

to the demand, and another spring, about a mile distant in the same direction, but issuing on the southern declivity of the same ridge, was collected in a similar reservoir of brick, and pumped into the village reservoir, to mix with the waters of the first spring, which is conveyed to its destination by gravitation. The second spring I found to be more rapid and more extensive in its action on lead than the water of the first spring, which alone, as far as I could learn, had attracted any attention; and even the circumstances to which I have already referred were quite unknown to any person with whom I came in contact. Still more recently, a third spring, under different management, but of very soft water, and therefore with the corrosive qualities upon lead of the waters affording the previous supply, has been introduced into the town, with the universal approbation of the inhabitants, as far as regards its wholesomeness, purity, and softness.

Irrespective, then, of the probability that the Loch Katrine water will lose much of its corrosive power by its contact with the various strata over which it must pass in the conduit, during its flow to Glasgow, I am of decided opinion that no more permanent danger is to be apprehended, in reference to health, from the transmission of the water through lead pipes, and detention in lead cisterns, than there is in the case of other waters supplied to towns. I may add, however, that I have always recommended the substitution of iron and other materials, as water-pipes, as much as possible, for lead; and, even when lead is employed, that it should be alloyed with tin.—*Lancet*, July 29, 1854.

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#### MEDICAL JURISPRUDENCE AND TOXICOLOGY.

43. *Poisoning by Solanin*.—An opinion has been prevalent, that certain diseased states in domestic animals arose from the deleterious action of solanin contained in potatoes, on which they had been fed. In testing the truth of this opinion, Dr. FRAAS made the experiments, of which the following account is an abstract. Otto had previously found that the ripe potato, unsprouted, contained only a trace of solanin; that more of this principle was discoverable in the stalk of the plant, but the greatest quantity in the sprouts, especially the shorter ones. A similar result was obtained by Berchtold, in the spring of 1853. In 100 grammes of the green potato-sprouts, he discovered 4 milligrammes of solanin; and another time, in the very short sprouts, 12 milligrammes.

The first observations on animals were made on two pigs, to one of which were given sprouted potatoes boiled, together with the water in which they were boiled, which necessarily contained all the soluble solanin; while to the other were given the boiled potatoes without the liquor, the food being, consequently, assumed to be free from solanin. This was continued from the 15th of April to the 8th of July, without any signs of ill health appearing in either animal, notwithstanding that the outbreak of the disease in pigs was mentioned in the journals as having appeared.

The next observations were made with pure solanin, 10 grains of which were given to a pig, without the least injurious result, and the next day 20 grains were given to the same animal, with no further result than producing a diminished appetite and frequent white thin stools, the animal being quite well again the next day. On the third day, 20 grammes of acetate of solanin were given without effect.

Five grains of pure solanin were given to two dogs, the only results of which were vomiting and dilatation of the pupil. Ten grains were now given, and the œsophagus was tied; strong efforts at vomiting were made, and there was much vascular excitement, but the dose was not fatal.

The sulphate of solanin was injected into the veins of dogs. In nine dogs, death resulted from doses of from 5 to 2 grains thus administered; smaller doses only served to excite the circulation. In the case of one dog, into whose

right jugular vein 5 grains were injected, respiration suddenly became difficult, accelerated, and spasmodic, with convulsions and tetanic extension and drawing back of the head, and death occurred in seven minutes.

Two grains of solanin were injected into the right jugular vein of a horse without any result being observed. Into the jugular vein of another horse, 30 grains of sulphate of solanin were injected. The animal was suddenly attacked with severe difficulty of breathing, and exhibited a great increase in the action of the heart, with convulsions, so that he appeared to be dying. In the course of twenty minutes he appeared quite recovered.

Two grains of acetate of solanin were injected into the rectum of a rabbit. The symptoms produced were heaviness, apathy, and slowness of movement: dilatation of the pupil followed, increased activity of the circulation and respiration, and convulsions, which, however, ceased in about two hours' time. The animal now moved but little, but when it did attempt locomotion, it dragged itself along with difficulty; but no special loss of power of the hinder extremities was observed. It died in six hours.

To a second rabbit, a certain quantity of acetate of solanin was given daily by the mouth, commencing with one grain. After several days, no effect being produced, the dose was increased to 2, and after another interval, to 3 grains. Some days after this the appetite lessened, but no other alteration being observed, the dose was increased to 4 grains. At last, the animal became heavy, slow in its movements, remained lying the greater part of the day, and at last died, without paralysis or any considerable fever having been observed.

Dr. Fraas is inclined to the opinion, that the pernicious effects which often follow feeding upon raw potatoes and potato-stalks, are due to the great quantity of alkaline and earthy salts which they contain, and never to the solanin. An analysis of the potatoes used in his experiments, gave the following results: In 100 parts of dried potatoes there were 4.22 per cent. of ash; or in 100 parts of fresh potatoes, 1.17 parts of ash. 100 parts of ash contained—

Sulphuric acid	.	.	.	.	2.00
Phosphoric acid	.	.	.	.	12.37
Silicic acid	.	.	.	.	A trace.
Chlorine	.	.	.	.	4.23
Potash	.	.	.	.	52.23
Soda	.	.	.	.	A trace.
Alumina	.	.	.	.	A trace.
Oxide of soda	.	.	.	.	A trace.
Magnesia	.	.	.	.	2.41
Lime	.	.	.	.	3.68
Carbonic acid	.	.	.	.	20.18
Loss	.	.	.	.	2.0

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100.00

The potatoes contained no solanin.—*Brit. and For. Med.-Chirurg. Rev.* July, 1854, from *Archiv. für Pathol. Anat. und Physiol. und für Klinische Medicin*, Bd. vi. Heft 2.

44. *Causes of Death from the Use of Anæsthetic Agents.*—Dr. K. KING relates (*Edinburgh Med. and Surg. Journ.* Jan. 1854) a case of death occurring forty hours after the administration of chloroform, and makes the following remarks on the causes of death from the use of anæsthetic agents, which are worthy of consideration:—

“The subject of anæsthetic agents is one comparatively new to the profession; and although its rapid adoption and speedy admission as one of the recognized steps of every very important surgical operation, seem to disprove that slowness to leave the beaten track which has often been objected to against medical practitioners, it must be admitted that there still is a division of opinion as to the extent of their applicability, and the amount of danger which attends their use. In the opinion of some, whenever pain is to be inflicted, these agents may be employed, unless special circumstances, as diseased heart,