

previously calcined. Morphia and narcotina may be substituted for strychnia with like results, other alkaloids I have not tried. Those cited can be removed from the absorbent by acids. From the results of numerous experiments I find that of all the silicates cyanite and andalusite (pure silicates of alumina) are the most effective absorbents of such bodies.

The silicates of the alkaline earths, or alkalies simple or compounded either among themselves or with silicate of alumina, appear quite negative to the alkaloids named. Wavellite and anhydrous sesqui-oxide of iron had no absorbing power for them.

These results show that the portion of the clay concerned in the production of the phenomenon instanced is silicate of alumina, and I should conceive a double silicate\* to be formed, in every case hydrous, the anhydrous silicates of alumina named passing completely to the hydrous condition when finely comminuted and moistened with water as I have previously shown (*Trans. N.Z. Inst.*, Vol. IV., p. 380).

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ART. LIV.—*On the Proposed Substitution of Acetate for Sulphate of Copper in the Manufacture of Iodine.* By W. SKEY, Analyst to the Geological Survey of New Zealand.

[Read before the Wellington Philosophical Society, 23rd October, 1872.]

THE precipitation of iodine from the residual liquors obtained in its manufacture is at present accomplished by Soubeiran's method, namely by the addition of sulphate of copper thereto, iodide of copper thus forming and precipitating, but it is found in practice that the precipitation is so incomplete that a notable quantity of iodine remains in solution, necessitating the application of after processes for the more complete removal of iodine from such cupreous liquors.

In connection with this I would desire to make it publicly known that from certain investigations I have made upon this subject it appears that by a slight modification of Soubeiran's method this loss of iodine may be prevented, or so nearly that the necessity of after processes will be avoided.

The particular agents most active in causing this retention of iodine in the liquor are sulphate of copper, free sulphuric acid, and alkaline sulphates and chlorides, since they exercise a considerable solvent action upon the iodide of copper formed in Soubeiran's process.

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\* Since the communication of this paper I find that silica chemically prepared and rendered anhydrous by heat will also absorb strychnia from aqueous solution, clearly showing that at any rate single silicates of the alkaloids readily form.

The modification therefore which I propose is the use of acetate of copper in place of the iodide, this salt, as also free acetic acid and alkaline acetates, dissolving the cupreous iodide to only a very slight extent.

For practical use this salt might be prepared from common sulphate of copper by adding thereto acetate of soda in quantity sufficient to allow of the whole of the sulphuric acid of the copper salt being interchanged for acetic acid, but for the more complete removal of iodine I should recommend the use of the acetate of copper alone.

I will only state further that the pure acetate of copper (acidified with acetic acid if necessary) is so delicate a test for iodine, if in the form of a soluble iodide, that it may very effectively and conveniently be used for this purpose in place of the expensive salt, chloride of palladium; indeed, by this process I have readily detected iodine in certain waters from the east coast of this (North) Island.

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ART. LV.—*On the Formation of Gold Nuggets in Drift.* By W. SKEY,  
Analyst to the Geological Survey of New Zealand.

[Read before the Wellington Philosophical Society, 23rd October, 1872.]

THE manner in which those gold nuggets have been formed which are found in our drift or fluviatile deposits has long been a subject of profound interest. Our Victorian friends in particular have been greatly exercised with this matter, no doubt from having it so frequently and forcibly presented to them by the almost regular announcement from time to time of the discovery of nuggets so large as to be entitled to description in the annals of their gold fields, and to names to identify them by.

From the circumstance of their attention being thus given to this subject many valuable observations have been recorded by them and published in the periodicals or other works emanating from their colony.

The first theory broached to account for the presence of these nuggets in drifts was that they had been broken off some rich reef and transported by water bodily to the positions in which they are now found by us. At first sight this appears very plausible, but there are several considerations which, when allowed to have their due weight, rather tend to shake our belief in its competency to explain the case. These considerations have been discussed pretty freely in the works alluded to so I need not detail them here, but will only state that, briefly put, the chief of them are as follows:—The large size of many of these nuggets as compared with any of the masses of gold yet found in our reefs; their position in the drifts, lying sometimes as they do in the