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Words, Actions, People: 150 Years of the Scientific Societies in Australia

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Address given in commemoration of the sesquicentenary of the foundation of the Philosophical Society of Australasia.



Douglass



Oxley



Field



Hill



Goulbourn



Howe

“Upwards of thirty years have now elapsed, since the colony of New South Wales was established in one of the most interesting parts of the world—interesting as well from the novel and endless variety of its animal and vegetable productions, as from the wide and extending range for observation and experiment, which its soil and climate offer to the agriculturist. Yet little has been done to awaken a spirit of research or excite a thirst for information amongst the Colonists... It is therefore proposed to form a Society, for the purpose of collecting information with respect to the Natural State, capabilities, productions, and resources of Australasia and the adjacent regions, and for the purpose of publishing, from time to time, such information as may be likely to benefit the world. at large.

The undersigned individuals therefore subscribe their names as original Members of a Society, to be called THE PHILOSOPHICAL SOCIETY OF AUSTRALASIA. Thus on the 4th July, 1821, James Bowman, Henry Grattan Douglass, Barron Field, Frederick Goulburn, Francis Irvine, John Oxley and Edward Wollstonecraft set in motion the first of our scientific societies, with Dr. Douglass named as Secretary. (Philosophical Society’s Minute Book.)¹

¹According to Phillips (1909), an earlier attempt was made in 1818 to set up an Agricultural Society; this failed because of Governor Macquarie’s opposition to

Judge Advocate Wylde's idea of balloting for membership. Macquarie wished emancipists to be freely admitted.



King



Rumker



Brisbane



Berry



Towson

The regulations drawn up by the seven pioneers in 1821 were challenging indeed. Each member in rotation was to produce a monthly paper on some subject connected with the objects of the Society under penalty of ten pounds! This was perhaps the beginning of our present “publish or perish” syndrome.

“Polemical divinity and party politics shall be excluded from such papers.”

“No paper shall be printed without the authour's (sic) permission. The selection of papers for publication shall be determined by ballot - two black balls to exclude “ – perhaps as satisfactory a way to referee papers as any presently in operation!

“No refreshment to be introduced, except tea and coffee, under penalty of Five Pounds.”

“The Society was to meet every Wednesday at each other's Houses in Sydney, alphabetically, at 7 o'clock in the evening. Fine for non-attendance at a quarter of an hour after that time, five shillings. No excuse to be allowed but sickness, public business, or non-residence in Sydney.” Major Goulburn seems to have been the chief offender as a late-comer, being fined no less than thirteen times, and Dr. Douglass was not far behind during the period till August, 1822! Mr. Wollstonecraft was excused from one meeting because “he was called upon to attend the funeral of a friend in the country”, but on another occasion when he was “engaged to dine at Government House “it was” resolved, that such excuse is not sufficient”!

Each member paid in five pounds to help set up a Museum, purchase a few books of reference and other incidental expenses, and Major Goulburn offered the use of a room in the Colonial Secretary's Office for the proposed Museum and Library.

In the next few months Mr. Patrick Hill (Surgeon of the Royal Navy), Reverend Samuel Marsden, William Howe, Esq., Lt. Phillip Parker King, R.N., and Alexander Berry, Esq., were proposed as new members, all but Marsden accepting; while on 24th October, 1821, Mr. Bowman resigned. There was no meeting on the 7th November, the day of Governor Major-General Sir Thomas Brisbane's arrival in the colony, but on the following Wednesday (14th November) the Society approved a letter prepared earlier by the secretary, Dr. Douglass, to be sent to Governor Brisbane together with the minutes of the Society.

“ Sir

... a few individuals of the Colony, anxious to obtain information, in the several branches of science and natural history, which this extensive and interesting quarter of the globe offers to industry and research, agreed to meet and form a Society....

I ... express the anxious wish of this Society, that you would accept the Presidency of their infant body....”

Brisbane’s letter of acceptance is dated 16th November. He attended his first meeting on 2nd January, 1822.

Up to August, 1822, when detailed records of the Society cease, three other members were gained, viz, M. C. Rumker, Esq. (as listed in the minutes of the Society – this is of course Charles Stargard Rumker), Donald Macleod, Esq., Staff Surgeon to Brisbane and his family, and Robert Townson, LL.D. (the latter was nominated in August and his final acceptance is not known).

The cessation of the minutes in August, 1822, is almost certainly due to Douglass’s clash with other Magistrates and with Dr. James Hall over the convict girl Ann Rumsby (*Aust. Dict. of Biography*, Vol. 1, p. 314) which started a long chain of litigation and other events. During all of this Governor Brisbane and Dr. Douglass remained friendly, as did Douglass and Goulburn, but relations between Brisbane and Goulburn became strained and Field and Douglass fell out. Evidence of at least one later meeting is given by Barron Field in his *Geographical Memoirs* (1825), where the paper by P. P. King “on the Maritime Geography of Australia” is labelled “Read 2nd October 1822” before the Society.

Whether the Society continued to be active beyond this date I have not yet found out, but it is listed among the Institutions of Sydney in the Australasian Almanac for 1825 and not afterwards. Field’s preface to his *Geographical Memoirs*, dated 28th February, 1825, sets out the oft-quoted “that infant society soon expired in the baneful atmosphere of distracted politics”.

Achievements of the Society

So far I have dealt with the personalities involved in this first society. Those interested in these quite fascinating characters can and further details in the notes by Cambage (1922) and in the *Australian Dictionary of Biography* (Vols. 1 and 2).

Just what scientific work did the Society try to do? The letter to Brisbane, quoted above, indicates that the Society was concerned to gather facts and carry out original work rather than just discuss already known material. At one of its early meetings it set out to make contact with many overseas societies. Apart from those to be expected in Europe and the United States of America, societies in India (Calcutta, Madras, Bombay), Ceylon and Java were to be approached asking for their cooperation in various ways. In particular, the Society would offer to exchange duplicate materials from its Museum as “it would be desirable to compare these specimens with others resulting from the same natural kingdoms in different parts of the world”.

When, and even if, the circular letter was sent I cannot ascertain. The “draught of a circular letter to the several scientific Societies of the different quarters of the globe” was presented to the meeting of 26th September, 1821, and adopted. However, on the 10th October it was “Resolved, That the first sentence of the Society’s Letter to the various Philosophical Institutions of the Globe, be altered... “, and on 2nd January, 1822, it was “resolved, That the following paragraph

be added to the Society's intended circular Letter to the different Scientific Institutions, throughout the world: 'I am desired to add, that quarterly meteorological tables, together with astronomical observations, will be regularly transmitted to you.' This last addition is clearly the work of Governor Brisbane.

During the first year of the Society material for the Museum was obtained from various sources - the major emphasis being geological.

A collection of minerals, fossils and petrifications came from Rev. Mr. Youl at Port Dalrymple (now Launceston, Tasmania), "specimens of the different stratifications of coal" from Major Morisset, Commandant at Port Hunter (Newcastle), and mineral specimens were brought from Port Macquarie by Mr. Oxley. Furthermore, members were requested "to transmit to the Museum, specimens of the different soils in their respective districts of the country, noting the depth at which each specimen was taken, and such other particulars as they may deem proper". Contacts likely to obtain suitable articles for the Museum were eagerly sought. Captain Raine of the *Surry*, sailing for Macquarie Island, and Mr. Kent, bound for the Sandwich Islands (Hawaii), were given written Instructions and Queries, and Raine's report [See J. S. Cumpston (1968), MacQuarie Island Antarctic Division, Department of External Affairs, Melbourne, pp. 50-53.] proved particularly interesting. Assistant Surgeon Fenton at Port Macquarie was requested to obtain "specimens of the timber and natural history of that port" which were apparently later transmitted through Captain Allman, the Commandant there. In April, 1822, Mr. Field presented "two Peruvian bottles of great rarity and antiquity". The hand of Douglass, of Irish origin and a graduate of Trinity College, Dublin, can be seen in the request to the Museum Committee "to report what specimens of natural history the Society can spare to the Museum of Trinity College, Dublin". The Museum also housed a Catalogue prepared by Field "digested into one volume" of the respective libraries of eight of the members.

Perhaps of most interest is a specimen the Society *did not* obtain. At the meeting of 14th December, 1821, "Mr. Wollstonecraft informed the Society, that Mr.[Hamilton] Hume reported the existence in Lake Bathurst, of an animal supposed from his description to be the manatee or hippopotamus". Consequently it was "Resolved, that Mr. Wollstonecraft be authorized to reimburse Mr. Hume expense he may incur, on the part of himself or any black natives, in food or labour, for the purpose of procuring a specimen of the head, skin or bones of this animal; and that the Treasurer do make good the same".

Papers of the 1821 Philosophical Society

How effective was the resolution of the first meeting concerning monthly papers and fines?

The records give the answer. At this first meeting Dr. Douglass was at the head of the list to give a paper, but this seems to have been forgotten later in the year when after the period devoted to organizing the Society it was resolved (14th November, 1821) "that the first preemptory paper be produced and read, on the first Wednesday in January next". In the January minutes we find "Mr. Berry, who stood first in order of the Society's Rules to furnish a paper to be read before the Society, not being prepared to do so, Mr. Field read a paper on the Aborigines of New Holland and Van Diemen's Land, and it was consented that Mr. Berry's turn should be postponed till the first Wednesday in next month".

Field's paper was preceded at the December, 1821, meetings of 19th and 26th by two from non-members. On the 14th was "Read the Journal of an Expedition from Lake Bathurst to the Pigeon House, on this Coast, performed last month by an European Native of the Colony, Mr.

Hamilton Hume”, while on the 26th “Read the Journal of a Tour to Jervis’s Bay from the County of Argyle, performed by Charles Throsby, Esqr. in November last and December instant”.

At the 7th February, 1822, meeting when Berry was due to speak we find in the minutes “Mr. Berry, whose turn it was to read a paper before the Society, was reported as unaccountably detained on an exploratory voyage to Bateman’s Bay, the result of which he intended to make the subject of his paper”. However, at the 13th February meeting “ Mr. Berry read a Narrative of his late Voyage of Discovery to Jervis’s and Bateman’s Bays”. It was “resolved, that by reason of Mr. Berry’s detention from the last meeting by the perils of the seas, his paper be now accepted as a satisfaction for his fine”. On 6th March Berry followed this up with a second paper on the Geology of the Coastline between Newcastle and Bateman’s Bay.

At the 13th March meeting Mr. Rumker read a paper on the importance of astronomical observations in the southern hemisphere, and some weeks later the President (Governor Brisbane) “presented to the Society various Memoirs and Tables of astronomical and other calculations” for its use.

McLeod was apparently next on the list, but at the 10th April meeting “Mr. Macleod not having laid before the Society a paper, according to the laws of rotation, and having, by this default, incurred a fine of Ten pounds, Resolved, That, for special reasons, the said fine be remitted upon the production of the paper on the first Wednesday in the next month”. The question of Mr. McLeod’s paper was adjourned at subsequent meetings and on 5th June, 1822, we find a new resolution on the books “that the Society’s Rule making it compulsory (*sic*) upon each Member in his turn to write a monthly paper, be suspended for the next six months; and that it be left to the interest and zeal which it is hoped each Member has in the objects of the Society, to lay before them a paper at such time as he may think proper, without any penalty for default. At the same meeting it was decided that the first meeting of each month should be held at the Secretary’s house at Paramatta (*sic*) and that ‘henceforth all Members absent from such meetings be fined ten shillings.’” However, for the July meeting “His Excellency the President requested the favour of the Society’s company at a dinner... being the anniversary of the institution of the Society”.

Although much of this is amusing, we must acknowledge that at least 30% of the Society’s members contributed papers in a period just over a year—a figure certainly not approached by our present societies!

What was the quality of these papers? Rumker’s paper setting out the work which could be done in astronomy was the first product of the group setting up Brisbane’s observatory at Parramatta. The three workers involved, Brisbane, Rumker and James Dunlop, in a few years carried out an extraordinary amount of important work. Regular observations began in May, 1822, but some observations were made soon after the arrival of Brisbane in November, 1821 (Wood, 1966). Berry’s geology paper (1825) contains some very perceptive material indeed. He recognized the unconformity between the rocks of the Sydney Basin and the older rocks in the Bateman’s Bay area; he had more than an inkling of the significance of the Lapstone Monocline, and described in some detail the character of the Hawkesbury Sandstone. Field’s paper, as Hedley (1921) says, “did not appreciate that the ragged and despised black-fellow at his kitchen door was a treasury of ethnological information”, but Hedley’s comment that Field “produced a trashy and pedantic memoir” is rather unkind at this early attempt at ethnology when one considers the general attitude of Europeans to natives in the early 19th century.

Governor Brisbane was appreciative and moved at the 6th March, 1822, meeting “that the thanks of the Society be given to Mr. Field for his valuable paper on the Aborigines of New Holland”. King’s paper (King, 1825), as one would expect, is a competent one which describes many features of Australia’s coastline.

As a final note to the papers presented, it is apparent that they all deal with rather broad topics. This may have been caused by an early resolution of the Society “That every experiment, related in any paper laid before the Society, shall (if possible) be performed and verified at the reading of the paper, or if not possible at the time, that the Society shall take the best means to determine the truth and value of such experiment, and that the means and result of such verification be deposited in the Society’s Museum”. Perhaps there would be some merit in introducing a similar resolution today!

The Commemorative Tablet at Kurnell

One other activity of the Society still remains to be mentioned. This is the setting up of a memorial tablet at Kurnell to commemorate the landing of Cook and Banks.

Barron Field first brought up the matter at the 18th July, 1821, meeting when he “laid before the Society a Latin Inscription by a friend, commemorating the landing of Capt. Cook and Sir Joseph Banks, K.B. on this coast, for the purpose of being engraved on brass and erected on the spot by this Society”. Captain Irvine took up the proposal but suggested some amendments, and on 8th August, 1821, it was resolved “that an English Inscription... would be preferable”. Major Goulburn, is next on the scene, and his inscription, presented 15th August, was adopted. However, there were second thoughts on the inscription, which were finally thrashed out at the 29th August meeting, and “the language of the Inscription was finally settled”.

Messrs. Field and Oxley were deputed to “form a Committee to procure the Inscription to be engraven on brass, with a view to its erection by the Society, against a rock, on the south shore of Botany Bay”.

On 23rd. January, 1822,

“The Inscription Committee reported that the Tablet was now ready, and that they had ascertained a proper place, for its erection; and they therefore requested the honour of the Company of the President and Members to a little collation on the spot, upon the affixing of the Inscription, on such day as the President and Members shall appoint.”

The meeting of 6th March announces that “the day for affixing the tablet... was appointed” but gives no details. However, the *Sydney Gazette* of Friday, 15th March, 1822, has the following—

“On Wednesday morning his Excellency the Governor came to town for the purpose of accompanying the Philosophical Society to the south head of Botany Bay to erect an inscription to commemorate the first landing of Captain Cook and Sir Joseph Banks; but when the party arrived at the north shore, the state of the wind forbade their crossing the bay, The excursion was therefore postponed till the following Wednesday, and the President and members dined where they were, and were honoured by the company of the principal officers of the ‘Dauntless’, together with Captain Elliott and, Captain Piper.”

The minute book gives no mention of this activity, but records a meeting at Major Goulburn's that evening at which Rumker's paper was read. There is a hint of some changes in organization, however, in the statement "The Minute Book being accidentally left at Parramatta the proceedings of the last Meeting were not read".

The rough weather had abated the following week and the Society was successful in its efforts.

The *Sydney Gazette* (Friday, 22nd March) once again records the activity—

"His Excellency the Governor-in-Chief came to town on Tuesday last, and returned to Parramatta yesterday. On Wednesday last his Excellency the President and members of the Philosophical Society of Australasia, made an excursion to the south head of Botany Bay, for the purpose of affixing a brazen tablet, with the following inscription, against the rock on which Captain Cook and Sir Joseph Banks first landed.

A.D.—MDCCLXX.

"Under the auspices of British science, these shores were discovered by JAMES COOK and JOSEPH BANKS, the Columbus and Maecenas of their time. This spot once saw them ardent in the pursuit of knowledge. Now, to their memory, this tablet is inscribed, in the first year of the Philosophical Society of Australasia.

"Sir THOMAS BRISBANE, K.C.B. and F.R.S.L. and E., (Corresponding Member of the Institute of France),
President.

A.D.—MDCCCXXI.

"On this interesting occasion the Society had the good fortune to be assisted by Captain Gambier and several of the officers of His Majesty's ship 'Dauntless'; and after dining together in a natural arbour on the shore, they all repaired to the rocks, against which they saw the tablet soldered, about twenty-five feet above the level of the sea, and they there drank to the immortal fame of the illustrious men whose discoveries they were then met to commemorate."

The Society's minutes (27th March, 1822) record the matter more formally -

"The Inscription Committee reported that the President and Members were engaged all day on Wednesday last, in affixing the tablet to the memory of Cook and Banks, at the South head of Botany Bay, and that the Society had the honour to be assisted in that duty by Captain Gambier, and several of the Officers of His Majesty's Ship Dauntless, now refreshing at this port, on her way from South America to India, with specie. They reported the tablet to be pinned and soldered into a beetling rock, twenty-five feet above the level of the sea, and to bear from Cape Banks,..., and from the Barrack Tower on the north shore,..."

[Apparently the compass bearings were not made available to the Secretary.] Barron Field was moved, by the occasion to write several sonnets, which he later published (1825). On the 15th May, 1822, the Treasurer was "authorized to pay five guineas to Stewart, the Engraver of the Inscription-plate ". But the matter was not quite closed then because at the same meeting it was

"Resolved, That it be referred to Capt. King and Mr. Wollstonecraft, to enquire into the state of the Inscription-plate and to consider whether, with the assistance of public subscription, a pillar might not be erected for the reception of it, out of the reach of the sea-spray."

There is no further reference to the plate in the minutes.

Apparently it was not moved, and its existence was only periodically noted by the scientific societies (e.g. in 1862, 1880, 1921), while there was no comment about it during the Bicentenary Celebrations held at Kurnell in 1970.

An interesting sidelight on the preparation of the plaque is that the earlier versions each made provision for insertion of the name of the President, although none had been elected. It seems likely that the Society had made up its mind quite early to ask Brisbane to become President, despite the absence of any comment in the minutes.

Final Comments on the 1821 Philosophical Society

A Museum created, papers given and published, a monument erected, and even an anniversary dinner—these are solid achievements for a society which operated for somewhat less than two years.

In a sense, the Society probably started too early. Just a few years later and there might have been a stronger body of more active scientists ready to keep things going—Alexander Macleay, John Busby, Archdeacon Scott, Rev. C.P.N. Wilton, Thomas Mitchell to name but a few.

Even at the time of formation there are obvious gaps in the potential membership. Why did not James Dunlop become a member? Did Brisbane keep him out of the way? Was Allan Cunningham away too much? What about Hamilton Hume and Charles Throsby (related to Surgeon Hill by marriage)—did they live too far out of town? Why did not Townson come in at the start—did the Society not know of him? And what about John Dickson the engineer?

Douglass did not arrive in Sydney until 1 May, 1821, and Goulburn less than a year earlier, and these were undoubtedly the prime movers in getting the Society going. Perhaps Douglass wanted to build up a good image quickly in the colony following his rather irregular departure from England. All in all there is no doubt the Society started very rapidly before Douglass and Goulburn could have been acquainted with a wide circle of people.

Perhaps I have dwelt too long with the infant Society, but I feel that in many senses its affairs have been rather poorly treated by earlier writers, many of whom lacked the Society's records. On the other hand, despite our commemoration this year, I feel, like J.H. Maiden (1918), that its links with our present society are tenuous indeed, despite the re-appearance in Sydney of a widely-travelled Dr. Douglass early in 1848.

Other New South Wales Activities, 1822-1850

Whereas philosophical affairs in New South Wales quickly declined, earthier matters were surer of attention, and a series of agricultural and horticultural Societies was established with gay abandon between 1822 and 1856. Maiden (*op. cit.*) has dealt with these societies in some detail. Suffice it to say that Governor Brisbane, Frederick Goulburn, Barron Field, Robert Townson, Alexander Berry, Edward Wollstonecraft, H. G. Douglass, Captain King and William Howe appear in the list of officers of the first Agricultural Society, which first met on 5th July, 1822, and followed up with an inaugural dinner on 16th July. This society seems to have had its demise in 1836, as did the semi-rival Australian Society formed in 1830.

Smith (1881) believed that the Australian Society was "An attempted revival" of the Philosophical Society, but there is no evidence to support this view.

These societies were followed by the Australian Floral and Horticultural Societies (sometimes called the Sydney Horticultural Society 1836–1848) supported apparently by professional gardeners, and the “Australasian Botanic and Horticultural Society 1848–1856”, which joined with the “Horticultural Improvement Society of New South Wales” to form the “Australian Horticultural and Agricultural Society” in the latter year. The 1848 Society had amongst its officers E. Deas-Thomson, Alexander Macleay, Charles Nicholson, George Bennett, Rev. W. B. Clarke, William Macleay, Charles Moore and Thomas S. Mort. The Horticultural Improvement Society had an independent life only from late 1854 to December, 1856, under its President Sir William Denison and Vice-Presidents Sir Charles Nicholson and Sir Thomas Livingstone Mitchell.

The Australian Horticultural and Agricultural Society, formed on 8th December, 1856, was the precursor of the present separate Horticultural and Agricultural Societies of N.S.W., and its President Sir William Denison. Its meetings were regular and covered a wide variety of topics, mainly concerned with plant varieties useful for cultivation and properties of soils.

Scientific Activities in Tasmania, 1821-1855

Mention of Sir William Denison provides a link with the distant scientific societies of Tasmania.

Scientific societies in Tasmania can also be dated from 1821 (Piesse, 1914), In that year The Van Diemen's Land Agricultural Society first saw the light in Hobart under the Presidency of Governor Sorell. The major object of the Society seems to have been to put down sheep-stealing! but it was also concerned with improvements in husbandry. The Society prospered at least till 1829, when the Van Diemen's Land Scientific Society was formed “constituted... in imitation of the Royal & other literary & scientific societies of Europe & India”. Among the Society's objects was to be a museum of natural history and an ‘Economic or Experimental Garden... a piece of ground set apart for eliciting and discovering the properties and uses to which the vegetable productions of the island may be applied and to ascertain the improvements which may be adopted in their cultivation”, In this Society the Governor (Colonel Arthur) was Patron and its first President Dr. John Henderson. This gentleman, in his inaugural address, proceeded to remark on the present state of the natural sciences, particularly as regards their nomenclature” and suggested in place of the existing nomenclature the substitution of certain syllables and letters, of which might be “compounded names expressive of the diagnostic marks of each particular plant”. This seems to have been an attempt to introduce the then recently developed chemical formulae technique into botany (but see Hoare, 1968). Henderson's remarks did not go unchallenged at the time, James Ross, defending the “ excellent classification which learned men had adopted in the old world”. Henderson seems to have had penchant for the unorthodox in science as witness his ideas about the Canobolas Mountains made during his trip in search of the inland sea in 1831 (Henderson, 1832).

On the same evening, 16th January, 1830, the Society entertained its Patron at dinner, where the chef “had done his best to cover the table of our philosophers with the first specimens of our fish, flesh & fowl”.

The Society met monthly, discussed many matters and established a museum, but did not last.

In 1887 Sir John Franklin came to Hobart and the following year created the Tasmanian Society, which published an excellent journal largely on natural science. Rev. John Lillie was its first Secretary. The setting up of the Franklin Museum at Ancanthe, Kangaroo Valley, in 1842 was closely associated with this Society. Franklin was still in Tasmania when his successor, Sir Eardly

Wilmot, arrived in 1843. Wilmot wished to reconstitute the Society and put the Colonial (botanical) Gardens in its care. Consequently, on 14th October, 1843, he formed “The Botanical & Horticultural Society of Van Diemen’s Land”, which in 1844 became “The Royal Society of Van Diemen’s Land for Horticulture, Botany and Advanced Science”. Eardly Wilmot as Governor was still technically President of the older “Tasmanian Society”. In November, 1843, he resigned from this Presidency, thinking perhaps that the Society would fold, but it turned and re-elected Franklin, who must have been rather embarrassed.

However, Franklin soon departed. and the Tasmanian Society, in the guise of its most active member, R.C. Gunn, retired to Launceston.

[Fuller details of these early societies are given in Piesse (*op. cit.*) and Morton (1901).]

Eardly Wilmot was followed as Governor in 1847 by Sir William Thomas Denison.

There is no doubt that Sir William Denison (1804–71) deserves more than a passing mention in the history of science in Australia. He was trained as an army engineer at the Royal Military Academy (1819–23) and was employed in Canada between 1827 and 1831 on the construction of the Rideau Canal. In February, 1838, he became instructor of engineer cadets at Chatham, where he established an observatory, and in 1836 he was employed as an observer at the Greenwich Observatory. In 1837 he was in charge of works at Woolwich Dockyard, and remained with the Admiralty till June, 1846. During this period he was made a Fellow of the Royal Society (*Aust. Encycl.*, Vol. 3, p. 232). He was appointed Governor of Tasmania early in 1847.

Soon after his arrival, he interested himself in the affairs of the Royal Society of Van Diemen’s Land. (The Society had obtained royal consent in 1844. In 1855, when the name of the colony was changed, it became the Royal Society of Tasmania.) In February, 1849, Denison wrote to Admiral Beaufort “I have set on foot a scientific society; that is, I have succeeded in making a society, which had been nominally established several years, perform some work, and I hope to be able to forward home a specimen of its labours shortly”.

Early in 1848, Dr. Joseph Milligan was appointed paid Secretary of the Royal Society “in its proper and originally intended character of a Scientific Society”, in succession to Dr. Lillie. Sir William Denison made it possible for the Society to secure Dr. Milligan’s services by giving him at the same time an appointment under the Government.

The Society prospered under Milligan’s secretaryship and Denison’s patronage, Volume 1, Part 1, of *Papers and Proceedings* appeared in May, 1849, printed at the Government Printing Office, and similar volumes appeared in following years. In September, 1853, a northern branch was set up at Launceston and flourished till about 1860. A collection of rocks and minerals was gathered by the northern members. These afterwards went to the Mechanics’ Institute of Launceston and formed the nucleus of collections in the Victoria Museum and Art Gallery about 1880. In June, 1848, Denison gave permission for the Society to use free of charge “the large Committee Room at the Legislative Council Chamber” in Hobart as a museum, library and society meeting room. This arrangement continued till 1852.

During his time in Tasmania Denison read papers to the Society on a wide variety of topics.

Denison in New South Wales

In 1855 Denison went to Sydney as Governor of New South Wales. On 30th July that year Sir William presided when members of the “Australian Society” met with a view to reactivating that Society, which had been formed in 1850 (largely as a result of Dr. Douglass’s activities). Some information about this Australian Society is given in Clarke (1867) and Maiden (*op. cit.*). On 9th May, 1856, the newly constituted Philosophical Society of New South Wales, which included many members of the Australian Society, had its first meeting, at which Denison presided and read a paper on “The development of the railway system in England, with suggestions as to its application to the colony of New South Wales”.

Writing to Colonel Harness in February, 1857, Denison said “The work of the Government is taken out of my hands... [a local legislative body now governed] but I manage to make work for myself. I am President of a Philosophical Society, and I have succeeded in organising an Agricultural Society. For both of these I have to write.”

In a letter to Sir Roderick Murchison, 25th June, 1856, Denison wrote:

“ I have got my Philosophical Society to work at last ... I determined I would not be President of an effete body, so I called the members together, read a paper on Railroads, got them to agree to meet regularly once a month for eight months in the year, and shall now, by the help of occasional papers from myself, and of suggestions to others, manage, I dare say, to generate, first an appetite for writing, and then a taste for observation, in order to have something to write about.”

Denison’s next paper, “On the Moon’s Rotation”, was read on 8th July, 1857, together with a paper “On a New Sun Gauge or New Actinometer” by Mr. (W.S.) Jevons and “On Sanitary Reform of Towns and Cities” by Dr. Bland. On 12th August, 1857, Denison continued his earlier topic “On Railways”. He mentions this paper in a letter from Braidwood to Sir Roderick Murchison, in which he notes that his practical knowledge of the colony, gained in the past two years, has given him a clearer understanding of the best type of railway for the colony. [He proposed wooden rails and horse-drawn carriages initially.] On 8th December, 1858, his subject was “On the Filtration of Water through Sand”. This is only a short time after the important work of Henri Darcy on water movement was carried out and published in France. At the Council meeting, 16th September, 1859, there is mention of Sir William Denison’s paper “On the Dental System of Mollusca” (see *Siphonaria* etc. below) being published in the *Empire*. At the 19th September, 1860, meeting his topic was “Bridge Building”, “which he illustrated by numerous drawings and plans of bridges”. The last meeting of the Society he attended was on 19th December, 1860, when he was presented with a farewell address in which, among other things, is stated... “ We are indebted for the reorganisation of the Society on a satisfactory basis, also... particularly for the valuable papers treating of the special capabilities and requirements of the Colony, which you have contributed from time to time....” Denison capped this address by reading two communications he had received from Mr. Thomas Hale Bellambi, giving particulars of the horse tramway he had constructed from the coal-mine to the harbour.

The construction of Sydney Observatory in 1857 followed Denison’s work in the Executive Council two years earlier. Writing to Murchison on 21st May, 1855, he said, “I am going to try to persuade the Council to vote a sufficient sum to re-establish the observatory here, and I have written to Airy to ascertain whether he can find me a competent observer”. He ensured that the activities of the Observatory “would extend beyond the work connected with the running of a time ball for purposes of Navigation” (Wood, 1967). He maintained a close association – with

the Rev. William Scott, first astronomer, who contributed a number of papers to the Philosophical Society.

In May, 1859, Sir William suggested that a Microscopical Committee be elected. This soon took the form of a special section of the Society, it was active only till September the following year. His Excellency exhibited various features at meetings, and at the September, 1859, meeting read a paper “explanatory of the microscopic objects he had mounted and laid before the meeting, viz:—Tongues of two *Siphonaria*, *Chiton*, *Chitonellus*, *Risella*, *Turbo*, *Radius*, *Nerita*, and two *Patellas*.”

This is an appropriate point in the history of the New South Wales societies to deal briefly with some developments in Victoria.

Victorian Societies

The formation of the Philosophical Institute of Victoria (later the Royal Society of Victoria) out of the two societies “The Victorian Institute for the Advancement of Science” and “The Philosophical Society of Victoria” has an interesting link with the Tasmanian societies, as the first president was Andrew (later Sir Andrew) Clarke (1824–1902).

Clarke was a military engineer who had the good fortune to be sent to Hobart with Sir William Denison in 1847. He later (1849) became Denison’s private secretary and was always appreciative of Denison’s help and friendship. He was an active member of the Royal Society in Tasmania, but in May, 1853, moved to Melbourne as Surveyor-General. Denison’s influence may be discerned in Clarke’s planning of Victoria’s first railways, installation of the electric telegraph, and initiation of the Museum of Natural History. Clarke held office in both of the foundation societies (President of the Philosophical Society in 1855) and became President when they amalgamated in July, 1855. He left the colony in 1858.

From the outset, the Victorian society took an interest in sponsoring exploration, the first expedition being that of Burke and Wills.

The Royal Society of Victoria (as it became in 1859) was lucky to have the patronage of Sir Henry Barkly, Governor of Victoria from 1856 to 1863. Barkly, who also helped to found the Acclimatisation Society and the “National Observatory” (in Melbourne), was by no means a figurehead.

An important feature of the Society’s early years was the fairly regular appearance of its transactions. In 1860 a very interesting (and geologically quite important) controversy was commenced in the Transactions. This was the long-continued verbal battle between, Rev. W. B. Clarke and Professor Frederick McCoy on “the Question of the Age of Australian Coal Beds”. Four exchanges of opinion and information occur in the 1860 volume alone, following McCoy’s original description of a fossil fern found by Richard Daintree as *Taeniopteris* and of Mesozoic age, Clarke maintained that the Australian coal measures were Palaeozoic. Although Clarke’s opinion proved generally correct, this controversy was not really solved till much later. Aspects of the later history of the Royal Society of Victoria are discussed by Prescott (1961) and will not be repeated here.

I will now move on to the important year 1874, passing without comment over the period when the Philosophical Society of New South Wales changed its name (1866) and became the Royal Society of New South Wales. This period has been adequately treated by others, particularly Rev. W.B. Clarke in his inaugural address of 1866 and by Smith (*op. cit.*).

1874—The “Challenger” Expedition, William Macleay and the Linnean Society

1874 was an important year for Australian science, not least because of the visit of the famous “Challenger” expedition which set the science of oceanography on a firm footing. The scientific part of the expedition was under the charge of Professor (later Sir) Wyville Thomson, The *Challenger* reached Sydney somewhat earlier than expected on 6th April, and remained till 8th June. Several long articles in *The Sydney Morning Herald* describe the results of the Expedition’s work up to its arrival in Australia. Before coming to Sydney, Challenger spent two weeks in Melbourne, where it was well received.

Magnetic observations were also carried out at the Melbourne Observatory. Thomson wrote that their “stay was greatly enlivened by the receptions and excursions arranged for the members of the Expedition by the inhabitants of Victoria”.

In Sydney, Thomson, and other scientists were made welcome at Elizabeth Bay House by William Macleay and at other houses, both in Sydney and the surrounding country, and the local zoologists organized an enjoyable collecting “picnic” around the shores of Port Jackson on 23rd April. This was reciprocated by the *Challenger*, which took invited guests out to sea to show off its dredging equipment on 3rd June. *The Empire* (4th June, 1874) gives an excellent account of this excursion.

Discussions with Sydney scientists influenced Thomson’s activities. He wrote, “it seemed to us from what we heard in Sydney there was a chance of making valuable additions to the natural history of north east Australia, by examining carefully the faunae of some of the rivers. Those in which *Ceratodus* had lately been discovered had the greatest interest.” Thomson thought it possible that other forms of Dipnoi might be found. Consequently Thomson, Lt. Aldrich, John Murray, Mr. Pearcey and others, armed with information and introductions, went by ship to Brisbane and thence to Maryborough, reaching there on 11th May. The party, with the help of Mr. Sheridan, the customs officer, an enthusiastic and knowledgeable amateur naturalist, camped some miles up the Mary River, where “*Barramunda*” (as the natives called the lung-fish) had been caught before.

Orthodox line fishing, netting, and even dynamiting (!) produced a considerable variety of specimens, but it was not till the tenth day, just before the party was due to return, that three specimens of the lung fish were caught on lines.

During the absence of Thomson and party in Queensland, H.N. Moseley made two excursions to “Browera Ck.” (i.e. Berowra Ck.), where he observed in detail the physical character of the valley, the complex nature of the water environment varying from fresh to salt with its great variety of fauna, and the extensive kitchen middens which stretch for some miles along the banks.

The ageing Rev. W.B. Clarke, senior Vice-President of the Royal Society, had been ill and unable to prepare an Anniversary Address for the annual meeting of the Society on 20th May, so following a short introductory paper the *Challenger* officers exhibited some of their sampling apparatus and discussed their expedition in an informal conversazione which attracted a big audience. The Council of the Society was embarrassed to hear indirectly at its 27th May meeting that a bale of 40 yards of canvas belonging to the Expedition had “gone off “ at the conversazione! The Council meeting of 24th June records that 40 yards of canvas had been purchased and sent to catch H.M.S. *Challenger* at New Zealand.

Clarke met Thomson on his return from the successful trip to Queensland and discussed some of the results of the expedition, at that time known in detail only for the Atlantic and Indian Ocean sections. Clarke's Anniversary Address of May, 1875, and his additional paper given in December, 1875, is an excellent summary of the Expedition's work. Macleay also met Thomson at the end of May and discussed his Queensland work.

Earlier in the year (28th March) Sydney University announced the acceptance of William Macleay's offer to bequeath the Macleay collections and library to the University. In view of the long association of the Macleay family with the Australian Museum (Alexander, William Sharp and William were all at some time Trustees), it may seem curious that the bequest was not offered to the Museum. Many years before (about 1852) the University had put out feelers to have the Australian Museum transferred to its charge, but this move was rejected (Etheridge, 1916).

Probably the main factor in the bequest going to the University was the friendship between William Macleay and his father-in-law, Sir Edward Deas-Thomson, at that time Chancellor of the University. Deas-Thomson believed that the announcement of the bequest at this time would be a stimulus to the formation of a medical school at the University, and the setting up of a hospital (Prince Alfred) adjacent the University.

Macleay was keen to spend more time on his scientific work, particularly his collections, but his seat in Parliament prevented him. He had intended to resign at the end of the session, but the sudden resignation of the Government in November, 1874, gave him the opportunity to leave earlier than he had expected. He began immediately to devote himself full time to the pursuit of "Natural Science".

In 1862 William Macleay, with the support and approval of W.S. Macleay, had commenced one of Australia's earliest specialist societies—the Entomological Society. Like most groups, it started enthusiastically, but attendances waned and it seems that no meetings were held from May, 1865, to December, 1866, or in 1871 or 1872, while only one or two were held in other years. Despite William Macleay's own statement that the Society closed in 1869, the minutes of several later meetings are available and indicate that sporadic meetings were held until 1874 (Fletcher, 1893).

Although very small, the Entomological Society was important (1) because it focussed some attention on biology, a topic generally neglected by the Philosophical Society in the 1860's; (2) because it issued its own publication, the first issued by a specialist scientific society in New South Wales; and (3) because it almost certainly helped to stimulate workers like Gerard Krefft, E.P. Ramsay, Dr. J.C. Cox and Count Castelnau, all of whom expanded their work into other biological fields. It should be noted that of the 24 members only six offered papers to the Society.

There is no doubt that the *Challenger* visit stimulated considerable activity among the "Natural Scientists" residing in Sydney. The original idea of forming a wider-ranging natural science society than the defunct Entomological Society seems to have been due to Commander Stackhouse, R.N., and Dr. Alleyne, then the Health Officer, but known around the town as "the curious old gentleman with the shocking hat who used to frequent the Australian Club". Alleyne had in 1852 been the first medico to administer chloroform in the colony. Of Stackhouse I know little, but he is probably commemorated in the genus *Stackhousia* (which includes about 16 species of herbs with rather woody rhizomes).

During October, 1874, Stackhouse and Alleyne “sounded out” the opinions of persons likely to be interested and then, in association with Macleay and W. J. Stephens, they proceeded to draw up a constitution. Macleay, in fact, missed the vital meeting on Thursday, 24th October, because of the threat of rain and some indisposition, but despite this was informed next day that the members wanted him for President. The name chosen for the new society was the “Linnean Society of New South Wales”, proposed by W.J. Stephens, while Stackhouse proposed “The Banksian Society”. The first activities of the Society were Linnean “picnics” or field days on the harbour (similar to the *Challenger* picnic) on 21st November and 19th December, when a good time was had by all—some samples were obtained for collections, others were capably cooked by W.B. Dalley to provide a pleasant repast, and all returned suitably sunburnt.

In his Chairman’s Address to the Linnean Society (31st January, 1876) outlining the first year of its activity, Macleay, while speaking kindly of the Royal Society, justifies the formation of the new body “... I allude particularly to the Royal Society of Sydney (*sic*)... a number of valuable papers have been read at its meetings. But mingled with those scientific papers have been others not of a scientific character, and possessing certainly no interest except of the most local kind. The publications of its proceedings also have not been conducted with the celerity and regularity to be expected from a society not deficient in point of means, and it is that irregularity and uncertainty in publication which makes it as a society useless as a record of zoological, botanical or geological discovery. Concerning the Linnean Society Macleay went on to say, “The proceedings of the monthly meetings, with the papers read, have been printed as soon as the matter in hand was sufficient for an octavo sheet, And the only regret I have to express, is, that the numbers of those contributing papers are not greater, and that Zoology seems to turn the scale upon Botany and Geology”.

I have not found any comment about the formation of the Linnean Society in the records of the Royal Society at the same time. Despite the *Challenger* visit, the Royal Society was not very lively. Rev. W. B. Clarke was in rather poor health, and Professor Liversidge, relatively new to the colony, was no doubt a little hesitant to start things moving. Two general meetings late in 1874 lapsed for want of papers, and the 30th September Council meeting lapsed for want of a quorum. However, the Council sent out letters asking for papers to be offered and shortly after decided that regular meetings would be held whether or not papers had been ordered and that notes and exhibits would be welcomed.

Despite the shortage of papers, the Society still had standards to maintain. At the 27th June, 1874, Council meeting a letter from Mr. Martin Gardiner was received offering to read a paper on “Geodesic Investigations”. However, Council refused to entertain his paper when “Hon. Treasurer informed Council Mr. Gardiner had not paid any subscription to the Society for the last eleven years!”

Comparison of the membership lists of the Royal and Linnean Societies in 1875 shows 49 members common to both, including Stackhouse, the first Secretary of the Linnean Society, W.J. Stephens, Liversidge, James Cox and E. P. Ramsay. Although Macleay was elected a member of the Philosophical Society of New South Wales in August, 1856, he did not continue into the Royal Society in the 1860’s. E.C. Merewether, Deas-Thomson and Sir William MacArthur belonged only to the Linnean Society in 1875, although the last-named was in the Royal Society in 1872. The Royal Society had an additional 106 members, the Linnean Society a separate 75.

Both societies began to develop rapidly, whether under the stimulus of competition as well as changing social conditions I cannot be positive. There was generally a separation into topics of

Natural Science on the one hand (Linnean Society) and Physical Sciences on the other (Royal Society), although some overlap is apparent.

The organizing abilities of Liversidge, backed by his sustained efforts, were most important to the Royal Society, while there is no doubt Macleay's personal backing of the Linnean Society both with energy and cash helped it to consolidate.

The importance of regular printing of the Royal Society's journal by the Government Printer should also not be overlooked. This commenced in 1878 but needed Liversidge's editorial capabilities to give the journal a new format.

A further stimulus for science occurred late in 1874, when a number of observation stations were set up in New South Wales to observe the transit of Venus. Details of this highly successful activity are given by Russell (1892).

The Garden Palace Fire

One of the tragedies for the historians of Australian Science occurred on 22nd September, 1882. This was the destruction of the Garden Palace by fire. The building had been used for the very successful International Exhibition of 1879–80 and must be considered one of the most remarkable achievements of James Barnet, the Colonial Architect. It certainly is an indication of the level which technology had achieved in the colony at that time. Barnet was given his first instructions for preparation of plans about the middle of December, 1878, building commenced on 13th January, 1879, "yet on the 17th September, exactly eight months afterwards, the building was finished, and the Exhibition was opened...". "To accomplish the work... much of it had to be done at night, with the aid of the electric light." It covered a site of more than five acres, was 800 ft. north to south, 500 ft. east to west: the main dome 100 ft. in diameter reached a height of 210 ft. above the ground. In addition there were four entrance towers and 10 minor towers. Construction was largely of brick and timber, and the cost a little over £198,000.

Following the highly successful Exhibition, the building was converted for use by various Government departments and societies. On the ground floor was the new Technological and Sanitary Museum, office of the Mining Department, the office and museum of the Linnean Society, and "a very extensive museum of Geological specimens arranged by the officers of the Department of Mines". The fire destroyed many precious documents and specimens. "It is estimated by Mr. Moore, the Curator of the Botanic Gardens, that about 20,000 or 30,000 plants are nearly all destroyed". Along with all the fossils, minerals and rocks collected by the Mining Department was "the collection of the late Rev. W.B. Clarke, which, with Mr. Clarke's maps and library, cost the Government £7,000." The whole collection had an estimated value of £50,000.

The Linnean Society suffered to the extent of over £2,500. It lost the whole of its library, comprising donations and exchanges and about £1,200 worth of books recently purchased by William Macleay, together with its collection of plants and all its publications, while the Rev. Tenison-Woods lost books worth £1,500. Along with many works of art, the results of the 1881 census were also lost; The *Sydney Morning Herald* wrote caustically "there can be no doubt that a feeling of the utmost indignation will pervade all classes of the community when it is realized that that information which has cost so much to collect... is now irreparably lost".

The Council of the Linnean Society met the same day as the fire to consider what action to take, and a general meeting of members was called to discuss the Society's situation. In the event the Society decided on a policy of "business as usual".

The Geographical Society of Australasia—The First Australia-wide Society

It is not generally remembered that this Society was closely related to the Royal Society of New South Wales. One of Liversidge's changes introduced into the Royal Society was the provision of specialist sections. These first became active in 1876. [Similar specialist sections were introduced about the same time in the Royal Societies of Victoria and South Australia.] Initially, allowance was made for nine sections—Astronomy and Physics, Chemistry and Mineralogy, Geology and Palaeontology, Zoology and Botany (including Entomology), Microscopical Science, Geography and Ethnology, Literature and Fine Arts (including Architecture), Medical Science, and Sanitary Science (and Statistics). These had varying success, but by 1882 only two, the Microscopical and Medical sections, were active. There were, however, later section renewals and developments.

The Geographical section was one which had lapsed after some activity. However, on 2nd April, 1883, a meeting took place, at the home of Dr. Belgrave, “for the purpose of either reorganising the Geographical Section of the Royal Society, or forming a new and entirely independent organisation on a co-operative basis to apply to all the Australasian Colonies”. Among those present were Mr. Gerard and Mr. Du Faur, secretary and chairman respectively of the “defunct Geographical Section”, Du Faur “related in considerable detail the efforts made by the Council of the Royal Society for establishing a Geographical Section. In spite of every effort it lapsed, the Chairman and Secretary becoming ultimately the only attendants at meetings”. Du Faur was inclined to think the geographers should stick to the Royal Society largely because of its healthy bank balance.

However, the others at the meeting thought that the time had come for an Australia-wide society as they had received a favourable reaction from interested persons in other colonies.

The original name chosen was The Federal Geographical Society of Australasia, and (Professor) W. J. Stephens was careful to define Australasia: “the Australian region as defined by W. Wallace shall be recognised by this Society as the space within which the operations shall be concentrated”. The enthusiastic Frenchman E. Martin La Meslée was elected as Secretary, while Stephens became Vice- President. No President was named.

Political pressure existed even in those days, and Sir John Robertson's comment at the final organizational meeting that the word “Federal” in the Society's title could lose it many friends did not go unheeded: the title became merely “The Geographical Society of Australasia”.

The inaugural meeting of the Society was a “grand spectacular” held on 22nd June, 1888, at the Protestant Hall in Castlereagh Street. After an introduction by Professor Stephens, Meslée presented a long paper on the Exploration of New Guinea. Between 700 and 800 packed the hall to get the Society off to a good start.

However, the organizers were determined on a continent-wide society which could sponsor exploration — especially of the unknown parts of New Guinea. Interested persons in Melbourne met on 13th August, 1883, to discuss the formation of a Victorian branch. J. Cosmo Newbery, Director of the Victorian Museum, pointed out that the Royal Society of Victoria had a geographical section which it might be better to join while still maintaining affiliation with the Geographical Society of Australasia. A committee was appointed to confer with the Council of the Royal Society (of Victoria) “as to the practicability of amalgamation”. However, this does not seem to have eventuated and a separate organization, with Baron Von Mueller as Vice-President and A.C. MacDonald as Secretary, was created. Developments were slower in other States, but in July, 1885, both Queensland and South Australia set up branches.

Two “Federal Council” meetings were held. The first, called “The Australian Geographical Conference”, met at the Melbourne Town Hall between 17th and 23rd December, 1884. At this meeting Sir Edward Strickland (from the New South Wales branch) was named President and Baron Von Mueller Vice-President. The meeting also decided that similar conferences should be held by a combination of branches “for the purpose of discussing periodically important matters affecting the interests of geographical science in Australia”.

The second interstate meeting appears under the title “Second Interprovincial Geographical Conference”, held at the rooms of the South Australian branch of the Royal Geographical Society of Australasia in Adelaide during September, 1887. At this meeting, attended by delegates from New South Wales, Victoria and South Australia, there was considerable discussion on the need for incorporating the Society and for drawing up a satisfactory Federal constitution which had not yet been achieved. The general opinion of the meeting was that the Society needed to be kept united.

The New South Wales branch persisted at least till 1898. In 1893 we find its proceedings published as the *Journal and Proceedings of the Royal Geographical Society of Australasia*, and there is little or no mention of other branches. However, there was apparently still co-operation between the branches. The Victorian branch persisted as an independent body till about 1918, after which it incorporated with the Victorian Historical Society. The Queensland and South Australian branches have continued to the present as an important heritage of this first attempt to link scientists in an Australia-wide scientific society.

Attempts to form a Geological Society of Australasia were less ambitious, but likewise aimed at a continent-wide representation (Branagan and Vallance, 1967).

The Geological Society might well have become Australia’s first permanent professional specialist scientific body similar to those operating today. However, it was thwarted to some extent by the formation in Broken Hill in 1893 of the Australian Institute of Mining Engineers. Coinciding with the growth of mining, this institute grew rapidly and soon received company support. When the institute moved to Melbourne it and the Geological Society had their offices in the same building, However, both retained their separate identities. While the Institute continued to grow, the Geological Society did not. The Society finally ceased to function in 1905.

Shortly after the formation of the Geographical and Geological Societies, a more successful Federal body came into being. This was the loosely-linked Australian Association for the Advancement of Science (A.A.A.S.—later A.N.Z.A.A.S.), the “brainchild” of Archibald Liversidge. The A.A.A.S., which first met in 1888, has proved surprisingly effective. Its formation has been adequately described by Russell (1888).

Professional Societies

(i) The Engineers

It is not possible to go into the development of these societies in any detail, but a few interesting aspects deserve mention. As we have shown earlier, engineers such as Denison and Clarke (as well as Professor William Henry Warren) contributed to the various learned societies during the 19th century, and in fact have continued to do so until the present.

The first separate engineering society was the “Engineering Association of New South Wales”, established in 1870 (Pugh, 1970). A separate similar society was established in 1883 in Melbourne.

The first moves for amalgamation of the various State bodies (which were many) were made in 1910, and final agreement was reached in 1917 (Corbett, 1957). One of the largest groups of engineers—the Northern Engineering Institute of New South Wales based in Newcastle—was hesitant about joining a federation, but finally decided to join. The objectives of the Federal body were very different from those of the 19th century societies. First and foremost it was concerned with professional objectives, such as qualifications, ethics, conditions of work, and salaries. Technical and scientific matters, although not neglected, were subordinate.

(ii) *Organization of the Chemists*

The Australian Chemical Institute was formed in 1917 largely through the efforts of Sir David Orme Masson of Melbourne (Leighton, 1954). The co-operation of societies in other States was not won easily. Masson realized the need for winning over the New South Wales chemists, and spent considerable time in Sydney during 1916 and 1917 working with Professor Charles Fawsitt to build, up support.

The Australian Chemical Institute achieved incorporation, by Royal Charter in 1932. From 1917 to 1934 the headquarters of the Council were in Sydney, during which time the Institute grew to a membership of nearly 1,000. This contrasts with a total number of about 200 Australian chemists in 1904.

In 1934 the headquarters were moved to Melbourne with the idea that a periodic transfer of central responsibility from State to State would prove stimulating. At the same time publication of a journal was commenced to replace the earlier use of the pages of the *Australian Chemical and Mining Journal*. From its inception, the Institute showed its concern for qualifications, professional conduct and service to the community. Likewise the Institution of Engineers and the Australasian Institute of Mining and Metallurgy (originally the Australian Institute of Mining Engineers—reorganized in 1918) directed their attention to these matters with subordinate interest in matters of research.

At this time the lot of the scientist, and particularly the chemist, was not good.

About 1917 the Victorian Department of Mines advertised for a B.Sc. graduate with a sound knowledge of chemical analysis for research on the distillation of brown coal. The salary offered was £72 per annum! Willsmore (1921) remarks drily that the then Victorian Minister for Mines, in a lecture given to the Royal Society of Arts in London, claimed for his department great credit for its zeal in stimulating chemical research!

However, it must be sadly confessed that it was the Great War which proved the major stimulus to chemistry in this country. The drastic shortage of chemists in Britain at the beginning of the war in 1914 left the country far behind the German war effort. The result of this was a massive recruiting campaign in Australia and other parts of the Commonwealth.

There can be little doubt that the return of many of these chemists to Australia, aware of their capabilities and their usefulness in the developing economy, helped to create an efficient professional body out of the Australian Chemical Institute.

There is clearly a relation between the growth of a professional spirit amongst engineers and scientists and the development of the new universities of Queensland (1911) and Western Australia (1913). In both of these institutions Engineering and Chemistry and other science professorships were among those first created, taking precedence over more classical topics—something which would have been unthinkable 30 years earlier.

Something of the pattern of growth of Australian Science is shown in Table I, which must still be regarded as a preliminary list of the scientific societies which have existed, within Australia.

My aim has been to show something of the growth of a community spirit among Australian scientists and to point to a few of the people who were responsible.

I have attempted only to give an inkling of the threads which can be traced through our history. We have seen some of the achievements of the infant societies, the effects of organization, wise Vice-regal patronage and Government assistance, the desire for and achievement of Australia-wide organizations, the successful linking of widely separate disciplines, and the professional organization of scientists both for their own benefit and the good of society. Perhaps I have not shown the humanity of the people who make up this fascinating web. This topic must be left to another occasion.

Table I



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New South Wales Societies

1. Philosophical Society of Australasia.
2. Agricultural Society of New South Wales.
3. Agricultural and Horticultural Society of New South Wales.
4. Australian Floral and Horticultural Society.
5. The Australian Society to Promote the Growth and Consumption of Colonial Produce and Manufactures.
6. Australian Philosophical Society.
7. Australian Botanic and Horticultural Society.
8. Philosophical Society of New South Wales.
9. Horticultural Improvement Society of New South Wales.
10. Australian Horticultural and Agricultural Society.
11. Zoological Society of Sydney.
12. Acclimatisation Society.
13. Royal Society of New South Wales.
14. Entomological Society of New South Wales.
15. Linnean Society of New South Wales.
16. Engineering Association of New South Wales.
17. Zoological and Acclimatisation Society of New South Wales.
18. Botanic Society of Sydney.
19. Geographical Society of Australasia (New South Wales Branch).
20. Naturalists Society of New South Wales.
21. Mechanics Institute of Sydney.
22. Mechanics Institute of Newcastle.
23. Sydney Mechanics School of Arts.
24. Australasian Association for the Advancement of Science.
25. St. George's District Natural Science Society.
26. Naturalists Union of New South Wales.
27. New South Wales Naturalists Club.
28. Electrical Association of New South Wales.
29. Electrical Club of New South Wales.
30. Northern Engineering Institute of New South Wales.
31. Bathurst Scientific Society.
32. Australian Institute of Mining Engineers (Broken Hill).
33. Broken Hill Scientific Society.
34. Sydney University Engineering Society.
35. Northern Engineering Institute of New South Wales.
36. Royal Zoological Society of New South Wales.
37. Wild Life Preservation Society of New South Wales.
38. This number not used.
39. Maitland Scientific and Historical Research Society.
40. Naturalists Society of New South Wales.
41. Australian Chemical Association.
42. Microscopical Society of New South Wales.
43. Australian Chemical Institute.
44. Institute of Engineers, Australia.
45. Amalgamation of Electrical Club of New South

60. Mechanics Institute (? of Victoria).
61. Geological Society of Victoria.
62. Zoological Society of Victoria.
63. Zoological and Acclimatisation Society of Victoria.
64. Microscopical Society (of Victoria).
65. Zoological Acclimatisation Society.
66. Geographical Society of Australasia (Victorian Branch).
67. Field Naturalists Club of Victoria (Melbourne).
68. Geelong Naturalists Club.
69. Geological Society of Australasia.
70. Victorian Institute of Engineers.
71. Melbourne University Engineering Society.
72. Bird Observers Club of Victoria.
73. Australasian Ornithologists' Union.
74. Electrical Association of Victoria.
75. Royal Australasian Ornithologists Union.

Tasmanian Societies

76. Van Diemen's Land Agricultural Society.
77. Van Diemen's Land Scientific Society.
78. Mechanics Institute of Hobart (? Van Diemen's Land Mechanics Institute).
79. The Tasmanian Society.
80. Franklin Museum (*Arcanthe*) Botanical and Horticultural Society of Van Diemen's Land.
81. Launceston Horticultural Society.
82. Royal Society of Van Diemen's Land for Horticulture, Botany and the Advancement of Science.
83. Hobart Town Agricultural Society.
84. The Midland Society.
85. Royal Society of Tasmania for Horticulture, Botany and the Advancement of Science.
86. Ornithological Society of Tasmania.
87. Tasmanian Field Naturalists' Club.
88. Royal Society of Tasmania.
89. Astronomical Society of Tasmania.

South Australian Societies

90. South Australian Literary and Scientific Association.
91. Adelaide Mechanics Institute.
92. South Australian Subscription Library.
93. South Australian Library and Mechanics Institute.
94. The Mechanics Institute (of Adelaide).
95. Adelaide Philosophical Society.
96. South Australian Institute.
97. Public Library and Museum of South Australia.
98. Royal Society of South Australia.
99. [Royal] Geographical Society of Australasia (South Australian Branch).
100. [Royal] Zoological Society of South Australia.
101. Astronomical Section (Royal Society of South Australia).

- Wales and Electrical Association of Victoria (74).
 46. Electrical Association of Australia.
 47. Australasian Institute of Mining and Metallurgy.
 48. Barrier Field Naturalists Club.
 49. Geographical Society of New South Wales.
 50. Royal Australian Chemical Institute.
 51. Anthropological Society (of New South Wales). 52. Royal Society of Australia (later of Canberra).
 53. -----

Victorian Societies

54. Mechanics Institute of Melbourne.
 55. Victorian Institute for Advancement of Science.
 56. Philosophical Society of Victoria.
 57. Philosophical Institute of Victoria.
 58. Royal Society of Victoria.
 59. Brunswick Ornithological Society.

- Australia).
 102. South Australian Astronomical Association.
 103. South Australian Ornithological Association.
 104. South Australian Institute of Engineers.

Queensland Societies

105. Queensland Philosophical Society.
 106. Royal Society of Queensland.
 107. [Royal] Geographical Society of Australasia (Queensland Branch).
 108. [Queensland] Mechanical Engineering Association.
 109. Queensland Institute of Engineers.
 110. Queensland Electrical Association.
 111. North Queensland Naturalists' Club.
 112. Rockhampton Scientific Society.

Western Australian Societies

113. Mueller Botanical Society of Western Australia.
 114. Western Australia Natural History Society.
 115. Natural History and Scientific Society of Western Australia.
 116. Engineering Institute of Western Australia.
 117. Royal Society of Western Australia.
 118. Western Australia Naturalists' Club.

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I have not attempted to reference every statement and quotation in this paper. However, apart from the references given in the text, I have included others which should prove useful to those seeking information about the various societies mentioned.

An overall basic list, although lacking some important references, is given in Mozley, Ann, 1962. A Check List of Publications on the History of Australian Science. *A.J.S.*, Vol. 25, No. 5, pp. 206 - 214, November, 1962.

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