

preceding day by a mild purgative, best by castor oil.

THE SUBCUTANEOUS INJECTION OF STIMULANTS.*

This practice has been becoming more and more prevalent during the last ten or twelve years. Dr. Zuelzer contributes to the *Deutsche Med. Wochenschrift*, No. 9, 1883, a paper on the various forms of stimulants which have lately come into use. Those which he mentions are sulphuric ether, camphorated oil (1 in 10); camphor and benzoic acid (camphor 1 part, benzoic acid $1\frac{1}{2}$, rectified spirit 12); ethereal solution of camphor (sulphuric ether saturated with camphor); liquor ammoniæ anisatus; valerianate and some other preparations of ammonia; spirit of sulphuric ether; tincture of musk (1 part of musk to 25 each of water and dilute spirit); cognac, and several ethereal oils.

No general bad effects have been recorded, and their action on respiration and circulation has been nearly alike in all, viz., immediate strengthening of both; but as they have generally to be repeated several times within a short space of time, it is important to avoid the irritating ones — *e. g.*, the preparations of ammonia, and still more alcohol, which easily produces sloughing of the skin. Camphorated oil causes least pain, but is inconvenient on account of the small quantity of camphor held in solution — a large quantity of oil having the effect of retarding the respiration. Ether and ethereal solution of camphor have the disadvantage of partially dissolving the shellac with which the end of the hypodermic syringe is fixed to the cylinder. Both ether and the ethereal solution of camphor can be employed freely, as no undesirable results have been known to follow their use even in large doses; partly, no doubt, because they immediately pass off by the breath. The pain after injection is not great, lasts sometimes for several hours, and leaves behind it some numbness of the part. One

cubic centimetre (17 minims) of pure ether may be injected into each of the four extremities at one time, and may be repeated in fifteen minutes at first, afterwards at longer intervals.

These remedies are indicated where there is collapse, when the patient is unable to swallow, or where a more rapid result is desired than by the stomach. The author has used them most often in enteric fever and in cholera. When in typhoid fever there are great cardiac debility, small and irregular pulse, cyanosis, and coldness of the extremities, with deep collapse, the injection renders the pulse fuller and stronger within a few minutes; the cardiac contractions become more energetic and the cyanosis disappears after one or two injections. Where the urine has been suppressed, diuresis follows their use. Leube in Ziemssens' *Handbuch* recommends their use in the dangerous swooning after gastric and intestinal hæmorrhage, where there is the advantage of introducing the remedy into the system without involving the affected organ. Jürgensen, in the same publication, recommends camphorated oil in pneumonia, when weakness of the heart supervenes; and ether has been found of great service in œdema of the lungs in the same disease.

In midwifery, the subcutaneous use of stimulants is extending. Baye describes nine cases in Hecker's clinic, seven of acute anæmia, one of shock after a difficult labour, and one of unfavourable anæsthesia.

Five improved suddenly, the others gradually. Von Hecker has injected $2\frac{1}{2}$ drachms without either local or general disturbance.*

The injection of sulphuric ether gives successful results in the treatment of sciatica and lumbago. After preliminary dry-cupping over the seat of lesion inject subcutaneously ten minims of sulphuric ether, gradually increasing it until thirty minims is reached, if no improvement has taken place in the course of a week. A brisk purge at the outset and a mixture of sal-

* *The London Medical Record*, May 15th, 1883.

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