presence of amphoric breathing because it yields very valuable information, as I have found in several cases of broncho-oesophageal cancer with neoplastic adenopathies in which it has enabled me to arrive at an early diagnosis.

These various items of information will enable us to conclude in favour of the existence of a tumour in the anterior or posterior mediastinum, the latter being of much more frequent occurrence than the former, and to assert that this tumour is, or is not, pulsatile. This will suggest or discard the possibility of the tumour being aneurysmal. In some instances, as in the one mentioned above, X ray examination may yield information as to whether the tumour is liquid or solid.

If we are enabled to decide that the tumour is liquid it behoves us to try to ascertain whether it is serous, hæmorrhagic, or purulent. Exploratory puncture will be necessary in the dull area that will have been outlined in one of the vertebral fossæ. If the needle, pushed in as deeply as possible in the dull area, fails to strike fluid, examination of the blood, should it show hyperleucocytosis, especially of the polynuclear variety, may afford useful information from this point of view. Liquid tumours of the mediastinum may be pleural or extrapleural, and the diagnosis between the two is often a matter of some difficulty. There are abscesses of the mediastinum in connexion with cancer of the œsophagus and, probably more frequently than one is apt to suppose, we get dermoid cysts of the mediastinum that may suppurate.

Some eight years since, in a young woman 22 years of age, I came across a dermoid cyst of the whole mediastinum but the exact diagnosis only became possible post mortem. The affection was characterised by high temperature, severe dyspnoea, a paroxysmal cough, slight difficulty in swallowing, tachycardia, and dullness at the base of the right lung. An exploratory puncture in that area gave issue to a greenish fluid containing yellowish grumous fatty material which, under the microscope, was seen to be composed of amorphous matter. Skiagraphy showed both apices to be clear and both bases obscure, especially on the right. I diagnosed interlobar pleurisy or a mediastinal collection of unknown nature and had the patient operated. An incision into the eighth intercostal space on the right side behind gave issue to a quantity of serous fluid mixed with yellowish grumous matter. On introducing the finger into the cavity it withdrew a lot of sebaceous matter. The dyspnoea did not diminish and the patient died three days later when, to our surprise, we found an enormous dermoid cyst of the mediastinum, weighing 13 kilogrammes, with numerous pouches, two of which were suppurating. Most of them contained a mixture of sebaceous matter and greenish fluid, with a few bristles; two of them contained a semen-like fluid; one big pouch in front was filled with very thick sebaceous matter, with a lot of long fine black hairs, cartilaginous nodules, plates of bone, and fatty nodules.

I have dwelt at some length on this case in order to show the difficulty of diagnosis when we are called upon to differentiate these dermoid cysts from mediastinal pleurisy, especially when one or more of the pouches happen to suppurate. Nevertheless, in this case I think I ought to have made the diagnosis, and doubtless should have done so had I given due consideration to the presence of the fatty matter floating in the greenish liquid withdrawn by the exploratory puncture.

The treatment of mediastinal pleurisy is difficult to lay down on general lines because it varies according to individual circumstances. The administration of 5 to 10 centigrammes of suprarenal and pituitary powder, intravenous or intramuscular

injections of lantol (electric colloidal rhodium), or electrargol, may render great assistance in combating the infection. When we feel pretty certain that we are in presence of an encysted purulent effusion in the mediastinum, the question of operative intervention will have to be adjudicated upon. In spite of the difficulty and risk of the operation we have no alternative when the temperature remains high, when pressure effects produce an intense mediastinal syndrome, and especially when, by the twentieth day, nothing has been coughed up.

Should pus be coughed up, usually in small quantities, we must try to facilitate expectoration by means of ipecacuanha or by injections of emetine, and we may try to disinfect the abscess cavity by means of injections of gomenol. Lastly, in cases where the cavity empties itself imperfectly, bronchoscopy may enable us to act directly thereupon by introducing an antiseptic fluid into the cavity, as is done in pulmonary cavities by Dr. Guisez and Dr. Stodel. Constitutional measures by the open-air treatment and the administration of tonics will complete the local treatment.

CLINICAL RESULTS OF 1,000 INTRAVENOUS INJECTIONS OF GALYL.

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IN this paper I desire to record experiences in connexion with the administration of one of the newer specific remedies, galy, in a series consisting of somewhat over 1,000 consecutive intravenous injections, given principally at the London Male Lock Hospital in the period from June to November, 1915, inclusive. My remarks will be confined to clinical observations only, no systematic study having been undertaken of the effect on the Wassermann reaction or of certain other questions chiefly of academic interest.

Galy, or tetraoxydiphosphaminodiarsenobenzene, is one of several synthetic substitutes for salvarsan which have recently appeared on the market. It is the invention of a French scientist, M. Mouneyrat, and while it is a substance with a high arsenic content (35·3 per cent.), it possesses some claim to originality in that it contains in its formula the element phosphorus (equal to 7·2 per cent.), while the atoms of arsenic are graphically represented as differently grouped. A comparison of the full doses advised for galy and for salvarsan and neosalvarsan indicates that galy as administered actually contains only about half as much arsenic as the others, a point of passing interest in view of the recent suggestion that the activity of these agents may be not wholly dependent on the arsenic moiety. In the leaflet which accompanies the preparation the assertion is made that it has the advantage over the other arsenic derivatives of being non-toxic to nerve tissue.

The preparation is supplied in five different strengths—viz., 0·4 grm., stated to be the full dose and to correspond to 0·9 neosalvarsan; three smaller, 0·25, 0·30, and 0·35 grm.; and a larger, 0·5 grm. It is left to be inferred that the large dose is to be used only very occasionally, or in other words that it is a specially powerful one. I may say, however, that during a recent temporary shortage of galy I was supplied with several 0·5 grm. tubes and used them in place of the 0·4's with indistinguishable results.

The substance itself is a light-yellow powder which looks not unlike salvarsan, is also readily oxidisable, and is put up in similar but larger tubes. It is readily soluble in distilled water, giving a clear olive-yellow transparent solution, neutral in reaction, which upon standing a few moments becomes darker in colour. Perhaps I should modify this by saying that an occasional ampoule will be found giving a slightly hazy solution, but apparently this does not indicate deterioration, and no unusual result has been observed in such instances. It is used in precisely the same way as neosalvarsan, either in concentrated solution in the 10 c.c. piston syringe, or more dilute in the familiar burette apparatus, preceded and followed by a little distilled water. This last is the safe method where one is giving intravenous injections only occasionally, and is useful also in institutions where good assistance is available and large numbers of injections have to be given quickly.

Hereunder are condensed notes of a few cases of syphilis in various stages chosen at random from among those treated by galyi and which may be regarded as fairly typical of all. By way of preface, let me say that it is our routine hospital practice to advise a minimum of three (full) doses of galyi at weekly or fortnightly intervals, these followed by mercury and iodides for at least two years, then a rest of a few months and a Wassermann test.

CASE 1.—The patient, aged 26, had been exposed to infection early in May, 1915. Chancre 26 days later, roseola following in 12 weeks.

Upon admission there were found to be well-established secondaries; general glandular enlargement; condylomata and ulcerative lesions of the mouth, scrotum, and toes; falling hair; pharyngitis; and a very profuse polymorphic outbreak covering the trunk and extremities, large scaly papules predominating and studding the flexor surfaces of the forearms almost to the exclusion of other types. The face was covered with squamo-dermato-syphilides and dirty-brown blotches, and there were impetiginised areas at the corners of the mouth, blepharitis of the right eye, and circumscribed scaly and hyperkeratotic lesions of the palms of the hands. An indurated button at the site of the chancre (the frænum). The symptoms had appeared while the patient was in South America, and during a protracted voyage to England he had experienced all the customary early complaints—cephalalgia, chilliness, malaise, bone-ache, and anaemia, with marked mental distress and depression. Temperature normal. Wassermann test, positive.

Treatment and course.—Three intravenous injections of galyi, 0.4 grm., were given at weekly intervals. No local or general reaction. Clinical improvement was immediate, the lesions beginning to retrogress and the colour to become less intense, while languor and subjective symptoms in general abated. Sixth day: Smaller papules represented by stain, larger ones becoming flattened, shrunken, and paler; face less scaly and more presentable. Seventh day: Condylomatous lesions gone, blepharitis also gone, mouth practically clear, a large ulcerated plaque on the inside of the upper lip being entirely healed. The induration at the site of the healed chancre seems softer and smaller. The patient expressed himself as "Feeling extra-fit," and added, "I want to get a hustle on me." Eighth day: Second injection. Ninth day: Ulcerated lesion of foot, $\frac{3}{8} \times \frac{3}{4}$ inch, entirely healed; rash much faded and its papular character about vanished, except for a few papules on the forearms. Fifteenth day: Third injection. Face practically clear, smooth, and not scaly. All papules flattened out. Only a faded and relatively inconspicuous staining remains.

CASE 2.—The patient, aged 21, had been exposed to infection in July, 1915. In 18 days there was swelling of the penis, and later a discharge.

Upon admission there was found to be tense bluish indurated oedema of the penis; greatest circumference, 7 inches; discharge of pus; phimotic. Moderate pain;

faint roseola; general hard shotty enlargement of glands; angina; mucous plaques; tonsillar ulceration; malaise. Temperature, 100° F.

Treatment and course.—Intravenous injection of galyi, 0.4 grm. Next day: Subjective improvement; evening temperature normal. Third day: Local condition better, tissues softened, inflammatory phenomena abated. Circumference of penis, 5 inches. Fourth day: No oedema. Circumference of penis, $4\frac{1}{2}$ inches (normal). Roseola disappeared. Urethral chancre confirmed. Circumcised. Eighth and fifteenth days: Galyi, 0.4 grm. No local or general reactions throughout.

CASE 3.—The patient, aged 32, had a well-marked maculopapular rash of three weeks' duration. Buccal lesions. Headache. Feeling "rotten." Wounded during the spring abroad, he had but recently been discharged from a German hospital, where it had been found necessary to amputate and re-amputate four times the infected wounded leg. The stump was drained continuously for four months.

Treatment and course.—Intravenous injection of galyi, 0.4 grm., at 9 A.M. Temperature: 2 P.M., 102°; 6 P.M., 104°; 10 P.M., 101.5°; 2 A.M., normal. No rise thereafter. Second day: Left the hospital. Sixth day: Seen again. Rash fading rapidly. Feeling very "fit." Did not return thereafter for further treatment, sending word to the effect that this was "unnecessary" as he was now perfectly well. During the time that his temperature was running high he felt warm, but experienced no other discomfort.

CASE 4.—This patient, aged 31, had had syphilis 12 years ago, and had been treated for ten months with mercury intramuscularly. He enlisted in the army in August, 1914, but shortly thereafter became unfit through inflammation of the throat, and later becoming also deaf.

On admission there was found to be extensive ulceration and destruction of much of the soft palate. Speech was mostly unintelligible; difficulty in deglutition; odorous naso-pharyngitis; very deaf. Stars on legs. For five weeks the condition has been rapidly progressive.

Treatment and course.—Three injections of galyi, 0.4 grm., at weekly intervals. After the first injection the progress of ulceration was arrested. Third day: Secretion lessened, less offensive; hearing somewhat better. Within three weeks the cleft in the palate was reduced almost to the size of a sixpenny piece, speech was vastly better and intelligible, and the patient had gained 8 lb. in weight and there was no malodorous secretion. Two months later he reported hearing and speech to be "as good as ever." He had gained a stone in weight, and he stated that he thought some gummatous scars on the inner anterior aspect of the left shin were fading.

CASE 5.—The patient, aged 40, had returned from abroad for treatment of a gummatous ulceration of the nose and adjacent part of the face, this area being bluish or purplish-red and exhibiting a dozen punched-out ulcers about pea-size or smaller. Married; several healthy children; no previous history of lues.

Treatment and course.—The early return of the patient to certain military duties being imperative and his leave limited to ten days, three intravenous injections of galyi, respectively 0.35, 0.4, and 0.4 grm. were given on the second, sixth, and tenth days, plus mercurial inunctions and iodides to saturation. Prompt improvement followed, and when leaving hospital the ulcerated areas were closing rapidly and some of them had already closed, whilst the colour of the surrounding skin was much paler. The patient has since reported complete symptomatic recovery, is enduring hardships, and is enjoying excellent general health.

I have said that the cases just summarised may be regarded as fairly illustrative. A perusal of the histories will at once suggest that in clearing-up symptoms the new preparation differs little if at all from its older rival. Indeed, at times I have been inclined to think that its effect on the large papular syphilide, a lesion most resistant to salvarsan, is somewhat better, from a comparison with concurrent cases in which the latter was used. The first case cited illustrates this well: whereas a woman to whom I gave two intravenous injections of 0.45 grm. neosalvarsan nearly three

months ago has still flattened papules on the flexor surfaces of the forearms. Nevertheless, I offer this suggestion with some reserve as I am not at the moment fully convinced that it is uniformly the case. It is certain that patients experience the same feeling of buoyancy and of wellbeing after galyl; appetite and nutrition improve, and there is frequently an increase in sexual vigour. Mr. Ernest Lane tells me that he believes relapses are rather more frequent than with salvarsan, and I have seen two cases of recurrent throat symptoms, both after a single injection of 0.4 gm. galyl, and both of which cleared up after a second dose.

Second only in importance to effectiveness in clearing-up symptoms is the question of toxicity. More than 150 deaths are credited to salvarsan, to say nothing of innumerable accidents and severe reactions, mostly in the early days and variously attributed to the water used, to improper preparation of patient, to pathological conditions, to too frequent administration, or to errors of technique. Nor has the use of certain other of the newer preparations been without disaster, as witness the cases so graphically described by Mr. Lane and Mr. J. E. R. McDonagh, of the honorary staff of this hospital. Some of these I have been privileged to examine, and I found them rather impressive. At a recent meeting of the Dermatological Section of the Royal Society of Medicine I exhibited a well-marked case of arsenical intoxication following one injection of 0.6 gm. novarsenobenzol, being one previously reported by Mr. Lane, showing ten months after injection profuse raindrop pigmentation, keratosis of the palms and soles, persistent fine branny desquamation, and cicatricial alopecia.

So far as I am aware no fatality has as yet been reported with galyl. Neither has there been reported any undoubted case of arsenical intoxication, but in this connexion it is to be remembered that the remedy is new and its literature at the time of writing very meagre. In a certain small number of cases of the present series there have been mild reactions shortly after or within a few hours after injection, but in only one, summarised above, did the temperature reach 104°, and in this case the presumption is strong that it was due to an endotoxic rest. If a patient has partaken of a hearty meal shortly before an intravenous injection is given vomiting is not uncommon with any drug, perhaps with chilliness or a rigor, pyrexia, or even purging and enuresis. If, however, he has been properly prepared, has rested well, and the alimentary tract has been cleaned overnight by a brisk purge and an enema if required, such symptoms are at least not usual.

An interesting complication which I have encountered twice was a reaction resembling serum sickness, large urticarial wheals which itched intensely appearing within a few hours of administration and remaining two or three days. One of these patients has had a second injection, preceded by adrenalin, no symptoms then appearing. A quite recent case developed a moderate erythema of the forearms within 24 hours, and has not been given a second dose; this redness disappeared in a day or two and there have been no further developments. The subject was anything but robust and had suffered from morbus coxae. I have notes of seven cases exhibiting a pseudo-Herxheimer reaction, all the symptoms seeming to be temporarily aggravated, the throat more congested and painful, and rash and malaise accentuated. It is, however, but fair to say that any one

of the reactions and symptoms just enumerated is at least as frequent with salvarsan and neosalvarsan, and none is typical of arsenical poisoning, very probably being due, as the studies of Yakimoff and others indicate, to the release of various bacterial endotoxins.

AN EPIDEMIC OF JAUNDICE OCCURRING AT ALEXANDRIA.

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DURING the months of June, July, and August, 1915, we had the opportunity of observing and treating a large number of cases of jaundice admitted to the medical wards of a general hospital. These cases presented several features of great interest, not the least being that they arose almost without exception from a single camp. The clinical picture was so constant and differed in so many respects from that of ordinary catarrhal jaundice that we regard the disease as a definite clinical entity.

On admission the patients complained of progressive weakness and loss of appetite of from seven to ten days' duration. Constipation was present in about half the number; the remainder had suffered from diarrhoea of varying severity for two or three days. In most cases the diarrhoea had ceased before the onset of jaundice, which had been present for three or four days and was frequently accompanied at the onset by pyrexia of mild degree; the majority were apyrexia throughout their stay in hospital. Nausea and vomiting were frequently complained of; vomiting in 4 cases persisted for several days after admission and in one of those was particularly severe. Headache was practically constant, and in several cases severe headache persisted throughout the patients' stay in hospital. The patients were of remarkably good physique, but there was considerable loss of flesh in most cases. The jaundice varied in intensity from a slight involvement of the conjunctivæ only to a profound generalised condition. In the mild cases the jaundice persisted for a few days only; in the severe it remained for several weeks and in some was still present when the patients passed from observation.

The tongue in all cases was moist and strikingly clean. The liver was invariably enlarged, sometimes extending as much as 3½ inches below the costal margin, the vertical dullness frequently measuring 9 inches in the nipple line; there was marked tenderness. The spleen was similarly greatly enlarged, frequently extending upwards to the seventh rib in the posterior axillary line, one or two inches below the costal margin, and sometimes reaching as far forwards as the nipple line, splenic and liver dullnesses not infrequently merged one into the other. The spleen was tender, and pain in this region was a common symptom.

The heart presented a very striking degree of enlargement in practically all cases. This enlargement was so definite and so persistent, associated as it was with giddiness and dyspnoea on exertion, as to make it almost the leading feature in the clinical picture. Cardiac dullness was almost constantly increased to the right, the right border of the heart frequently extending 2 inches, and in one case 2½ inches, to the right of the midsternal line. The cardiac impulse was frequently palpable to the right of the sternum. The apex beat remained internal to the left nipple line, the increase in the size of the heart apparently affecting the right side only. The heart sounds remained clear; in one case only an apical systolic murmur was present on admission. There was never any