

secondary inflammation. It will doubtless prove valuable for relief of photophobia, spasm of orbicularis, etc., from corneal irritation, as well as of reflex ills elsewhere of kindred origin. The writer has been disappointed in not finding an eight or ten per cent. solution of the alkaloid in oleic acid anæsthetic to the skin; but the aqueous solution of the salt can be utilized for local anæsthesia, to some extent at least, hypodermically. In solution or unguent of various strengths, it should allay the pain of burns, etc., and the itching, etc., of some skin diseases.

EXPERIMENTS WITH CAFFEINE.

Influenced by the alleged identity of the general physiological, if not therapeutical, effects of caffeine and cocaine, the writer was led to test the former, hoping that it also might prove to possess the properties of a local anæsthetic; but a four per cent. solution failed to appreciably lessen the sensitiveness of his own conjunctiva. Bearing in mind the fact elicited by E. R. Squibb, that caffeine is only one-sixth of the strength of cocaine as regards systemic effects, a much stronger solution of caffeine was next tried, namely, twelve per cent., on the patient, case 1, in whom the anæsthetic effect of a four per cent. solution of cocaine had been quite marked; but the conjunctiva remained sensitive, and grasping it with forceps caused pain. This would seem to show that caffeine* is not a local anæsthetic, a fact to be regretted; because it can be had pure and cheap, and the supply is unailing, while it would seem that good coca leaves are seldom imported.

HYDROCHLORATE OF COCAINE — A NEW LOCAL ANESTHETIC.

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In a communication in the *New York Medical Record* of October 11th, 1884, Dr. Noyes drew attention to certain experiments before the Ophthalmological Congress, in Heidelberg, with a solution of the muriate of cocaine. The re-

* Though bought from a reliable house it may prove on analysis to be impure.

sults were so remarkable and so important that the subject was immediately taken up in America and investigated with characteristic ability and energy by Drs. Knapp, Roosa, C. S. Bull, Agnew, Hepburn, and others. To the experience of these eminent observers I propose to add my humble testimony. But before doing so it would be interesting to make a few remarks on the properties of the somewhat rare and expensive drug. Cocaine is an alkaloid obtained from the leaves of the erythroxyton coca, soluble in 704 parts of water, but easily dissolved in ether, alcohol and dilute acids. The erythroxyton coca is a shrub which is widely diffused over South America, both in a wild and cultivated state, and is used by the natives, especially in Bolivia and Peru, in the place of Chinese tea. The infusion of the leaves is a powerful nervine stimulant, and smells very much like tea. It is stated that the Indians can travel for days and endure great fatigue and hardships, and use but little food, by chewing the leaves as a kind of cud. Although its anæsthetic power has only just been discovered by Mr. Koller, a medical student in Vienna, cocaine has long been known to chemists. It was first isolated from the leaves by Gardeke, in 1855, who called it erythroxyline. Dr. Niemann, of Goslar, investigated it more fully in 1860, and gave it its present name. Its action on lower animals is analogous to that of itecine, titanizing frogs, and, in large doses, paralyzing the sensory nerves and posterior columns of the cord.

The experiments of Dr. Hepburn, of New York, by hypodermic injection, show that local anæsthesia is produced in the skin over a considerable area. After the injection of forty-eight minims of a two per cent. solution at intervals of five minutes, general physiological effects were manifested, viz.: increased frequency of the pulse, increase of one-fourth in the number of respirations in a minute, an agreeable sensation of warmth, moderate mydriasis, slight crossed diplopia, and agreeable hallucinations. The power of locomotion was slightly interfered with. There was impairment of general cutaneous sensibility, a feeling as if walking on cushions, a tendency to walk on the heels, and a sensation on grasping an object as if something spongy were interposed. Applied locally