Selwyn, on geological grounds, that the nuggets occurring in such situations have been formed *in situ* by the aggregation of gold by precipitation from solutions permeating the drifts.

Mr. Skey, in other papers, suggests an improvement in the process of the manufacture of iodine, and shows an absorptive power which clay possesses for strychnia and other alkaloids, which he traces to the action of silica in combining with these alkaloids.

I have thus shortly touched on the principal subjects to which the work of our Society has been directed during the past session, and it now only remains for me to thank you for the courtesy and support which I have received during the period for which it has been my duty and pleasure to preside at your meetings.

Dr. Hector then vacated the chair, which was taken by Mr. W. T. L. Travers, F.L.S., in the unavoidable absence of the President, Mr. Charles Knight, F.R.C.S.

1. "On the Occurrence of *Selenium* and *Tellurium* in the Neighbourhood of Wellington," by W. S. Hamilton.

The publication of this paper is deferred at the author's request.

2. "Notes on Dr. Hector's paper on the Whales and Dolphins of the New Zealand Seas," by J. E. Gray, Ph.D., F.R.S., Hon. Mem. N.Z. Inst. (*Transactions*, p. 93.)

3. "Notes on the Fixing of Sand-hills," by William Keene. Communicated by J. C. Crawford, F.G.S.

During the year 1867 Captain Benson, late chief manager of the P.N.Z. & A. Royal Mail Company, kindly undertook to make some enquiries for me as to what was done in Australia with regard to fixing sand-drifts. The result was the able and suggestive letter bearing the signature of William Keene, and given below. I suppose the writer to be Inspector of Mines to the Government of New South Wales, and a person whose opinion has weight.

From my experience in the matter, I quite agree with Mr. Keene that, at all events when a fixing of the sand is to be produced within a reasonable time, the means which he suggests are those which should be adopted as being rapid and effectual. On the other hand we must not despise the grasses. I find that I can break up and transplant the *Ammophila arundinacea* (*Marram*, English; *Oyât*, French) during all the damp months of the year, say from March until October; whereas in New South Wales the term for transplanting must be much more limited.

I have now spread this grass over a number of acres, and although I cannot say that it has fixed the sand, inasmuch as there are many more acres adjoining from which the sand blows over the plants, yet it begins in a way to alleviate the nuisance. The plant receives a drift of sand like manure, and grows above it, gradually attaching to itself a small sand-hill, but the process is extremely slow, and requires constant attention. Where the sand is blowing away the plants are apt to be blown out, and require to be watched and transplanted. Where the sand is accumulating the plants

grow vigorously, unless the increase of sand is so rapid as to cover them entirely, in which case they are unable to recover themselves, and appear no more.

In moderately-sheltered positions, however, where the sand is only blowing slightly, the *Ammophila* can be planted out with very slight loss of plants.

From the expense of enclosures it may be impossible, for years to come, to adopt the pine plantation system in many localities where the grasses may, in the meantime, prove very useful.

One great advantage of the *Ammophila*, as a sand-fixing grass, is the ease of transplantation, one plant of it broken up may give some hundreds to plant out.

The New Zealand plants *Cyperus ustulatus* and *Spinifex hirsutus* are both excellent for fixing sand; but, after repeated attempts, I have only succeeded in transplanting two or three of the former, and, I think, none of the latter plants. My attempts with seed have been equally ineffectual.

Lawson, of Edinburgh, recommends the seeds of *Ammophila* and *Elymus* to be puddled up with wet clay and short pieces of straw rope before sowing. No doubt this is an excellent plan, giving the young plant something to hold on to until it gets its roots established. But the success of *Ammophila* must, I think, mainly depend upon close attention to planting it out during the damp season.

"Newcastle, N.S.W., 15th July, 1867. Dear Sir—In attention to your request that I may give you any information I may possess on the best means of stopping sand-drifts, I may, in the first place, remind you of the fact that a great deal of money has been spent here at Newcastle in attempting to stop them, by sowing and planting grasses, and that all such attempts have failed.

"I recommend, from personal observation and knowledge of the mode of stopping the march of the sand-dunes on the sea-board between Bordeaux and Bayonne, that the same means should be employed which have there been so uniformly successful, and are as follows:—

"Spaces along the sea-board above high water mark are hurdled in with close hurdles, about 4 feet 6 inches in height, forming squares of not more than 10 yards each way. In these spaces the seed of the maritime pine is sown, so that the young plants come up almost as thick as wheat. As they grow in strength year by year, they are thinned out, and in their growth completely prevent the further onward march of the sand and break the strength of the well-known gales of the Bay of Biscay, and protect further plantations inland.

"By application to our Consul at Bayonne, Captain Graham, to whom I am well known, I am sure he would take the trouble to obtain a few boxes or hogsheads of the seed if the payment of the expense of so doing was assured to him, and, as we have frequent communication by ships from Bordeaux, Mr. Graham would send the seed to Bordeaux to be shipped for Sydney.

"This pine at full growth yields the resin which serves for sealing the wine bottles of Bordeaux, and the planks from which the cases for packing wine and brandy are made; also, abundant turpentine is distilled from the resin. The tree is, in fact, a profitable culture, and I recommend it as most certain of success.

"We have plenty of the bent grass growing here on the North Shore, but it does not prevent the spread of the sand.

"I can give you more particulars if they be desired, and remain, &c., WILLIAM KEENE.—To J. R. Pringle, Esq."