

the description of organic matter, it is impossible to credit the latter with producing the phenomena described. But granting that nothing except organic matter was administered to the solution, even then the evidence as to the enlargement of the "piece of undissolved gold" is exceedingly unsatisfactory.

Thus it appears from the manner of stating the matter that neither the weight nor volume of the "undissolved gold" was determined, the apparatus, etc., evidently not being arranged for any experimental inquiry at all. If then no such determinations were made at the outset, they would be of no value as applied to the piece of gold after the process of decomposition was complete. Consequently the statement that the undissolved gold was increased two or three, or several times, its volume, as Mr. B. Smyth states, is guess-work, for the correctness of which we are dependent upon the power of the eye to realize size, the power of the memory to retain a correct and distinct impression as to the size and shape of the gold piece at the outset, and further upon the proper working of the comparative faculty, in order that this image in the memory may be correctly compared with that which the enlarged nugget presented to the eye when the process was finished.

Obviously so many delicate processes are involved in this method of estimating size, that the results given cannot properly be taken as being absolutely correct, nor yet even to have such weight as to induce us to forego our present belief in the dispersion rather than the aggregation of gold precipitating from solution under the circumstances stated.

In the meanwhile, in cognizance of the tendency of gold to scatter when reduced from solution by organic matter, as manifested by my experiment here described, and by our previous experience in this matter, and on the other hand its tendency to agglomerate when reduced from solution by metallic sulphides, I cannot allow Mr. Daintree's results, as at present known to me, to affect me in any speculations I may make as to the origin of gold nuggets in drift.

ART. LIII.—*On the Absorption of Certain Alkaloids by Aluminous Silicates.*
By W. SKEY, Analyst to the Geological Survey of New Zealand.

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

If an aqueous solution of strychnia is agitated a short time with common clay it will be found on testing the mixture that a part or the whole of the alkaloid (according to the quantity used) has been removed from solution and absorbed by the clay. The same effects follow when the clay is

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).

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.

* 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.