

**CSIRO**

# Forest Products Newsletter

DIVISION OF FOREST PRODUCTS, CSIRO, P.O. BOX 310, SOUTH MELBOURNE, VICTORIA 3205

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## 40TH ANNIVERSARY ISSUE

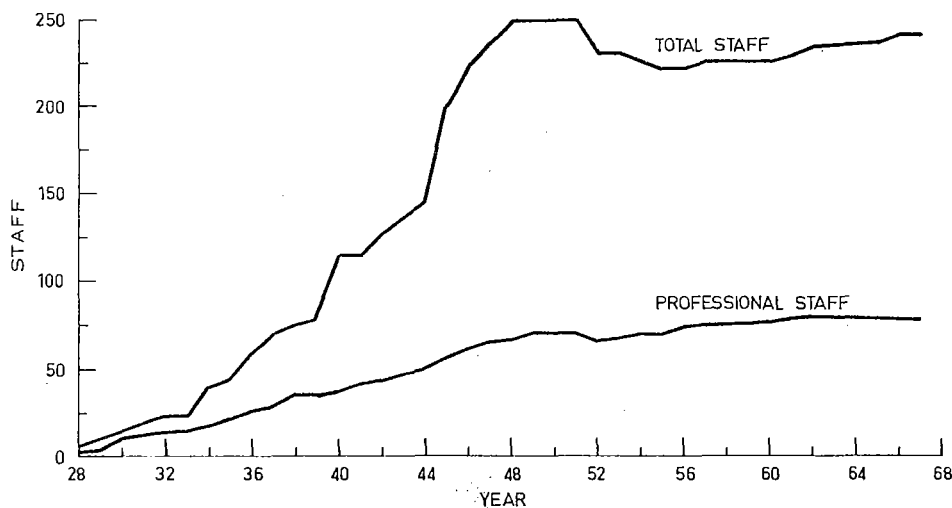
### Our Fortieth Birthday

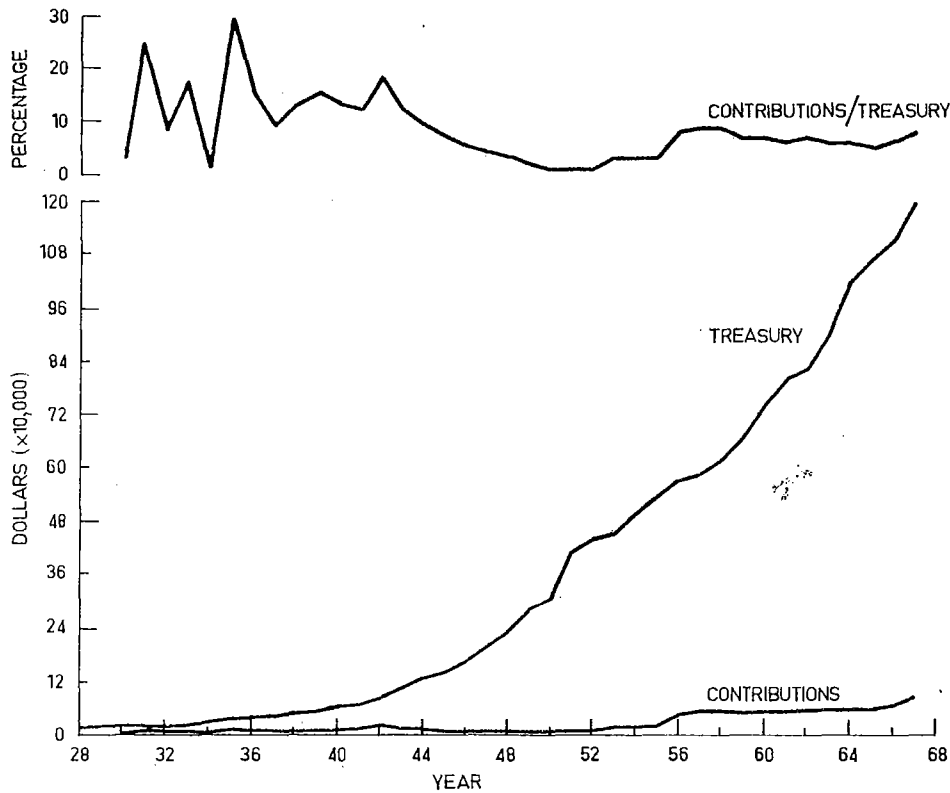
ANNIVERSARIES are a time for looking back and for looking forward. The institute that is now the CSIRO Division of Forest Products was brought to birth by the stroke of the pen of Senator Sir George Pearce, on May 1, 1928. As this issue of the Newsletter marks the fortieth birthday of the Division, its contents are largely devoted to reflection and projection.

The Australian timber industry of the 1920s was already an active one, having an annual log input of about 150 million cu ft compared with 400 million cu ft at the present time. But the scene would be completely unfamiliar to industrialists of today. Machinery was primitive and the content of human back-breaking labour was excessive by present standards. Buyers

generally would accept only high-quality timber, sections used were comparatively heavy, seasoning and reconditioning processes were known but retained a considerable element of black magic and were distrusted, naturally durable species only were suitable for hazardous locations, and it was generally believed that Australian hardwoods could not be made to yield pulp suitable for paper manufacture. Almost all the softwood used was imported from either North America or Scandinavia.

The transformation of the timber and paper industries to their present advanced condition has been achieved by the dedication, ingenuity, cooperation, and perseverance of many workers, including officers from the Division of Forest Products. Sawmills now





in operation are incomparably more efficient than those of the 1920s, with higher rates of cutting, improved layouts, efficient handling methods including systems that largely eliminate manual effort, and the effective use of much previously rejected material. The seasoning of sawn timber has many of the marks of an exact science, and kiln-dried hardwood has improved to the stage where it is the preferred material for much high-quality furniture and decorative use. Seasoning as carried out in Australia is normally a combination of air- and kiln-drying, more than half of the kilns being of a design type initiated by the Division. The 40-year period has seen the initiation of a large wood preservation industry, so that less durable species can now be treated and used in hazardous situations. Divisional patents have been the basis on which timber preservation within Papua and New Guinea has been established, and all timber used in Government contracts there must now be so treated. Comparable strides have been made by sections of the industry which produce wood-based panels, with notable advances in understanding of veneer peeling as a result of research undertaken by the Division.

A great change has occurred within the paper industry. Research by workers in forest products institutes that were forerunners of the Division showed that, contrary to widespread belief, eucalypt timbers could be successfully pulped to form the basis of satisfactory paper. Very extensive research and pilot-plant studies by industrial and divisional groups formed the basis of eucalypt pulping, which commenced just prior to World War II and has grown and developed since then. Further extensive developments in related areas are anticipated following the extensive overseas (especially Japanese) interest in and demand for eucalypt wood chips and pulp, and much greater understanding of the paper-making properties of blended pulps will be needed.

The Division's work has been complementary to the development of the timber and paper industries in supplying technical knowledge, standardized measuring methods, and an understanding of the interrelationship of the various properties of finished products. The scientific studies required to provide a firm foundation for these contributions have been of high standard, and have increased world understanding of the constituent

materials of trees and their chemical properties, the structure of the wood, the behaviour under load, the mechanisms of cutting, and the moisture absorbed by the wood. This work has led to a notable world reputation with the very happy consequence of exchange visits between local and overseas workers and the resultant fruitful pooling of ideas.

Aspects of the growth of the Division over 40 years are illustrated in the accompanying graphs showing staff, funds, and industry contributions as a proportion of Treasury funds; its history and personalities are reviewed in an accompanying article. The staff grew to 250, including 70 professionals, in the post-war period and has not changed greatly since, although the tendency is to increase the proportion of professionals. The funds expended have shown a continual increase, much of it obviously related to changing money values. Industry has contributed throughout the life of the Division, to the order of 15% in some early years, decreasing to less than 1% in 1951, and currently running at about 7%. These contributions are at present made up as follows:

Species assessment for Territory of Papua and New Guinea, Fiji, British Solomon Islands Protectorate .. .. .	\$23,000
Plywood industry—general research .. .. .	\$22,000
Pulp and paper industry—general research .. .. .	\$14,000

Quebracho adhesives—specific contract .. .. .	\$12,000
Seasoning: Tasmania—specific contract .. .. .	\$4,000
General donations .. .. .	\$10,000
The proportion is expected to rise shortly with the addition of	
Fibreboard containers—general research .. .. .	\$35,000

The Division is financed largely by the Australian community and the research effort is directed towards the advantage of the community generally. The notable point in choice of projects is the economic value to the community in the first place, with special emphasis for the timber and paper industries. Scientific research is an endeavour seeking, primarily, long-term benefits, and the overall direction of the work and the detailed selection of projects must include an assessment of possible future prospects of commercial opportunities and emphasize those aspects likely to provide the best opportunity. The Division was created to serve the Australian community and its wood-using industry. Its continuing efforts seek to help, support, and stimulate the wider and better use of wood, to provide accurate and meaningful technical data on which industry, specifiers, and consumers may base their judgements and decisions, and to encourage the best use of the knowledge the world has, or can accrue, about wood. To these ends the Division and its staff have applied and will continue to apply their utmost effort.

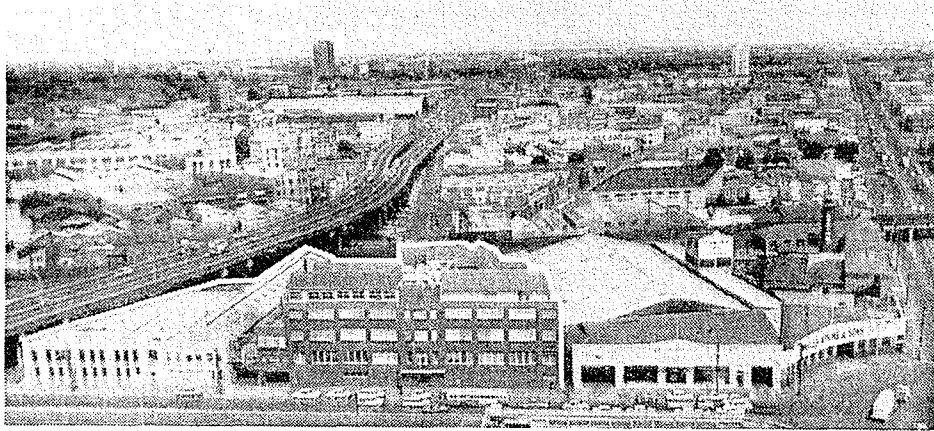
## THE BUILDINGS

WITHIN A DECADE of its foundation, the Division was housed in a specially erected building on a site of about one acre situated close to the main areas of timber merchandising activity in Victoria. The site was conveniently located for public transport and with the growth of the Division it was found possible to lease further adjoining land, so that the present main site is now a little less than two acres. It is bounded on three sides by public thoroughfares and by a railway line on the fourth (see picture on p. 4).

This site has served the Division well, and

in recent years the view northwards to the Yarra has been opened, although some further improvement would be desirable. With the increase in traffic and the greater number of visitors who now drive themselves to the Division, the parking situation is becoming increasingly strained. The laboratories themselves are no longer convenient, and the need to be close to the timber merchandising area is less important and, in any case, not achieved now that the industry is more dispersed.

In these circumstances it was decided that

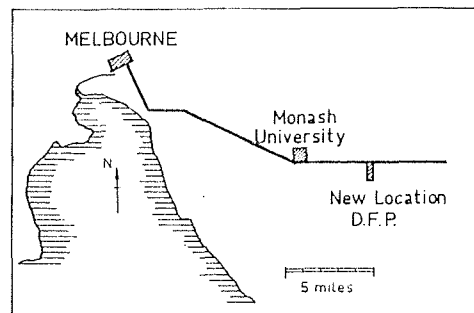


Recent aerial view of the Division showing its geographical limitations.

a larger site should be sought, still within the area of greater Melbourne, where all the activities of the Division could be centralized (there are now three subsidiary sites in addition to the main site).

The Division, therefore, is pleased to announce the acquisition of an area of land at Mulgrave as the site for a future laboratory (see plan). It is an area of 29 acres in a rectangle  $7\frac{1}{2}$  chains by 39 chains, and faces north. Some portions have a moderately steep slope, the total rise being of the order of 100 feet with a natural creek occurring at about 10 chains from the front end. It is planned to plant trees on about one-third of the site within the next two or three planting seasons, so that when the laboratory is moved a moderate number of more or less typical trees will be available for experiments related to forest products.

Planning of a future layout is still in the embryo stage and no firm guide-lines have so far been established. As matters stand at present, it will be several years before a



new laboratory is erected at Mulgrave, but in the meantime the opportunity is being seized to make the most of the time available to produce a worthy master plan.

# Division of Forest Products

## A Brief History

By Sue Preston, Library

### Early History, 1916-25

THE ESTABLISHMENT of an Australian Commonwealth Forest Products Laboratory was first publicly advocated by Mr. W. A. M. Blackett\* in his presidential address to the Conference on Australian Timbers, Forestry, and Reafforestation (also known as the Third Australian Forestry Conference), held in Melbourne in November 1916. Forest

\* Then President of the Royal Victorian Institute of Architects.

products research was already being carried out at a few places in Australia at this time, notably at the New South Wales Museum of Technology, which as early as 1896 had published a paper in the *Journal of the Society of the Chemical Industry* on the "Dyeing properties of aromadendrin and of the tannins of *Eucalyptus kinos*".

Not long after this conference, a timber seasoning kiln was installed by Acting Professor Alfred Tomlinson, at the Engineer-

ing School of the University of Western Australia. At the same time, Mr. C. E. Lane-Poole, the Conservator of Forests in Western Australia, arranged for investigations on pulp and paper manufacture to be commenced at Perth Technical School, under Mr. Isaac Herbert Boas.

To this time, little had been done about establishing a national Forest Products Laboratory. However, in 1919 the Institute of Science and Industry (later the Council for Scientific and Industrial Research) accepted an offer from the Government of Western Australia of an annual grant and a site in the grounds of the University of Western Australia for the establishment of a laboratory.

Mr. Boas was appointed Director of the new laboratory, and spent some time visiting similar research institutions overseas. When he returned in 1920, temporary accommodation was obtained in the Customs Department Laboratories in Perth. The main lines of work were the investigation of hardwoods for paper-making, a survey of tanning materials in Australia, attempts to make a suitable tanning extract from marri kino, and a study of the Powell process for wood preservation.

Unfortunately, proposals for the permanent laboratory did not eventuate, and Mr. Boas resigned in 1921 to take up a position in industry. Mr. R. A. Fowler, the chemist in charge of the preservation section, then became Acting Director. Other members of the staff were Mr. H. Salt, a chemist, who was investigating the properties of specific tanning agents and assisting Mr. Fowler; Mr. L. R. Benjamin, a chemical engineer, in charge of the paper-making department; and Mr. S. A. Clarke, an engineer, in charge of the drying kiln at the University of Western Australia.

The paper study was carried on for some years by Mr. Benjamin and his co-workers. As it progressed from the laboratory to the semi-commercial stage, larger laboratories were needed for testing. The Australian Paper Mills at Geelong made their laboratories available, and here the experiments progressed to the commercial stage. Results were published in the Bulletins of the Institute and the Council from 1919 to 1928. This work led not only to the establishment

of the hardwood pulping industry in Australia but also promoted the use of short fibres for the manufacture of good-quality paper throughout the world. The tanning survey was completed in 1927 by D. Coghill (CSIR Bulletin No. 32).

When the large-scale test of pulp and paper manufacture was transferred to Geelong in 1922, it was decided to transfer the rest of the laboratory's work to Melbourne. The Western Australian Forests Department resumed control of the seasoning investigations at the University of Western Australia, but the pulp, paper, and tanning research was continued at the Brunswick Technical School in Melbourne.

#### 1926-35

In 1925, Sir Frank Heath, head of the Department of Science and Industry in Britain, was invited to Australia by Prime Minister Bruce to inquire into and to report on Imperial cooperation in scientific and industrial research work. The report was completed in 1926, to be followed in the same year by an Act of Parliament. This resulted in the formation of the Council of Scientific and Industrial Research, which was to take over the functions of the old Institute of Science and Industry. In his report Sir Frank had made strong recommendations that one of the earliest tasks of the new Council should be to set up a Forest Products Laboratory.

In 1927, at the request of the Commonwealth Government, the Government of India made available the services of Mr. A. J.

*I. H. Boas  
(1928-44)*





*S. A. Clarke  
(1944-60)*

Gibson, Conservator of Forests, Bihar and Orissa, for four months to advise and furnish a report on a Forest Products Laboratory for Australia. This report was published in 1928 as CSIR Pamphlet No. 9.

Provisional Ministerial approval to set up the laboratory was given by Senator Sir George F. Pearce on May 1, 1928, in reply to a letter from Dr. A. C. D. Rivett, Chief Executive Officer of CSIR, suggesting a plan of action for the formation of the Division of Forest Products. This was to be the first CSIR Division to deal with secondary industry. Ten days later, at the 92nd meeting of the Executive Committee of CSIR, attended by the chairman, Mr. G. A. Julius, Dr. A. C. D. Rivett, Professor A. E. V. Richardson, and Mr. G. A. Cook, it was decided to proceed with the organization of the Division of Forest Products.

On July 1, 1928, the new Division was formed and Mr. I. H. Boas was appointed the first Chief. Two overseas studentships were created under the Science and Industry fund and the selected men, Mr. J. E. Cummins, who was to study wood preservation, and Mr. H. E. Dadswell, to study wood chemistry, were sent overseas to the Forest Products Laboratory, Madison, U.S.A., for training. Mr. Boas also went overseas again, visiting other laboratories. He returned to begin the organization of the laboratories in February 1929.

The forest products activities at Brunswick Technical School were taken over by the new Division. In 1928, a pilot tannin extract

plant began operation in the grounds of the Engineering School of the University of Western Australia, with funds provided equally by CSIR and the Forests Department of Western Australia. Preservation investigations began in 1929 in Western Australia and wood chemistry and technology investigations commenced at the Australian Forestry School in Canberra.

Although there was pressure to establish the Division in Canberra, this was considered too far from the centre of the industry to be practical, and a site was selected in the grounds of the Defence Department at Maribyrnong, Vic. This was found to be unsuitable, and in 1929 an excellent site was found on New South Wales Railways property at Lidcombe. Plans for the new laboratories went ahead, but were not finalized owing to the depression. Attention was then turned to the coach-houses, stables, and caretaker's quarters at CSIR's Head Office in Albert Street, East Melbourne. For a modest outlay these were turned into small but well-equipped laboratories. Seasoning and utilization work began in June 1929.

From the beginning it was realized that for many years the Division would have to devote its major energies to collecting existing information and establishing good practice in the industry, as well as searching for new knowledge. Much time then and subsequently had to be given to the important task of assisting in the preparation of standards for the Standards Association of Australia.

In 1930, the tannin extract plant in Western Australia was closed and the staff transferred to Melbourne. The chemical work at Canberra was moved to Melbourne, to be followed the next year by the wood technology group. For the first time the Division was housed under one roof. Despite the financial restrictions of the depression years, more staff members were sent abroad to study at the Forest Products Laboratories at Madison, U.S.A., and Princes Risborough, Britain.

During 1930 the Division began to publish its Trade Circular series, for which there was a great demand. The services of Mr. de Beuzeville, of the New South Wales Forestry Commission, were made available for collecting wood samples and, in addition, samples were sent from interested laboratories

all over the world. As an Assistant Chief was now deemed necessary, Mr. S. A. Clarke was appointed in 1931. Two years later the Timber Physics Section was created to enable more basic research to be done in this field.

By this time, the quarters at the back of Head Office were becoming rather crowded, and although the staff had developed the ability to carry on under the most difficult conditions, the pressure of their work made it essential that they find a permanent home. The Victorian State Government granted a 50-year lease, at nominal rental, on an excellent site in Yarra Bank Road, South Melbourne. Although limited in size, the site was selected because of its central location and proximity to the timber industry. Towards the end of 1934 the Commonwealth Government granted £25,000 for the erection of permanent laboratories. Most of the timber for the new laboratories was donated, and a notable gift of £5000 from Mr. (later Sir) W. Russell Grimwade made possible the purchase of a 600,000 lb timber testing machine.

#### 1936-45

1936 was an eventful year for the Division. Early in the year the first of many exhibits was prepared, for display at the Ideal Homes Show in Melbourne; in October the move into the new laboratory began, with work continuing at the same time. By then the staff had reached 60.

A much-needed cold store in the basement was made possible the following year by the generous donation of a 7-ton freezing plant by the Postmaster-General's Department. Educational activities were expanding rapidly and, at the request of the industry, flax investigations were started.

In 1938-39 the Veneer and Gluing Section was formed and housed in a new building. Mr. W. Russell Grimwade donated £1250 for the purchase of a Coe lathe for experimental veneer peeling, and a large laboratory for experimental pulp and paper studies was completed and equipped.

By this time the Division was becoming well known to industry, which was by now taking advantage of the services it offered. The staff was extremely busy and again working conditions were becoming rather

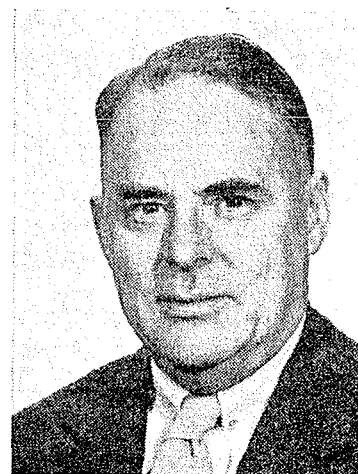
cramped. In 1939-40 there was a gradual swing of all activities to work directly or indirectly connected with defence, and the Division took over timber control activities. These were later transferred to the Department of Supply, officers of the Division being seconded to assist with the work.

A very active war-time role was in store for the Division, and it was declared a protected industry to prevent the loss of technical staff to the armed forces. The main work was on tropic-proofing, munitions boxes, aircraft timbers, standardization, and timber identification.

Early in 1944, Mr. Boas retired and Mr. Stanley Anthony Clarke became the new Chief. Following the war there was considerable turnover of staff, necessitating much reorganization within the Division. The Flax Investigation Section had expanded, and it was decided to establish it as a separate section of CSIR. Greater attention was now to be paid to fundamental work, and additional officers were provided to help meet the growing demand from industry and the public for help in day-to-day problems. There was a rapid transition to post-war problems, especially those which affected the building industry. Two Assistant Chiefs were appointed: Mr. C. S. Elliot in April 1944, and Dr. H. E. Dadswell in June 1945.

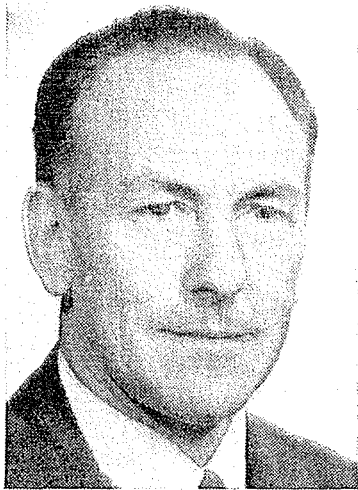
#### Post-war Development, 1946

The year 1946 was also an important one for the Division. Early in the year, the first of the Forest Products Research Conferences was held, and later a fourth storey was added to the laboratories. A few years later an



H. E. Dadswell  
(1960-64)





R. W. R. Mumcey  
(1966—)

additional laboratory and conference room of light construction were added to the top of the building, the weight-bearing limit of the foundations having been reached.

During the year 1947–48, two graduate members of staff of the National Forestry Research Bureau, Nanking, China, came to study at the Division. They were the first of many overseas students to be welcomed to the Division, which had gained much of its early experience by sending officers abroad for training. In turn, the Division was now recognized as an important training centre in forests products research.

In 1950–51, the annual number of enquiries received reached 7000. An Information Officer was appointed to handle some of these, with the object of reducing the interference with research activities. The year 1952 brought an F.A.O. Eucalypt Study Tour, which resulted in extensive contact with overseas delegates and a flood of requests for further information on the work of the Division.

By 1959 the old problem of over-crowding had to be faced again, and a lease covering the two adjoining properties was obtained, increasing the total ground area by 50%. With the impending retirement of Mr. Clarke, a Committee of Review under the Chairmanship of Mr. (now Sir) H. B. Somerset, was set up in September 1959, by the Advisory Council of CSIRO. The Committee recommended that there should be no major changes in the Division's research programme.

Mr. Clarke retired in August 1960, and

three months later Dr. Herbert Eric Dadswell was appointed Chief.

There were important new developments at this time. The Government of the Crown Colony of Fiji asked the Division to join in a cooperative research programme on Fijian timbers, and made a small annual grant to assist with this work. The plywood industry through the Australian Plywood Board commenced a contribution of £1000 a month for plywood investigations. Enquiries reached a record peak of 18,000 for the financial year 1963–64, and arrangements were made with the Victorian Forests Commission to handle certain of these, bringing some relief to the staff. A new two-storey laboratory was completed in 1964.

At the end of 1964, Dr. Dadswell died suddenly, and the Division was directed by Mr. J. D. Boyd for most of the interim period until March 1, 1966, when Mr. Robert William Roy Mumcey took up his duties as the new Chief. Dr. W. E. Cohen was appointed Assistant Chief in April, and when he retired after 40 years of service, Dr. W. G. Kauman was appointed to his position on July 1, 1967.

At present, the Division's research programme is being reassessed in the light of industry's changing requirements. Its activities are directed towards serving first the Australian economy, then the broad forest products industry, and finally individual problems, with subjects and specific projects for research selected on this basis. This reorganization has already involved the purchase of several major items of equipment to modernize the laboratory facilities. Four young research scientists from various countries have commenced duty in the last few months, following greater emphasis by the Division on the CSIRO programme of two- or three-year research fellowships, and it is intended to continue recruiting new scientific staff in this manner.

Considerable attention has been given to the future laboratory requirements of the Division; it is recognized that it has grown too large for its present location, and indications are for further development on a new site. Land has been acquired for this purpose, as discussed in another article in this Newsletter.

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