

strychnia grs. iv., aqua dest. $\bar{3}$ j, each minim containing the $\frac{1}{40}$ of a grain of the alkaloid. The sulphate of strychnia is quite soluble in pure water, at least to this extent, and in this strength it makes a very convenient form for administration. For the past ten months I have usually commenced the strychnia treatment by injecting 3 minims of the solution, equal to $\frac{1}{40}$ of a grain of the drug. If no marked bracing of the muscles, heaviness of the calves, tightening of the jaws, or stiffening of the joints ensues, the amount of the solution for each day's injection is increased by one minim until a maximum dose is finally reached, which is frequently $\frac{1}{2}$ and often $\frac{1}{3}$ of a grain. In one case $\frac{1}{2}$ of a grain of the sulphate of strychnia was injected at a dose, and continued daily, without causing any special annoyance. When in progressively increasing doses the physiological effects of the remedy, indicated by muscular contractions, are excited, I do not diminish the quantity for the next injection, as experience has taught me, that the same dose, when repeated for two or three days, will cease to annoy, and then an augmentation may be safely indulged in. By this methodical and gradual increase, the maximum dose can be attained in from 15 to 20 days. In some cases I have found that the good results are not secured until large doses are reached, simulating, in this respect, the large doses of iodide of potassium, which excites a rapid subsidence in syphilitic symptoms, when ordinary doses of from 5 to 10 grains, continued for a long time, had produced no decided effects.

When the dose of strychnia has attained its maximum, that is to say, as much as can be comfortably borne, it should be steadily persevered in at this strength as long as any improvement shows itself. I have continued the injection of $\frac{1}{6}$ grain doses for 3 months. Should, from any cause, the daily injection be interrupted, even for a short time, it is not safe to resume the dose left off with, but a smaller quantity should be used, which may be rapidly increased until the full dose is again reached. As with all potent medicines, cases will now and then be met with, in which the commencing dose of $\frac{1}{40}$ of a grain may prove too powerful. In a single case only have I experienced uncomfortable muscular contractions from this small quantity. The effects in this patient were sufficiently annoying to establish a rule for a cautious commencement in every case. I have heard of one case of marked idiosyncrasy in which a single dose of $\frac{1}{50}$ of a grain of strychnia (the first), hypodermically used, caused convulsions and insensibility, which continued for several hours. The injection was made by a country physician, and I cannot vouch for the accuracy of the amount injected. In another case, coming under my immediate observation, that of a young lady of nervous temperament, an attack of convulsions of short duration was brought on by the use of 1-20 of a grain, which seemed to be the largest dose that she could take with safety. The best results are obtained when two injections are made daily, morning and evening. When it is inconvenient to make more than one injection per day, the effects upon the system may be kept up by the administra-

tion of strychnia pills, first in doses of 1-40, then 1-30 and finally 1-20 of a grain each, twice a day.

There is no advantage in injecting the solution under the skin of the temple, or other portion of the head, for the cure of eye or ear diseases, as it causes needless pain to puncture frequently these sensitive surfaces. As the remedy can only act upon the nerves of sight and hearing through the instrumentality of the nerve centres, and by the circulation, I always select the arm as the least sensitive and most convenient seat for the injection. In my experience, the loose skin near the outer surface of the shoulder, or in the upper and outer third of the arm, is the preferable site for the operation. Care must be taken to avoid superficial veins, otherwise bleeding from the puncture annoys, and the arm becomes sore. When the point for throwing in the injection is carefully selected, the puncture should be bloodless.

The canulated trocar of the hypodermic syringe should pass through the skin without resistance. If force be necessary to enable it to reach the subcutaneous cellular tissue, the cause will be found in a blunt heavily shouldered point which needs the cutler's care. As obtained from the instrument maker, the new points are always dull and need sharpening. The necessity for keeping this useful instrument in order is not so seriously felt by those who use it seldom; nor would the pain of application be complained of by persons upon whom it is now and then inserted for the relief of severe neuralgias. When it is systematically used once or twice every day for months upon the same individual, its easy or forced introduction, with the subsequent little or much uneasiness, will be commented upon.

Those not skilled in the use of the hypodermic syringe should, in applying it, first lift a fold of the skin between the thumb and index finger of the left hand, then place the point of the canula at the base of this fold, avoiding visible veins, and thrust it forward until at least one half the thickness of the fold is transfixed. When the canula has perforated the skin and its point lies in the loose cellular tissue in the centre of the fold, all resistance to the onward progress of the point will have ceased. The canula needle will now have gone sufficiently deep under the skin. In the next step of the operation the surgeon lets go the fold and with the same fingers steadies the syringe so that the point may not draw out of the puncture; nor, on the other hand, be thrust too deeply whilst the fluid is being injected. As the injected fluid causes an elevation of the skin, making a little reservoir in the subcutaneous cellular tissues with the puncture as an outlet, it is best by pressure with the finger upon this prominence to disseminate the fluid through the plane of areolar tissue before the canula be withdrawn; otherwise some of the injected fluid will escape, and the full dose not be retained for absorption.

As we are dealing with a very potent remedy, it is the safest course to put in the syringe only the dose to be injected. Some physicians fill the syringe, and throw under the skin from this quantity the number of minims desired, as marked upon the scale attached