PRELIMINARY NOTE ON THE PREPARATION OF THE SKIN FOR OPERATION BY MEANS OF DICHLORIDE OF ETHYLENE AND IODINE.

By ARTHUR J. WALLACE, M.D.,

SURGEON TO THE HOSPITAL FOR WOMEN, ETC., LIVERPOOL.

I CALLED attention recently¹ to the use of iodine acetone for preparing the skin prior to operation. Last year v. Herff of Basel described² the results of the use of acetone only, but as the latter possesses very feeble bactericidal powers, I combined its advantages with those of iodine. The iodine acetone solution was found by Dr. Leith Murray to be more strongly bactericidal than an equivalent iodine alcohol solution. Unfortunately solutions of iodine in alcohol or acetone give off pungent, irritating odours, and when a large area of skin is painted with such a solution, the atmosphere of the room becomes well-nigh intolerable for the time, and nurses who apply the solution complain of lacrymation, coryza, etc., often of an intense kind.

I regarded the good results obtained from acetone as being due mainly to its power of dissolving fats, and set out to discover some solvent of fats and iodine free from the objection mentioned. Whilst engaged on this search, Dr. W. McQ. Brunton of Runcorn drew my attention to the commercial fat solvents manufactured by the Weston Chemical Company. These solvents are derivatives of ethane and ethylene; they are clear liquids of a detergent nature; most of them are non-inflammable and non-combustible; they are powerful solvents of fats and resins, miscible with alcohol but not with water. In each instance the addition of iodine results in a violet-coloured liquid which in bulk has a black appearance. In four instances (the tetrachloride and pentachloride of ethane, the trichloride and perchloride of ethylene) the odour is decidedly pungent; and in the case of the first-named iodine is recognizable.

In the case of the dichloride of ethylene there is only a faint aromatic odour without trace of iodine, even when the solution is painted over a considerable area.

Dichloride of ethylene ($C_2H_2Cl_2$) is a clear mobile liquid, specific gravity 1.25, boiling point $55^\circ C$. (The boiling points of the other preparations are much higher—usually over $100^\circ C$.) It is non-explosive, but its vapour burns slowly with a smoky flame. It has an immense capacity for dissolving fats and greases, practically double that of acetone. It mixes readily with alcohol, and a mixture of equal parts can absorb water in small quantities. Dr. G. Koller, of the Weston Chemical Company, informs me the dichloride can dissolve 2.48 per cent. of iodine, the trichloride coming second with 1.71 per cent. He assures me further that the addition of iodine to the dichloride results in a solution, for the absence of iodine odour had inclined me to suspect that chemical combination had taken place. This point is not of importance, because in practical use the results are identical with those given by iodine-acetone.

When painted on the skin, temporary mild tingling or pricking sensations are produced, and, as the violet liquid quickly dries, the light brown iodine stain appears. The following method of skin preparation is pursued:

1. Immediately—a few minutes to an hour—before operation: swabbing with sterile swabs saturated with a mixture of equal parts of dichloride and alcohol (methylated spirit).
2. Swabbing with sterile swabs saturated with pure dichloride.
3. Painting with iodine-dichloride-ethylene ("I-D-E") solution (2.48 per cent.).
4. Application and fixation of sterile lint over prepared area.

The only odour given off is a mildly aromatic one that does not produce any unpleasant effects on bystanders. Those in whom other iodine solutions produce lacrymation, etc., can with impunity apply I-D-E solution. The iodine stain has a lighter hue than that produced by other solutions, and it disappears more quickly and without causing irritation or dermatitis. In operative—chiefly abdominal—work the results have been uniformly excellent.

NOTE.—Ethylene dichloride is made by the Weston Chemical Company, Weston Point, Runcorn. In bulk it costs about 9d. per lb., or less than half the price of acetone. It is stored in metal vessels, and solutions should be kept in dark blue glass bottles, stored in dark cupboards, as exposure to light for any length of time leads to the appearance of traces of HCl.

REFERENCES.

- ¹ *Practitioner*, April, 1910, p. 501.
- ² v. Herff, *Deut. med. Woch.*, 1909, No. 10, p. 425; G. Koller, *The Chlorine Derivatives of Ethane and Ethylene and their Industrial Importance as Non-inflammable, Non-combustible, and Non-explosive Solvents*: Seventh International Congress of Applied Chemistry, London, 1909.

A CASE OF EXOPHTHALMIC GOITRE CURED BY OPERATION.

By F. P. STURM, CH.B.ABERD.,

LEIGH, LANCs.

THE following case affords such an excellent example of what surgery can do for otherwise hopeless conditions of exophthalmic goitre that no excuse is needed for putting it upon record:

In October, 1908, I was asked by Dr. F. E. Wynne to see an advanced case of Graves's disease. The patient was an unmarried lady aged 32. Two years previously she had suffered from palpitation, anaemia, and swelling of the ankles. These symptoms had not responded to treatment, and in six months from the commencement of her illness she presented all the symptoms of well-marked Graves's disease.

When I saw her she had a moderately large bilateral goitre. The neck measurement was 20 in. There was a loud bruit, and a well-developed thrill over the tumour, a murmur of dilatation at the apex of the heart, and an irregular pulse, which fluctuated between 120 and 140. There were fine tremors of the hands and very definite exophthalmos. Her ankles were oedematous, there was profound anaemia, and her general condition was bad. She complained of nervousness, palpitation, inability to do any work, and breathlessness upon the slightest exertion. She had attacks of profuse sweating, which were always accompanied by an extremely offensive and penetrating odour. The diagnosis of exophthalmic goitre made by her medical attendant had been confirmed by an eminent consulting physician, who furthermore gave an extremely grave prognosis. Practically every known plan of medical treatment had been tried without success. She had been kept in bed for months at a time, and had swallowed large amounts of thyroidectin, not to mention antithyroid serum and the usual drugs, but without any permanent benefit. As she expressed her eagerness to undertake no matter what risk in the hope of even partial relief, I advised operation.

Operation.

Upon October 30th, 1908, I removed the right lobe of the thyroid tumour under local anaesthesia. The right lobe was chosen because it appeared to be the larger and more vascular, and because it had the louder bruit and the more marked thrill. The operation was a difficult one, involving much haemorrhage and deep dissection. The wound healed by first intention except at the point of insertion of the drainage tube, through which much colloid material escaped during the first five days. Recovery from the operation was uneventful. The temperature never rose above normal. Within a week the pulse had dropped to 80. Within a month the tremors had disappeared and the exophthalmos had improved. Exophthalmos has been the last symptom to disappear.

Present Condition.

Seventeen months have elapsed since the operation, and all symptoms of Graves's disease have disappeared. There are no tremors except after unusual exertion; there is no dyspnoea; there is no exophthalmos, and the pulse remains steady at 80. The patient is able to be on her feet from morning to night, and has recently applied for, and obtained, a position in a teaching institution. She eats well, sleeps well, and is never troubled either by palpitation or nervousness. The only relic of her former condition is the almost invisible scar of the incision in the neck.

During the past two years I have performed thyroidectomy in 5 cases of well-marked Graves's disease. Each of these cases presented the classical symptoms, namely, exophthalmos, tachycardia, fine tremors, and goitre, and in all the diagnosis had been confirmed by independent observers. Of these 5 cases the one recorded above has been completely relieved of every symptom. Three other cases declare themselves cured, but of these three all have still slight exophthalmos, and two have occasional attacks of tachycardia. The remaining case was a woman, aged 33, who had been married eight years and was childless. No symptoms remained six months after operation. I then lost sight of her, but her medical attendant, Dr. G. H. Shaw, tells me that she subsequently became pregnant, was delivered at term, and within a few weeks of her confinement died of acute pulmonary tuberculosis.