Dr. ILLINGWORTH did not consider that digitalis was a cardiac tonic. If given in doses of 6 to 10 minims in cases of pneumonia, the pulse-rate might be very considerably reduced, and syncope or even death might occur. He considered this to indicate a depressant or calnative action. He admitted, however, that in cases of nervous palpitation the pulse-rate appeared to be slowed and the volume increased, but in his opinion this was a mere side issue, and not a main question.

THE SUBCUTANEOUS USE OF CREASOTE AND GUAIACOL IN PULMONARY PHTHISIS.¹

By F. R. WALTERS, M.D., M.R.C.P.,

Physician to the North London Hospital for Consumption.

Of all the drugs which have been used in the treatment of phthisis there are probably none which have been so widely adopted as wood creasote and its derivations. Advocated in 1833 by Reichenbach, condemned in 1835 by Martin Solon, it fell into disrepute until revived by Bouchard and Gimbert in 1877, since which it has been tried and approved by a long list of authorities—Jaccoud and Dujardin-Beaumetz, Dieulafoy and Germain Sée, Sommerbrodt, Von Brun and Guttman, Douglas Powell, Burney Yeo, and many more, who all agree as to its utility, while they differ as to its mode of action, dosage, and modes of administration. At the present time some are enthusiastic in its praises while others are as strongly opposed to it; and it must be admitted that it has a nasty way of failing in some of the cases where its help is most needed. It is, however, not surprising that this should be the case. To begin with, in a disease like pulmonary phthisis, where destruction and repair go on side by side, and the same process is sometimes useful and necessary, at other times disastrous, it is very difficult to estimate the effect of any remedy, owing to the impossibility of obtaining strictly comparable cases. In the next place, not only is there true or wood creasote and sham or coal-tar creasote, but several varieties of wood creasote, such as pinewood creasote, which contains more cresols, and beechwood creasote, consisting largely of guaiacol; and even beechwood creasote (which is usually preferred) varies in its composition. To add to these difficulties, the dose of creasote which can be borne with impunity varies considerably with individual idiosyncrasies and with the type of the disease, perhaps more than is the case with any other commonly used drug. Bearing these facts in mind, it is not so much remarkable that authorities should differ as to its utility as that there should be as great a unanimity. The concord becomes more striking than the discord. The number of cases dealt with by some of these observers is so considerable that there is at least strong *prima facie* evidence, in favour of the utility of the creasote compounds.

Bouchard in his first paper gave the results of 93 cases, and subsequently published more; Sommerbrodt's cases numbered over 5,000, Von Brun's 1,700.

Bouchard and Gimbert's early results were obtained by the administration of comparatively small doses of creasote—3 to 6 minims—over long periods of time, although they subsequently increased their doses in certain cases. They gave it either in cod-liver oil, or in alcohol with a bitter tonic on an empty stomach. Sommerbrodt, writing in 1887, recommended the administration of three capsules, each containing 1 minim of pure beech-wood creasote, increasing the dose by one daily until the eighteenth day, when this quantity (20 minims) was to be continued for many months.

As a rule patients can be readily brought in one way or another to tolerate large doses if these are sufficiently gradually increased; but it is by no means certain whether more than 15 or 20 minims per day can be absorbed by the alimentary canal, judging by Poggi's results with guaiacol. And some patients are quickly nauseated by quite small doses which do not appear to be of any use. To overcome this difficulty several methods have been adopted. A less irritating ingredient may be given, such as guaiacol, introduced by Sahli in 1887, or the creasote may be prescribed

with some bland fluid such as milk, or with a gastric sedative. Another method is to give it in capsules, or in keratin-coated pills which are only dissolved beyond the stomach. The administration of carbonate of guaiacol or creasote depends on a similar principle, as the combination is only exceptionally broken up in the stomach.

There seems to be some doubt as to the equal efficacy of guaiacol and creasote, the experiments of Main² appearing to show that the crude drug was more reliable. Hudeod, of Geneva, is strongly impressed with the advantages of rectal administration, and Burlureaux also adopts this method amongst others. Germain-Sée has recently advocated the employment of inhalations of compressed air containing creasote. Another plan is that of external applications, as guaiacol has been shown to be largely absorbed by the skin. But the method which I wish to dwell upon to-day is that by subcutaneous injection. This has been adopted in one form or another by Schetelig, Picot, Diamantberger and Weil, Burlureaux, and others. Schetelig uses 20 to 30 per cent. solutions of creasote in oil of cloves, injecting 16 minims into the thigh or abdomen from four to twelve times daily, leaving the needle in and applying gentle massage between the injections, which are repeated at intervals of a quarter of an hour to an hour. He states that, although the taste of creasote was sometimes noticed after the injection, there was no digestive disturbance, and marked antipyretic effects were observed. He gives guaiacol in the same way, in one-third to one-fourth the dose. Meunier, of Lyons, prefers liquid vaseline as a medium. Picot, of Bordeaux, injects a mixture of sterilised olive oil and vaseline containing 1 per cent. iodoform and 5 per cent. guaiacol, beginning with 1 c.cm. of the mixture and increasing to 3 c.cm. He remarks that no swelling or other local reaction follows. Burney Yeo has used the same method with a more concentrated formula.

The method, advocated by Diamantberger and Weil at the Paris Congress for Tuberculosis in 1891, was to inject creasote dissolved in an equal volume of sterilised almond oil. Of this they injected two Pravaz syringefuls in twenty-four hours, and after over 1,000 injections have had no accidents. Shingleton Smith adopts this method. Prévost, on the other hand, declares that a chemical combination of guaiacol with oleic acid is much less irritating than a mere oily solution. The chief advocate of the subcutaneous injection of oily solutions of creasote and guaiacol is Burlureaux, of the Val de Grâce. He lays stress on the importance of using a pure preparation such as creasote prepared by Choay's method dissolved in sterilised olive oil free from oleic acid, and on the gradual introduction of large quantities into the body up to the capacity of the individual, which is a variable quantity. He uses a special apparatus originally contrived by Gimbert and modified by Guerder and himself, one form of which I am able to show you to-day. The oily solution is driven into the body by atmospheric pressure, the degree of which is indicated by a manometer. Not more than 20 grammes (say 5 fluid drachms) per hour must be introduced, so that as most of his patients receive from 50 to 100 grammes of creasoted oil per diem at the height of the treatment, a single injection may last several hours. He begins with 5 grammes of a 1 in 15 solution, and if there are no signs of intolerance increases it to 50 grammes or more. One of his patients received 5 kilos. under the skin in as many months, besides 1 kilo. per rectum. This represents between 30 and 40 minims of pure creasote per day. The largest quantity which appears to have been injected at one sitting was 220 grammes, or nearly 8 ounces, of a 1 in 15 solution. Some patients of his were, however, less tolerant, as in one case 5 grammes of a 1 per cent. solution caused distress. Whenever small doses are persistently badly borne, he regards the prognosis as highly unfavourable. Where the treatment is doing good the appetite improves, flesh is gained, and the local lesions show signs of healing. Intolerance is shown by shivering, perspirations, and a condition resembling the collapse of pernicious malarial fevers, with or without high temperature. A persistent taste of creasote or black urine are of bad import when they come after small doses.

To come to my own results, which are unfortunately incomplete, as some of my notes have been mislaid or not yet returned. I have had some 6 or 8 cases treated in this

¹ Read in the Section of Pharmacology and Therapeutics at the Annual Meeting of the British Medical Association held in London, July-August, 1895.

² Bull. de Thérapie, cxxii, 205.

way, and can refer to-day to 4: A married woman, aged 36, with early affection of one apex; a clerk, aged 21, with unilateral consolidation, with perhaps a few small cavities; a bookbinder, aged 20, in the second stage, both lungs affected; and a clerk, aged 27, with one lung in the first and the other in the second stage.

My material is insufficient to determine the value as regards cure of the pulmonary condition, but is of interest in showing the doses which can be tolerated. I have used three different solutions: (1) a solution of creasote, 1 in 15—a Parisian product, creasote α ; (2) a similar solution of English manufacture; (3) a solution of guaiacol, 1 in 5, of French manufacture; all three solutions in sterilised and purified oil.

Burlureaux depended mainly on subcutaneous injections, and gave them nearly daily. My own cases only had them from once to three times a week, as daily injections are not convenient in out-patient practice. They all took creasote or guaiacol in some other form to about 10 to 15 minims daily. The injections were given in one of three ways: by the apparatus of Burlureaux and Guerder; by injection with a small hypodermic syringe holding 20 minims, the barrel being sometimes refilled while the needle was left *in situ*; and a large hypodermic syringe holding about 2 drachms; both syringes have asbestos plugs and are readily sterilisable. The doses injected varied from 20 to 30 minims of a 1 in 15 solution to begin with, to 5j to 5ij twice or thrice a week. The largest doses injected were 300 minims of 1 in 15 creasote solution, and 165 minims of 1 in 5 guaiacol. The treatment was continued in two cases for two months, in a third case for eight months, in a fourth for nine months.

The local effects were, slight burning at the seat of injection, which usually soon passed off unless the injection was made where the skin was tight. A swelling was left, which felt hard and indurated, the induration passing off, as a rule, in about a week, but sometimes lasting longer. There was usually no pain or inflammation afterwards, with two exceptions. In one case I had an accident with the Burlureaux apparatus, due to my own impatience, and a little air probably escaped into the cellular tissue. In the other the syringe had been rinsed out with carbolic solution, and probably incompletely freed from it. In neither case was there suppuration.

As regards the general effects, I did not find any complaint of tasting the creasote directly after injection, and am satisfied this was not usually the case. In one case there was slight collapse after the first injection of 20 minims of a 1 in 15 creasote solution; the same case subsequently readily stood drachm doses. In one case the appetite greatly improved, the lung trouble nearly disappeared, the cough disappeared, and weight was increased. This patient remains in good health. In another the lung trouble had increased, but much more slowly than was to be expected, while the general health remains exceptionally good. The two others were not long enough under treatment to be able to judge.

In conclusion, I believe the treatment is well borne, and may be useful where other methods fail. The doses should be very cautiously increased, and the treatment should not be tried where the kidneys are unsound, or there is a large area of inflamed lung, or decided signs of intolerance. No form of creasote treatment is of use unless it is long continued. I believe it to be useful in many cases if judiciously applied. One in 5 guaiacol appears to me to be as well borne as 1 in 15 creasote solution; and notwithstanding the results obtained by various observers, I do not think it is finally settled that guaiacol is inferior to creasote in the treatment of phthisis. The results with an ordinary syringe are apparently quite as good as with the Burlureaux apparatus, which should, I think, be reserved for exceptional cases.

THE NEW YORK ACADEMY OF MEDICINE.—The list of Fellows of the New York Academy of Medicine for 1895, which has just been issued, shows that the Academy is in a very prosperous condition. Organised in 1847 and incorporated in 1851, it grew slowly for a time. At present it numbers 792 resident and 70 non-resident Fellows, 29 corresponding Fellows, and 6 honorary Fellows. The Academy has a commodious and well-appointed house of its own, in a good situation.

REMARKS ON GONORRHOEAL IRITIS.

By H. PERCY DUNN, F.R.C.S.,

Assistant Ophthalmic Surgeon, West London Hospital.

THE eye is a small organ, and upon reflection the fact seems a strange one that the delicate tissues of which it is composed should so often exhibit inflammatory changes, associated with so-called constitutional disease. What, for example, determines the outbreak of a rheumatic iritis when the rheumatic taint has, so to speak, almost the whole of the body upon which to expend itself? What, again, leads to a syphilitic iritis when the syphilitic virus has so wide a scope for attacking the other tissues and organs of the body? Why, further, it may be asked, should a sarcoma develop from the periosteum of the orbit when so vast an expanse of periosteal tissue exists elsewhere? And oftentimes no exciting cause can be shown to which the outbreak of inflammatory and neoplastic attacks can be traced. Patients suffering from rheumatic iritis in its acutest form seldom have any other defined symptom of rheumatism. In cases of sarcomata of the orbit no history can be obtained, generally speaking, of any blow or disturbance of nutrition which might be regarded as exciting the outbreak. It was while reflecting upon this aspect of the subject that my mind recently reverted to the connection subsisting between gonorrhoea and gonorrhoeal iritis.

In the only case of this form of iritis which has come under my notice, a detailed account of which is given below, there were several interesting features; but after all it is difficult to say how much of the iritis in a given case of gonorrhoeal iritis is due to the gonorrhoea, and how much to the existence of a rheumatic taint in the patient. Upon the subject of the pathology of so-called gonorrhoeal rheumatism authorities are still divided, and until we possess more information of a definite nature in regard thereto, it must still remain an open question whether we can correctly describe any cases of iritis as really due to gonorrhoea. Nevertheless, among the writers of textbooks a general consensus of opinion prevails that gonorrhoeal iritis is a distinct form of iritic inflammation. By one and all the statement is repeated that it is a mixture of the plastic and serous forms. Wecker, in testifying to this fact, also remarks that "we never see an inflammation of the urethra followed by iritis without some joint having been attacked previously. The iritis is easily cured and leaves no traces, while appearing very readily whenever the patient has the least tendency to urethritis. It differs from the rheumatic form by the sudden onset, and its plastic nature is less pronounced. It shows a very peculiar predilection to alternate or succeed a rheumatic attack of the knee. Generally gonorrhoeal iritis disappears quickly under treatment, without leaving synechiæ. This proves its absence of plasticity. Its rheumatic nature is shown by its tendency to recur, even when no synechiæ are present after the first attack."

Again, Duplay and Reclus observe: "It has for long been observed that cases of iritis occur in individuals who have had arthritic symptoms after gonorrhoea. Recently, Despagne has noted the presence of gonorrhoeal iritis without arthritis." This latter condition, however, appears to be altogether exceptional. Fuchs states that "gonorrhoeal iritis develops in those cases in which gonorrhoea has given rise to a general infection. This latter runs a course similar to that of acute articular rheumatism. First, the knee-joint is attacked by inflammation, which may afterwards migrate to the other joints also; associated cardiac complications may even occur. This disease is known as gonorrhoeal rheumatism. Iritis does not generally set in until after the outbreak of the arthritis, and frequently attacks both eyes. Just as the gonorrhoeal lesion of the joints is very similar to articular rheumatism, so also gonorrhoeal iritis resembles in external features the rheumatic variety. Like the latter, too, it has very frequent recurrences, with which is frequently associated a renewal of the discharge from the urethra or a return of swelling in the affected joints." Lastly, Swanzy says: "Gonorrhoeal iritis does not attend on, nor immediately follow, a gonorrhoea; but an attack of rheumatic arthritis, usually of the knees, always intervenes. The disease is extremely rare."