Anæsthetics.

No. 3.—NITROUS OXIDE.

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Nitrous oxide is the anæsthetic in general use in dental surgery. It is frequently employed in minor surgical operations, and is also used to render the patient unconscious previous to the administration of ether and chloroform. For the patient's comfort it is far the most pleasant anæsthetic, but it can only be inhaled for such a short time that its use is very much restricted.

Its common name is "laughing gas," so called because the patient while under its influence often becomes quite hysterical, laughing, and being very boisterous.

Many people know it simply by the title "gas."

It was first discovered by Priestley, in 1772, but accurately investigated by Sir H. Davy, in 1799.

It is one of the five oxides of nitrogen. Its formula is N_2O, its correct name nitrogen monoxide, or nitrous oxide. It may be prepared by the action of dilute nitric acid on certain metals such as zinc or copper, under special conditions.

But as an article of commerce it is obtained by heating pure nitrate of ammonium. When nitrous oxide and water are given off

$$\underset{\text{ammonium nitrate}}{NH_4NO_3} = \underset{\text{water}}{2H_2O} + \underset{\text{nitrous oxide}}{N_2O}$$

the heat is applied gently, not above 400 degrees F., or nitric oxide will be evolved, and nitrogen. Nitrous oxide is slightly soluble in cold water, so is collected over mercury (quicksilver), or else hot water. It is then purified by passing it through a solution of Ferrous Sulphate, to absorb any nitric oxide which may be present. Then through caustic soda to remove any trace of chlorine which may be there from the presence of ammonium chloride in the nitrate used as a source of the gas.

It is a colourless gas, with a faint characteristic odour, and sweet taste. It is fairly soluble in cold water. It can be liquified.

In many ways it very much resembles oxygen. It will, like that gas, support combustion.

The great test between the two is: that oxygen when mixed with nitric oxide, forms red fumes (nitrogen trioxide and nitrogen peroxide), while on mixing oxygen with nitrous oxide, no red fumes are seen.

About one ounce of ammonium nitrate will yield two gallons of the gas.

Sir H. Davy, in 1800, discovered its anæsthetic properties.

Some time afterwards Dr. Horace Wells, an American dentist, had one his own teeth out while under its influence. He then set up an establishment for painless dentistry, but unfortunately an accident occurred during an experiment in Boston, after which he gave up its use, and it was not until other anæsthetics were well established that nitrous oxide again came to the front.

For use as an anæsthetic, it is liquified by pressure, and stored in thick iron cylinders, from which when opened at the ordinary temperature a copious stream of gas is obtained.

Local Anæsthetics.

Sir Benjamin Richardson used ether spray as a local anæsthetic, that is, when it is necessary only to deaden the sense of feeling in one particular spot, without rendering the patient unconscious.

If ether be placed on the part about to be operated on, by its rapid evaporation the tissues become frozen and the parts become insensible. Freezing mixtures such as snow and salt have also been used. But of late years they have become almost unknown.

Ethyl chloride C_2H_5Cl. is now frequently employed instead.

Cocaine is used as the anæsthetic in most of the operations on the eye. It is sometimes employed in other minor operations; also in dentistry.

It is an alkaloid obtained from the leaves of erythroxylon coca, a plant which grows in Peru. It may be obtained from an aqueous solution of an acidulated alcoholic extract, made alkaline with carbonate of soda, by shaking it up with ether, separating the ethereal liquid, evaporating.

The product is purified by repeating the treatment, with acidulated water, soda and ether, neutralising with hydrochloric acid and recrystallising.

This forms hydrochloride of cocaine. It is soluble in water, has a little taste. It is also soluble in alcohol. It dilates the pupil of the eye when applied to it.

The British Pharmacopœia orders a hypodermic injection containing ten grammes in one hundred cubic centimetres, i.e., ten per cent.

The dose of this by subcutaneous injections to be two to five minims.

Examinations at the Sick Asylum, Hendon.

At the examinations of nurses at the Central London Sick Asylum, Hendon, three nurses, Nurses Louise Woodnutt, Harriet Pearse, and Alice Maud Harris passed with great credit. Nurse Ellen M. May headed the list of third year probationers, gaining ninety-four marks out of a possible 100, and Nurse Ethel Corbey was first on the list on second year probationers. Nurse May has been presented by Dr. Thompson Bishop, the Senior Assistant Medical Officer, who lectured to the nurses, with a well filled nurses' wallet, bearing a suitable inscription.

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