June 29th, and the glands started to subside. Unfortunately, some of the 4th injection was given subcutaneously with marked local and general reaction. The course was then suspended, but the glands continued to subside. Then they reappeared slightly August 7th, on the day of return to duty. Rectal examination done on that day showed that the left lobe of the prostate was bigger than the right; all tenderness had, however, disappeared.

Summary.—A case of a bubo which reacted moderately well to a combination of protein shock and N.A.B. treatment. This case shows the syndrome of Case 15, only in this case the right side instead of the left was affected.

CASE NO. 23.—AGE 29. EX-PATROL BOAT, WEST RIVER

History.—There was a swelling in the right groin of one week's duration, and of a few days' duration in the left groin. No obvious primary focus of infection found and no history of venereal disease obtained.

Physical Examination.—On admission 14/8/25.

Locally.—There were enlarged glands in both groins, these were confluent on the left side, and the left external iliac glands were palpable.

General Examination was negative, except slight bronchitis and for the enlargement of the left external iliac glands. *Per rectum*, prostate large on both sides, but not tender. There was a slight general adenitis of the glands near both angles of jaw (chiefly left), both axillæ (chiefly right), and right epitrochlear gland. There were no skin lesions.

Treatment.—Bed and low diet 16 days and calomel. gr. $\frac{1}{2}$ t.d.

THE "NON-VEREAL" OR CLIMATIC BUBO

Locally.—Thermogene wool and elastic pressure. Protein shock therapy, 3 injections of intravenous T.A.B.

Clinical Course.—After the protein shock therapy the glands gradually subsided, the glands of the left side becoming discrete. After the glands had appeared confluent, this was found to be one of the earliest signs of resolution. He was discharged to duty 7/9/28.

Summary.—A case of double inguinal bubo reacting well to protein shock therapy.

CASE NO. 24.—AGE 31. EX-SLOOP, HONG KONG

History.—This patient gave a history of a contusion of his back a few days before a bilateral inguinal adenitis appeared. He had also had eczema of his feet for a considerable time. There was a past history of gonorrhœa in 1918, 1922 and 1926 and syphilis in 1916 and (?) 1927. There was no history of recent sexual intercourse with a coloured woman.

Physical Examination.—On admission to hospital 5/9/28.

Locally.—There was a suppurating bilateral inguinal adenitis.

General Examination.—Negative, except for slight eczema of the toes. This patient *was circumcised*. His prostate was slightly enlarged on the left side, but not tender on rectal examination. Wassermann reaction negative 1/10/28.

Treatment.—Rest in bed for 21 days.

Locally.—Eusol and iodoform gauze after free incisions of both groins on 11/9/28 and 20/9/28, right and left side respectively.

Clinical Course.—After incisions there was moderate progress for the next few days. The patient was allowed up on 26/9/28, in order to aid drainage from the wounds. The left side, which had the biggest incision, healed by 27/10/28, but broke down again, and a hair follicle surrounded by inspissated white secretion was removed. After this convalescence was rapid, and he was discharged to duty 10/11/28. Time in hospital, 66 days.

Summary.—This case illustrated a bilateral inguinal adenitis, in which previous venereal disease may have played a part in the ætiology. This patient also was a circumcised man.

BRITISH JOURNAL OF VENEREAL DISEASES

CASE No. 25.—AGE 40. EX-AIRCRAFT CARRIER,
HONG KONG

History.—There was a past history of gonorrhœa in 1913 and a twenty days' history of a left inguinal adenitis, treated in the ship with three injections of intravenous T.A.B. (protein shock therapy). No recent venereal infection.

Clinical Examination.—On admission 24/11/28.

Locally.—There was a large mass of glands in the left inguinal region with periadenitis and confluent glands. There was no local softening.

General Examination.—T. 99 to 100. Heart, lungs and abdomen negative, except that the left external iliac glands were enlarged. *Per rectum* there was tenderness near the left seminal vesicle. Wassermann reaction negative 23/11/28. Leucocyte count, 13,750 per cu. mm. ; 72 per cent. polymorphs. 1/11/28.

Treatment.—Rest in bed for three weeks.

Local Treatment.—Only thick boric fomentations every four hours, and needling with an exploring syringe into the gland masses ; no pus was obtained.

Clinical Case.—After three weeks of the above treatment the glands started to break up into separate groups owing to the disappearance of the periadenitis, and his convalescence was so far advanced that he was discharged to duty 27/12/28 after 33 days in hospital.

Summary.—This was another case of the same syndrome as Case 15, which was somewhat resistant to protein shock therapy.

CASE No 26.—AGE 21. EX-LIGHT CRUISER,
HONG KONG

History.—This rating had a history of sexual intercourse with a Chinese woman 14 days before the glands started to swell in the right groin. There was no sore or penile lesion and no evidence of venereal disease.

Physical Examination.—On admission 14/1/29.

Locally.—There was a mass of glands in the right inguinal region, attached to the skin and deep fascia ; the mass was slightly tender on palpation, but the skin was not red or œdematous.

General Examination.—There was a slight fever ; T. 100,

THE "NON-VENEREAL" OR CLIMATIC BUBO

P. 80 (see Chart 1, illustrating protein shock therapy). Tongue dry and coated. Throat red. Chest and abdomen appeared healthy, and there were no cutaneous or mucous membrane lesions and no general adenitis.

On rectal examination, right seminal vesicle was enlarged and tender.

Treatment.—Rest in bed 14 days on a low diet. Protein shock therapy, 3 injections of intravenous T.A.B. vaccine were given on January 17th, 22nd and 25th respectively, with moderate reactions.

Locally.—Aspiration and removal of pus 16/1/29.

Clinical Progress.—The temperature subsided after the first T.A.B. injection and the glands subsided considerably after the third. He was left in bed 14 days and discharged to duty 2/2/29 after 19 days in hospital, still having slightly enlarged glands, but no fever or tenderness remained.

Summary.—A typical case of climatic bubo, reacting well to protein shock therapy. In this case the seminal vesicle on the same side as the glands was large and tender.

I have heard, since above was written, that this cure was not permanent, and that subsequently operative treatment on the right groin was required.

CASE No. 27. AGE 29. EX-SLOOP, HONG KONG

History.—This rating had a past history of gonorrhœa in 1921; he had had sexual intercourse with an Eurasian woman 5 weeks before his left inguinal glands became swollen. Just before the glands swelled he fell down a ladder in the ship. Glands enlarged for 14 days.

Physical Examination.—T. 99.4 to 100, P. 90 (see Chart 2, illustrating protein shock therapy), on admission 8/3/29.

Locally.—There was a mass of swollen tender glands in the left groin.

General Examination.—Negative. *Per rectum*, the left lobe of the prostate and the left seminal vesicle were swollen and tender.

Treatment.—Bed and light diet for 14 days.

Locally.—Thermogene wool and elastic pressure. Protein shock therapy with 3 intravenous injections of T.A.B. vaccine March 11th, 15th and 20th respectively. The reactions were small.

BRITISH JOURNAL OF VENEREAL DISEASES

Clinical Course.—After the protein shock therapy the glands subsided rapidly, the temperature disappearing after the first reaction. Patient was discharged to duty 2/4/29 after 25 days in hospital.

Summary.—This was another typical case of climatic bubo treated successfully by protein shock ; no penile lesion found, but some enlargement and tenderness of the left lobe of the prostate and seminal vesicle.

(12) DISCUSSION

As regards the ætiology there seems a general agreement that the disease is commonest among young adult males, and mainly in the tropics (here it does not, however, seem to be much more in evidence in the hot than in the cool weather). It appears to be especially common among the fighting Services abroad, especially those for whom home ties are absent. Among sailors in Hong Kong it appears that the smaller the ship the higher the case incidence, with the exception that coal-burning ships have a relatively higher case incidence than oil-burning ships of the same size ; in oil-burning ships engine-room and upper deck ratings appear to be affected about equally ; in coal-burning ships, on the other hand, engine-room ratings are more affected than upper deck ratings in about the proportion of three to one. Irregular sexual connection with coloured women seems to be established as a means of infection, at any rate, in inguinal gland infections, the incubation period being, as a rule, from three weeks to two months. The primary lesion, if penile, appears to be in the nature of a transient herpetic eruption ; it is inconstant and perhaps often missed ; evidence is brought forward that the portal of entry of infection may be the posterior urethra or prostate or seminal vesicles in some cases. The presence of a long prepuce probably predisposes to infection, but two possible cases of the disease in the circumcised have been described. Antecedent skin conditions alone are uncommon causes for buboes in manifest diseases such as scabies ; they may predispose to glandular infection by lowering the resistance of the glands in their vicinity, but that this is not very common is shown by the difference in the seasonal curve of incidence of climatic bubo and the commoner skin diseases. The infecting

THE "NON-VEREAL" OR CLIMATIC BUBO

agent is unknown at present. True climatic bubo is a disease entirely distinct ætiologically from the common venereal infections—syphilis, gonorrhœa and ulcus molle ; it is, however, very hard to distinguish clinically buboes from a latent gonorrhœal infection, from climatic bubo. It has been described, probably with some justification, as a fifth venereal disease, the other four being syphilis, gonorrhœa, ulcus molle and granuloma venereum. Hence, the term "non-venereal bubo" appears to be a misnomer.

The pathology of the lymph glands appears to be successively a proliferative and a degenerative subacute inflammation. Most of the suggested organisms and parasites supposed to be infectory agents have received no confirmation from other workers, with the exception of the "inclusion bodies" of Gamna and Favre, which have also been found by several other observers, such as Todd, De Bellard and Uribe, Virgillo. They have been considered parasites of protozoal nature. A specific skin reaction has been evolved by Frei and used by other workers successfully, and a vaccine from a piece of excised gland has been produced by Delbet.

Clinically, physical signs are few ; the fever is of a not very severe remittent type. The glandular enlargement is the important feature ; periadenitis and suppuration are common. The left side is affected more than the right, the external iliac glands are enlarged and can be felt in something over 25 per cent. of cases, and in my series the left side is again affected more than three times more often than the right. It is probable that the external iliac glands are enlarged in a higher percentage of cases than can be usually recognised, as, owing to their situation, it is not easy to feel them until a considerable enlargement has taken place. Cervical adenitis of a similar nature has been recorded by two observers, and in my series there were two such cases ; in these cases the infective agent of the disease probably entered through lesions of the lips, mouth or throat. Clinically, the course of the gland swelling is not that of acute septic glandular enlargement in which the glands appear quickly and subside soon after the septic focus is healed. These glands show little tendency to a spontaneous cure. Examination of the blood in the early stages shows a mild polynuclear leucocytosis and a slight degree of secondary anæmia. The Wassermann reaction is positive

in a certain percentage of cases. Rectal examination shows a frequent enlargement and tenderness in the region of the prostate and seminal vesicles ; I have never seen this referred to before in literature. This affection, again, is more common on the left than on the right side, and it is customary to find the affected side of the prostate and seminal vesicles is the same as that of the inguinal glands, and it was even more noticeable in 11 cases in which the external iliac glands were palpably enlarged. It is possible that this fact is of importance in a consideration of the portal of entry of the infection in many cases ; the virus or infecting agent entering either (i.) *viâ* the posterior urethra, and the inguinal glands and seminal vesicles or prostate on the same side are infected concurrently from the same source ; or (ii.) it may enter through the prostate and seminal vesicle itself, and so reach the external iliac glands, and then the inguinal glands are enlarged through a retrograde lymphatic infection. Other examples of this process are not uncommon in medicine ; for example, (1) the deep cervical glands sometimes become tuberculous in cases of advanced phthisis, the tubercle bacilli reaching these glands through the tracheo-bronchial and mediastinal glands ; (2) there is sometimes a tubercular deposit at the umbilicus in advanced abdominal tuberculosis, the tubercle bacilli reaching the navel along the lymphatics of the urachus or hypogastric arteries ; further, (3) in carcinoma of the stomach in the later stages, the portal glands of the liver become infected.

The exact clinical diagnosis is difficult in this disease, and it is more than probable that glands enlarged from some other causes have been included in my series. For exact diagnosis further investigations on the lines of Frei's cutaneous reaction or Gamna and Favre's diagnosis by gland puncture and isolation of "inclusion bodies" would appear necessary.

A purely clinical investigation is hampered by the facts that histories are not always reliable, old-standing gonorrhœa is very hard to exclude as a source of glandular enlargement, and the importance of skin infections is not easy to estimate.

The treatment is as yet not stereotyped and no specific has been discovered. Three lines of treatment would appear to give the best chance of a cure :—

THE "NON-VEREAL" OR CLIMATIC BUBO

(1) Surgical treatment, complete excision of all the glands of the groin, sterilisation of the cavity, complete closure of the operation wound if possible with deep sutures and draining the cavity by a separate stab incision below the wound. This procedure is not without risk of causing a form of elephantiasis, but has given good results in many hands. There is also a risk of erysipelas arising in the wound or scar, especially in cases which are heavily infected with contaminating organisms.

(2) Protein shock therapy, with or without a course of N.A.B. as an adjuvant, is very useful in cases which will react favourably to it (probably the majority). A certain percentage of cases, however, do not appear to be affected by this treatment.

(3) Intravenous tartar emetic, if the protozoal theory of the disease is proved, would give a rational line of treatment, as this drug is known to have a curative action on other kinds of protozoal disease, such as Leishmaniasis. This treatment has apparently been used with success in a large series of cases by De Stephana and Vaccarezza. The drug is not without its dangers, as has been pointed out earlier.

The prognosis is good ultimately, but the course is often very slow. The most serious sequelæ, as mentioned above, are post-operative elephantiasis and erysipelas.

(13) CONCLUSIONS

(1) Evidence is produced that the hot climate *per se* has little influence on the incidence of the disease.

(2) As regards warships, the disease is relatively commoner in small ships and coal-burning ships than in large ships and ships which burn oil fuel. In coal-burning ships the engine-room department is relatively more frequently affected than the rest of the ship's company.

(3) Irregular sexual connection with coloured women appears to be a frequent source of infection.

(4) Primary penile lesions are inconstant and transitory. Evidence is produced that a possible portal of entry of the virus is the posterior penile urethra, or the seminal vesicles and the prostate.

(5) Further investigations pathologically are required, especially with reference to the "skin reaction of Frei" and the "inclusion bodies of Gamna and Favre."

BRITISH JOURNAL OF VENEREAL DISEASES

(6) Clinically, climatic inguinal buboes are more common on the left than the right side. The external iliac glands can be felt in something over 25 per cent. of cases, also more commonly on the left than the right side; and, *per rectum*, affections of the prostate or seminal vesicles in this disease are usually to be found on the same side as the bubo, hence also more frequently on the left side.

(7) Two cases of subacute cervical adenitis of a similar nature have been described, in which the virus appears to have entered through the mouth or throat.

(8) Inguinal adenitis due to old-standing venereal disease (especially gonorrhœa) and cutaneous affections are difficult to differentiate clinically from climatic bubo.

(9) A series of 48 cases of climatic bubo has been treated by protein shock therapy, using intravenous T.A.B. vaccine for producing the reactions, and supplemented in resistant cases by a course of intravenous novarsenobillon.

(10) Analysis of this series shows that while the majority of cases have been favourably influenced, some have not been so affected, and the biggest reactions have not always given the best results.

(11) Evidence is produced of the beneficial action of intravenous novarsenobillon in this disease.

(12) Hitherto the only important late result of this disease that has been described is a pseudo-elephantiasis after a too thorough excision of the glands. The most important sequelæ in my series have been (1) erysipelas, and (2) residual abscesses.

(13) The term "Non-Venereal Bubo" is probably a misnomer, as the disease in many cases is acquired in a venereal manner.

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