tration of alcohol—an experiment I have never failed to regret, as my results were not nearly so satisfactory during that period. I give whisky in doses of 15, 30, or 40 minims, according to the age and condition of the child, every two or four hours, and once its administration is commenced I generally find it necessary to continue it until convalescence is established. In all cases I give strychnine in minim doses of the liquor every four hours as a routine practice. It acts as a cardiac and respiratory stimulant, as a stomachic and nerve tonic, and it seems to help the contraction of the muscular walls of the bronchi and thus assist the expulsion of mucus. The only cases in which I omit the strychnine are when diarrhoea occurs and when there is marked respiratory stridor.

When signs of advancing cardiac strain make their appearance, evidenced by irregularity of the pulse and increasing cyanosis, to the strychnine I add 1-minim doses of 1885 tincture of strophanthus, finding by experience that strychnine and strophanthus better maintain the blood pressure than digitalis, and they have no injurious effect on gastric digestion. I am a firm believer in the efficacy of the inhalation of oxygen, and have frequently been amazed at the improvement in the child's condition which followed its administration, the breathing and colour improving and the somnolence and cyanosis becoming much less marked. I regard it as a valuable remedy in the treatment of these symptoms. The only means I advocate for the reduction of high temperature is tepid sponging and the cold pack. When sudden collapse of a portion of the lung sets in, I rely upon free alcoholic stimulation and placing the child in a mustard bath. I have entirely given up the administration of cough mixtures, having seen little good result from them, and consider that they are very liable to upset the child's digestion, which it is so important should be kept undisturbed. When the bronchi are choked with secretion and the child is strong, an emetic of ipecacuhana often gives great relief, and, failing that, I have occasionally seen exceedingly good results from the administration of belladonna.

During convalescence, nourishing food, small quantities of good old port wine, quinine, cod-liver oil, and change of air are the methods of treatment on which I place most reliance.

I conclude this paper as I commenced—by remarking that though I have not wandered very far from the beaten track, I have endeavoured to state my own impressions without referring to the work of others, and to give the results of my own experience for what they are worth.

THE PHYSIOLOGICAL ANTAGONISM BETWEEN ACONITE AND BELLADONNA.

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COMPLETE physiological antagonism amongst drugs, especially alkaloids, is well known to be extremely rare. The following case, which came recently under my observation, seems worthy of record, in that it illustrates the partial antagonism existing between aconite and belladonna, as well as from the fact that the patient recovered after an enormous overdose of both these drugs taken simultaneously:

J. Y., aged 48, suffering from a subacute attack of pleurisy, was recommended by me to take an expectorant mixture and at the same time was given a 6 oz. bottle of aconite, belladonna, and chloroform liniment for external application to the chest. The liniment was dispensed in a blue bottle, labelled poison, but nevertheless the patient on the following morning swallowed by mistake $\frac{1}{2}$ oz. of the wrong bottle. He immediately recognized his error, but did not realize its seriousness. About four hours after its commission his relatives became alarmed and hurriedly summoned me to attend him.

I saw him about four and a half hours after the poison had been swallowed. Apart from copious libations of warm water, no emetics had been taken, and consequently the full $\frac{1}{2}$ oz. of liniment had been absorbed.

The patient was in a state of active delirium, his pupils so widely dilated that only a fine rim of iris was visible. At times he became exceedingly violent, and struck out at those who were vainly attempting to restrain him. He kept constantly muttering and grasping at objects within reach, totally mistaking their identity. At one time he would become violently maniacal, and a few moments later would subside into fits of unrestrained mirth. The pulse was rapid, about 180, small, and thready, and during a violent paroxysm became undiscernible

at the wrist. The tongue was dry and parched, the lips pale and slightly cyanotic, while sordes accumulated at the angles of the mouth. Malar flushing, a characteristic sign of belladonna poisoning, was, however, absent. On the patient endeavouring to stand, distinct muscular weakness was apparent; his legs appeared to give way and he required to be supported. A fine fibrillary tremor was present in the muscles of both extremities. He talked irrationally, and being offered stimulant, clenched his teeth and refused.

Altogether the patient seemed to be approaching a condition of very grave collapse, and, under the circumstances, I did not feel induced to administer morphine, the usual antidote in belladonna poisoning. The stomach tube was also too late to be of service. I injected 10 m liq. strychn. hyd., and repeated the dose in ten minutes. A saline enema, Oij, with $\frac{3}{4}$ ij brandy, was quickly administered, and a hot mustard poultice applied to the precordia.

These measures seemed to bring about some improvement, as the pulse was reduced in frequency and its volume increased. He, however, continued restless, and at times violent, and I decided to remove him to hospital. Here morphine ($\frac{1}{4}$ grain) was immediately administered, with the result that his violence gradually became subdued. Consciousness returned at about 11 p.m. the same day—exactly twelve hours after the ingestion of the poison. With the exception of retention of urine, which lasted during the next day, and a continued pupillary dilatation lasting for six days, the patient soon completely recovered.

It would appear that the patient took 53.3 grains of aconite root, which is at least twenty-seven times a safe dose. It represents $\frac{1}{4}$ grain aconitine, of which $\frac{1}{8}$ grain has been known to be fatal. He also swallowed 40 m ext. belladonnae liq., which is equal to 0.3 grain of the total alkaloids. This would represent something like thirty times the official dose of atropine. Recoveries, however, have been reported after larger doses of this alkaloid, from $3\frac{1}{2}$ to $5\frac{1}{2}$ grains having been taken without a lethal termination. Of chloroform he took 40 m, about eight times the official dose.

The interest of the case lies in the fact that the lethal effect of a large dose of aconite was abolished by the action of a large dose of belladonna. Muscular weakness, numbing of the extremities, and the tendency to complete collapse were all the purely aconite symptoms to be observed. Salivation, usually present in aconite poisoning, was absent, while the usually contracted pupil was lost in the powerful dilating influence of atropine. Finally, the intensely depressant action of aconite on the central nervous system was counteracted by the more stimulating action of belladonna.

The obvious lesson to be drawn is the great value which should be attached to hypodermic injections of atropine in all cases of aconite poisoning, and one can hardly avoid a word of tribute to the wisdom of the framers of our *Pharmacopoeia* in compounding pharmacological antidotes in many of their formulae.

A NEW APPARATUS FOR CHLOROFORM ANAESTHESIA.

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It has been evident for some time past that the open method of chloroform anaesthesia, although almost universally adopted, is attended by the disadvantages that are inseparable from the administration of an active drug in unmeasured quantity. That untoward consequences are not more numerous is a tribute to the skill of the anaesthetist, but even the best intentions are sometimes unequal to the very difficult task of supplementing the deficiencies of an unsatisfactory method, and "accidents" such as are recorded in the newspapers emphasize the necessity of a more exact method of administration.

The first step in such a method is to construct an apparatus that shall deliver a known admixture of chloroform vapour and air. Several machines have been already made by Dubois, Vernon-Harcourt, Waller, Collingwood and others, and the result of the work of these experimenters has been of very great assistance in the present research. I would particularly express my indebtedness to the densimetric method of Waller and Geets, without which the construction and testing of this apparatus would have presented even greater difficulties than were met with.

The apparatus consists of a circular copper vessel 5 in. in diameter and $4\frac{1}{2}$ in. deep, which contains 150 c.cm. of