increase in volume with age. It is in adult age that the increase is greatest, the average weight being 31 grains. These results are far from D. Brown-Sequard's observations, who gives from 120 to 216 grains as the average weight of these capsules in the adult. According to Mattei, this difference is accounted for by the insufficient number of capsules weighed by Brown-Sequard.

Some anatomists pretend that the cortical portion of the capsules is composed of two layers, an external one of a yellowish colour, and an internal one of a yellowish brown colour. Mattei's opinion is that there is only one layer, and that the brown colour is due to a cadaveric alteration, or the result of a putrid fever, or the subject being of a sanguine temperament, or the temperature high; when these circumstances are not present, the brown colour is altogether wanting. When it exists there is always softening, which is nothing but a cadaveric effect: hence it is that there is constantly an intimate relation between the softening and the brown discoloration of the capsules. That softening of the cortical portion can be brought so far as to produce its separation from the medullary portion, and thus create a cavity which does not really exist in the normal state. And on that subject M. Mattei would prefer to the denomination of *supra-renal capsules*, that more correct or more true one of *supra-renal glands* already proposed by Winslow.

Compared to the kidneys and other organs, the number of morbid alterations in the supra-renal capsules is very small.

M. Mattei has collected two observations of capsular apoplexy:

Obs. I.—A man aged 60, entered Sancta Maria Nuova Hospital (Florence), for ulcers on the legs. A short time after, the man was taken with sharp pain in the abdominal region, and died in twenty-four hours. At the autopsy no lesion was discovered, except in the supra-renal capsules, which contained each a clot of blood.

Obs. II.—The second case was observed on a still-born fœtus. No sign of compression on the umbilical cord which might account for death. Ecchymoses on the capsules were to be seen; there was no *foyer* as in the first observation. It was evidently a case of interstitial apoplexy.

In both cases M. Mattei does not hesitate to attribute the death to the capsular apoplexy. This termination would be due to the compression on the semi-lunar ganglions of the solar plexus. Lobstein maintains that death can take place not only by the brain, heart, and lung, but also by the solar plexus, centre, to and from which converge and diverge the nerves of the abdominal viscera. A sudden commotion, any irritation whatever, exposes it to a paralysis which is rapidly fatal. Brown-Sequard has seen the heart stopped after the crushing of the right semi-lunar ganglion. M. Mattei has seen the same effect brought on on a rabbit on which he had simultaneously crushed the two supra-renal capsules.

In all the cases collected by M. Mattei, on lesions of the supra-renal capsules, he never found the bronzed discoloration of the integument. From M. Chavanne's statistics, out of forty-four cases of bronzed skin, thirty-four times there was alteration of the supra-renal capsules.

If the alterations of the supra renal-capsules can exist independently of the discoloration of the skin, and if, on the other side, the bronzed colour of the integument has been observed without any alteration in the capsules, we must admit that one of these two facts alone, cannot be the cause of the other, still it might constitute one of the elements of a complex cause. M. Mattei believes in an alteration of the ganglionic nerves, basing his opinion on some nervous symptoms of Addison's disease and on Brown-Sequard's experiments. The neurosis admitted, it seems to M. Mattei that the alteration of the supra-renal capsules must co-operate more than that of any other organ with the manifestation of the disease. This is evidenced by the number of nerves which the capsules receive from the sympathetic and the close relation which they have with the semi-lunar ganglions of the solar plexus.

G. S. De Bonald, M.D.

Montreal, 1st Nov., 1864.

VACCINATION.

The official instructions issued to vaccinators, in England, contains the following directions:—

"In all ordinary vaccinations, vaccinate by four or five separate punctures, so as to produce four or five separate good-sized vesicles, or if you vaccinate otherwise, (for some vaccinators prefer to make long scratches side by side, or intersectingly, instead of punctures,) take special care to secure the production of four or five separate good-sized vesicles."

Dr. Aitken remarks, in his recent work on the practice of medicine, that these numerous vesicles are considered necessary for securing to those that are vaccinated, the full amount of protection which good vaccination confers.

He says that in vaccinating by punctures, the skin should be made tense by means of the left hand, and the lancet, charged with vaccine virus, be inserted in an oblique direction to the depth of a few lines, so as to impinge upon or penetrate the cutis vera, and after remaining in contact for a few seconds, should be withdrawn whilst the sides of the wound are being compressed together, in order to wipe off and retain the virus and to prevent bleeding.

When the mode by scratches is preferred, the number of groups should correspond to the number of vesicles intended to be engrafted, and will therefore vary according as three, four, five or more vesicles are considered necessary; the length of the scratches will determine the size of the resulting vesicle, and to some degree the soreness of the arm. The scratches should be so superficial as barely to result in the faintest possible exudation of blood, and that only after the lapse of a second or two. If the lymph be now applied it will at once become absorbed.

It has been considered that the normal diameter of a cicatrix, produced by a single insertion, is about a third of an inch, and that when scars are of greater dimensions than this they are generally of double or multiple origin.

The marks on some vaccinators are conspicuous for their excellence, whilst that of many others unfortunately are very imperfect.

With regard to the means of estimating the efficacy of vaccination, it seems established that a distinct connection subsists between the number and the quality of the cicatrics, and the protection conferred by vaccination against death from small-pox; so that it may be confidently stated that that vaccination is the most efficient which produces the best and most numerous cicatrices.

Dr. Simon gives the following as the result of