About ten o'clock it was moved by Joseph Hone, Esq., seconded by D. T. Kilburn, Esq., and carried unanimously, that the thanks of the Society are due to His Excellency Sir W. T. Denison, Mr. Swainson, and other gentlemen from whom written communications and presentations have been received; and the President having risen, the members soon after separated.

8th March, 1854.—Monthly Meeting; His Excellency the President, Sir W. Denison, in the chair.

The following gentlemen were ballotted for and duly elected into the Society:—

The Reverend Francis Hales, B.A., of Launceston. The Rev. J. Tice Gellibrand, M.A., of Richmond. William Henry Barnard, Esq., of Geelong, Victoria. Robert Clark, Esq., of Malahide. John Murphy, Esq., of Sydney. Frederick Robert Lees, Esq., Edward Swarbeck Hall, Esq., George Hutton, Esq., and Samuel Tapfield, Esq., of Hobart Town.

Upon the recommendation of the Council, W. J. Macquorn Rankine, Esq., C.E. F.R.S.E., F.R.S.S.A., &c., was elected a Corresponding Member.

The Secretary announced the presentation, by John Lyne, Esq., of Apslawn, Swanport, of an English translation of Dr. Dodoen's Herbal, published in London, in 1619, substantially bound in calf;—considered a curious, rare, and valuable work.

The Tasmanian Athenæum for February received from the Editors.

A note was read from Lieutenant Lochner transmitting, by direction of the Lieutenant-Governor, the First Report of the Mineralogical Surveyor of Victoria, "On the Geology and Mineralogy of Mount Alexander and the adjacent country lying between the Rivers Loddon and Campaspe," with Map and Sections.

Specimens of Lignites and associated tertiary Clay-beds were received from Mr. P. S. Tomlins, who procured them at Fresh Water Point, on the River Tamar. The Secretary read a note from Mr. Tomlins explaining the relative position of the different beds represented by the specimens submitted, setting forth the great advantages which would accrue to Launceston and neighbourhood from a discovery of coal on the Tamar River, and soliciting the opinion of the meeting as to the value of the indications afforded by the specimens submitted.

A note was read from Mr. H. Hull giving an account of a brilliant display of Aurora Australis, about 12 o'clock on the night of the 21st ultimo, as seen from Tolosa, and of a loud rushing or rumbling noise which was simultaneously heard high overhead, recurring in five distinct shocks or paroxysms between midnight and 2 o'clock.

Mr. John Lucas forwarded for the Museum nine very diminutive coins; five of silver and four of copper, said to be from Cochin, on the Malabar coast.

From Mr. Jones, of Liverpool-street, was received a silver coin (date 1711) of Spanish America.

Extracts were read of the following letter from Dr. Knight to Sir William Denison, on the native gold of New Zealand. According to Dr. Knight's researches, it consists of pure gold 7·4275, and silver 2·06, with quartz as a matrix, and he estimates its value at £3 8*s.* 10*d.* per ounce; Tasmanian gold being worth £3 19*s.*, and that of Victoria from £4 to £4 2*s.*, in the London market.

"*Auckland,* 12*th January,* 1854.

I had an opportunity, a few days, since of perusing for the first time Your Excellency's interesting paper on the value of gold, read before the Royal Society of Van Diemen's Land, on the 22nd June, 1852.

My attention was directed to the same subject early in 1853, in reference to the value of gold obtained in this district. Although my investigations were limited to gold in a quartz matrix, it appears to me that they are of sufficient interest to excuse my taking the liberty of addressing Your Excellency on the subject.

The New Zealand gold is mostly found in a quartz matrix or mixed with iron-sand, (specular iron).

It appeared to me that the quantity of gold in the quartz matrix could be determined with facility by taking the weight of the specimen in air and in water. We should then have the following known quantities:—

Weight of specimen in air....................	$= a$
Ditto in water	$= e$
Specific gravity of gold	$= b$
Ditto of quartz........................	$= c$

From which the quantity of quartz $= (y)$ could be readily determined, that of gold being $(a-y)$

$$\text{For } \frac{(b-1)\ (a-y)}{b} \text{ weight of gold in water}$$

$$\text{also } \frac{(c-1)\ y}{c} = \text{weight of quartz in water}$$

$$\therefore \frac{(b-1)\ (a-y)}{b} + \frac{(c-1)\ y}{c} = \text{weight of specimen in water}$$

$$\therefore y = \frac{(eb + a - ba)\ c}{c-b}$$ A convenient expression for the quantity of quartz without first computing the specific gravity.

I may mention here that the absence of silver had been (as it was thought), satisfactorily shown by the analysis published in the Wellington Government *Gazette.*

Having determined by the above method the value of two or three specimens of gold in a matrix of quartz, I was surprised to learn that when the ore was run out in Sydney, the value was declared to be much higher than my estimate; suspecting this discrepancy to arise from the presence of silver, I undertook the chemical analysis of a few grains of the gold, and found it alloyed with silver in the following proportions:—

Gold	7·4275
Silver..................	2·06
	9·4875

The weight of this specimen in water previous to analysis was 8·905, (hence the specific gravity 16·2875.) Now, substituting the specific gravity of silver (10·474) for that of quartz, and taking the specific gravity of cast gold as stated in Your Excellency's paper, we have—

$a =$ 9·4875	=	0·9771518		
$b =$ 19·258	=	1·2846112		
		2·2617630 =		182·71
$e =$ 8·905	=	0·9496339		
$b =$ 19·258	=	1·2846112		
		2·2342451 =	171·492	
		$+ a =$	9·4875	
				180·9795
1·7305	=	0·2381716		1·7305
$c =$ 10·474	=	1·0191126		
		1·2572832		
$c—b =$ 8·784	=	·9436923		
		·3135909 = 2.0587 = quantity of silver.		

The quantity of silver found by analysis was 2·06,—an approximation so close that, considering the small quantity operated upon, it must be considered accidental. As I thought it desirable to test whether the metals in combining increased in density or not, I selected a new sovereign, and by means of a balance whose beam when unloaded was depressed more than $\frac{5}{8}$ths of an inch with $\frac{1}{70}$th of a grain, I found the weight in air and in water to be:—

In air................	4·5035 drams avoird.	= 123·1426	grs. $= a$
In water	4·248 „ „	= 116·15625	grs. $= e$

∴ Specific gravity .... 17·62623

New standard British gold consists of gold 22 parts, copper 2 parts. Taking the specific gravity of hammered gold to be 19·361 and that of copper 8·878, we find by the following formula,—

$$\frac{a}{a-\left\{\frac{(b-1)\ (a-y)}{b}+\frac{(c-1)\ y}{c}\right\}}=\text{Sp. Gr.}$$

That the Specific Gravity of standard gold is 17.62632. The weighings were made with the greatest care, and the difference between the Specific Gravity found by actual weighing, and that found by computation, is too small to be noticed. It appears, therefore, that no considerable alteration takes place in the density of gold and copper when combined. I do not, however, overlook the circumstance that the usefulness of this is interfered with by a doubt as to the exact proportion of copper in the coin; which I believe in different sovereigns varies within certain limits, the limit of fallibility for fineness being 1-16th of a carat.

Returning to the value of New Zealand gold, it is estimated from the above experiments, that an ounce entirely free from quartz or other substance except silver is worth £3 8*s.* 10*d.*; (that of pure gold being 2.1237*d.* per grain, and that of pure silver, ·1367*d.* per grain, as found by Your Excellency.)

Trusting that Your Excellency will overlook the liberty I have taken in addressing you,

I am, &c.,

CHARLES KNIGHT.

"His Excellency Sir W. T. Denison, F.R.S."

Mr. Milligan placed on the table ripe capsules of the Blue gum, recently collected by him in the vicinity of the Apsley River, in the Swanport district. Mr. Swainson said that he recognized amongst them six distinct species of his proposed new genus DENISONIA; two of which, he says, differ specifically from any previously seen by him.

Mr. Milligan also exhibited a curious dwarf specimen of she-oak (*Casuarina,*) not quite a foot high, bearing a cluster of full-sized, monstrous, abortive cones. This led to an interesting conversation on the influence of temperature, &c., on the forms, characters, and geographic distribution of plants and animals, in which His Excellency Sir William Denison, Drs. Agnew and Crooke, Mr. Walker, and others joined, when Mr. Swainson took occasion to express his conviction that "there exists a wide and marked difference between the trees of Tasmania and those of Victoria, notwithstanding the positive assertions to the contrary published in the recent report of the Victorian Colonial Botanist." In proof of this, Mr. Swainson stated that "out of more than sixty (!) different species of Casuarinæ discovered, drawn, and described by him during his short residence in this island, he has not met with one which is also a native of Victoria;" and adds, that "more than one-half of those discovered by him at Launceston are totally different from those met with at the southern end of the island."

Mr. Swainson remarked "that this diversity is equally conspicuous among the Gum trees, only *two* out of more than forty species detected in Tasmania being considered by him as common to the opposite coasts of Bass's Strait—while of the genuine Blue gums, so common on the southern and eastern parts of Tasmania, not one has been observed by Mr. S. in the province of Victoria: one, indeed, he says, has been recently said to have been found growing near Cape Otway, on the coast of Victoria; but he thinks the fact requires verification."

A paper embodying descriptions, and accompanied with beautifully executed figures by Mr. Swainson, of some undescribed Trochiform shells of Tasmanian seas, now in Mr. Milligan's collection, was then read:—One closely resembling *Calliostoma* in its colouring, perlacious structure, and elevated apex, and *Solarium* in its absolute want of a pillar, and in the thickened and granulated character of the internal edge of the whorls, Mr. Swainson has made the type of a new genus, to which he has given the name of *Astele.* The other shells of the same tribe Mr. Swainson has referred to his genus *Carinidea;* the largest, from Flinder's Island, he has named *C. fimbriata;* a second, from the same locality, *C. granulata;* and a third, discovered by Mr. Swainson himself at Port Arthur, he has named *C. parva.*

His Excellency Sir William Denison then placed before the members Tabular Statements of the extraordinary Fall of Rain at Hobart Town on the 26th and 27th ultimo—of the direction and force of the wind, and of the condition of the Barometer and Thermometer, &c., compiled from observations made at short intervals during the storm, by Mr. S. Jeffrey, of the Observatory, who also furnished a memorandum of the fall of rain during each month of 1853, and during January and February of the present year, by which it appears that the sum total of rain during 1853 was only 14·48 inches, while January and February of 1854 have yielded 9·69 in.; the mean average of the 12 years from 1841 to 1852 having been 20·30 inches.

Sir William Denison also laid before the meeting tables showing all the remarkably heavy falls of rain here since 1841—their dates, with the period of the day, rate of descent, and total fall in each case. Sir William also supplied a Table exhibiting the months in which the greatest and least falls of rain have occurred during 13 years; from which, December, August, and October appear to be the driest, and as compared with each other in the order in which they are here named, while November is by far the wettest: the former three months having yielded together only 11·53 inches during this long period, while November alone yielded 37·83 inches during the same time,—facts worthy of consideration in the calculations and arrangements of the farmer and horticulturist in this quarter of the island.

Mr. Jeffrey also submitted diagrams showing the comparative rapidity of the several heavy falls of rain which are recorded as having taken place on the 25th November, 1842,—on the 6th November, 1849,—and on the 26th and 27th February, 1854, respectively; amounting in the first case to 3·75 inches in 16½ consecutive hours; in the second case to 3·25 inches in 11 hours; and in the last and recent case to 6·25 inches in 13 hours.

His Excellency the President then read an interesting and important paper, supplementary to that read to the Society at the last November meeting, upon the Drainage and Sewerage of Hobart Town and Launceston, and having reference to the unprecedentedly heavy rains of the 26th and 27th ultimo, to the new demand thus made on the channel of the Hobart Town Rivulet as a main sewer, and its capacity for discharging perhaps the greatest amount of water which may ever have to flow through it within a given time; the fall of rain during thirteen hours of the two days referred to having been at such rate as would give in twenty-four hours a cubic foot of water to every foot of superficial area, thus rendering the number of cubic feet of water passing down the channel of the town rivulet during the continuance of such rain, the measure in square feet of the surface, for which it subserved the purpose of a main drain. Sir William observed the height of the water in the rivulet during the flood when unimpeded, and has had levels and measurements taken at two points since, the mean of which has been used to determine the velocity and rate of discharge during the flood,—the former having been 14·3 feet per second a little above Wellington Bridge, and 9·6 feet per second near the bridge at Campbell-street; but His Excellency does not consider the results now obtained as more than an approximation, and thinks it highly desirable that a series of experiments should be made in the course of the ensuing winter to determine the area and rate of discharge with precision, and suggests, as deserving of consideration, the adoption of means for intercepting during winter a large portion of the water which would otherwise be forced through the town rivulet, and "retaining it for the use of the inhabitants during the dry summer months;" and adds, "were a scheme of this kind carried out with judgment and boldness, it would not only relieve the lower parts of the town from the risk of being flooded, but would afford an ample supply of water, available at all times for the extinction of fires, as well as for the more ordinary purposes of domestic economy."

Mr. Kilburn submitted for inspection by members a few well-executed and carefully coloured Daguerreotype portraits, groups and landscapes, prepared by himself with two lenses set at some distance apart (angle not determined), in order to adapt them for exhibition in the Stereoscope, which Mr. Kilburn produced for the purpose. One group, in which the prominent figure is a handsome bay pony, the property of Sir William Denison, was particularly admired, equally for the life-like fidelity of its fine proportions, obtained by great accuracy of focal arrangements, as for the beautiful and brilliant touch of natural colour thrown over it.

A lengthened discussion ensued upon the great advantages which would accrue to natural science from the discovery of a cheap mode of applying photography to the representation of nice organisms in botany, &c., and upon the principles and practical details of the production of binocular photographic pictures, when Mr. Kilburn gave the results of his own experience, and made observations on the art of taking impressions on glass, on the chemicals requisite in each case, and their imperfections, on the luminous and chemical rays of light, and the difficulties to be overcome in regard to solarization, focal arrangements, &c.

A paper on the Trigonometrical Survey of the island was laid on the table to be read at next meeting.

About ten o'clock, the thanks of the Society having been voted for papers and other contributions, the President left the chair, and the meeting, which was numerously attended, broke up soon after.