

Lamps Burn Far Into Night At University Laboratories

ADELAIDE: MONDAY.
SEPTEMBER 24, 1934.

AN AERIAL SURVEY

Research in Many Branches of Science



Inside a laboratory where the work of research goes on quietly and steadily.

QUIETLY, but earnestly, instructors and students alike at the Adelaide University work long hours in laboratories and studies to solve knotty problems.

Laboratory lamps burn far into the night as fresh clues are unearthed. Patiently bits of evidence are pieced together, and steadily the store of knowledge grows.

Anything from the problems of the atomic theory to the complex task of analysing the coloring matter extracted from a plant growing in the Adelaide hills comes within the scope of research work of physics and chemistry students.

The dean of the physics department, Prof. Kerr Grant, is one of the leaders in his field in the Commonwealth. He keeps abreast of the rest of the scientific world, and has made many worthwhile contributions to scientific knowledge. Prof. Grant has devoted much time to the construction and perfection of delicate electrical instruments, many of which have become standard equipment.

INFRA RED PHOTOGRAPHS

Mr. R. S. Burden, his chief assistant, has devoted himself for some time to the study of the films of absorbed molecules on the surface of mercury or water, and their effect on the surface tension of the liquid. The study of these films on the surface of metals has led to great improvements in the efficiency of electric lamps and radio valves.

Another member of Prof. Grant's staff, Mr. M. I. G. Iliffe, has been very successful in his experiments with the infra-red film. He has a fine collection of photographs taken with the new process.

Prof. Macbeth and his chemistry staff and students use such big names for their subjects that the layman is lost in a veritable maze of words. They talk quite casually in the chemical laboratories of the spectroscopic examination of hydroxynaphthoquinones and their reactions to special re-agents, such as pyridine, diazomethane and boroacetic anhydride!

The examinations being made into the properties of eucalyptus oils hold more interest for the man in the street, though the spectroscopic examination of coloring matter is of great assistance to industry. The narrow leaf eucalypt of Kangaroo Island, which yields the best oils for pharmaceutical purposes, is now being dealt with. Students, too, are investigating the construction of glucoside quercitrin, which gives a yellow coloring matter, and myrticolor, obtained from the red stringy bark eucalypt.

In the engineering department experimental work of great value is always going on under the direction of Prof. R. W. Chapman. Research work there has revealed that the amount of water mixed with concrete is just as important as the amount of cement. Students have been experimenting with the contraction of different

concrete mixtures when varying amounts of water are used. Concrete that is mixed with most water, they find, shows a greater amount of shrinkage in setting.

The expansion and contraction of different cement mortars, when there are alterations in temperature and moisture, is another subject which has engaged the attention of the department.

Students are now busy with experiments to discover a simple means of measuring the flow of large bodies of water. They are often called upon to solve little problems which arise in the daily work of Adelaide engineers and engineering firms.

Sir Douglas Mawson and Dr. Cecil Madigan in the geology department have plenty of work on their hands to occupy their spare time. Sir Douglas, world renowned for his polar explorations, has a great deal of work to do arising out of his last expedition. "I have enough work to do in the rocks brought back from my last two expeditions to last me two lifetimes," he commented recently.

He is also particularly interested in the meteorites of Australia, and contemplates an expedition to the Henbury Ranges in the near future.

Dr. Madigan, who has just completed a book on life in Central Australia, is interested in the origin of the sand found in the sandy deserts of the centre, and the direction of the sand ridges and movement of the sand. He is also superintending the mapping of the geological formations of the Adelaide Hills, much of which work is being done by senior students.

STUDY OF ABORIGINES

Research by the pathology department is intimately bound up with the work being done at the Adelaide Hospital laboratory. The examination of the blood groups of the natives of Central Australia is proving very interesting, as only two blood groups have been found among these people. All other races, with the possible exception of the North American Indian, have four.

The study of notes collected during the 23 months he lived with the vanishing Aranda tribe of Central Australia occupies all the spare time of Mr. T. G. H. Strehlow, lecturer in English at the University, and the son of a famous anthropologist and ethnologist. Living alone with them, and learning to speak their language, the young scientist gathered data which will enable him to make an exact linguistic record of the Aranda tribe. For the first time the complete grammar of a native tongue will be fixed, throwing light on the whole structure of the aboriginal tongues of Australia.

Each and every department at the University has its spare time jobs, of greater or lesser importance. We should be grateful to these patient workers who are constantly adding to the growing store of human knowledge regarding ourselves and the world we live in.

The heartiest good wishes of South Australia will accompany the party of technical officers who left Sydney a few days ago in Sir Charles Kingsford Smith's monoplane, Southern Cross, on an aerial survey of areas in North Australia, as a preliminary to more detailed ground examinations, geological, geophysical, and, not least, mineralogical. It is hoped to cover about 15,000 miles during the next eight weeks; and as, in addition to Dr. W. G. Woolnough, Commonwealth geological adviser, and Mr. P. B. Nye, Government Geologist of Tasmania, the party includes Messrs. F. C. Forman and L. C. Ball, Government Geologists of Western Australia and Queensland respectively (the two States which, together with the Commonwealth, are defraying the cost), the expenditure of £150,000 will probably not be without valuable results. To these results, if they should include or lead to mineral discoveries (notwithstanding Dr. C. T. Madigan's warning against immoderate expectations) this State cannot be indifferent, since, as Sir Herbert Gepp has reminded us, South Australia would serve as the natural outlet for any mineral products.

Although the expedition has properly been described as the first national undertaking of its kind to have been projected in Australia, the trail may be said to have been blazed more than four years ago, when Dr. Madigan made his well-remembered flight to the sun-baked interior of Central Australia, which, if it had no other result, dispelled the legends concerning Lake Eyre which had long been propagated, representing it as a bottomless morass, to set foot on which spelt death. Thousands of cattle were alleged to have been swallowed by it, a fable which had no other basis than the existence between two portions of the lake of a narrow neck "where thousands of cattle crossed and a few were lost." Organised on a more ambitious scale, was the Mackay expedition of 1930, which continued its researches last year, undiscouraged by the scant heed given, as the chief promoter complained, by the Federal Government to the report he had furnished on the last occasion. What these enterprises certainly did, was to confirm the value, previously demonstrated in Northern Rhodesia, Canada, Iraq, and elsewhere, of the aeroplane, assisted by photography, in surveying wide and inhospitable areas, and to suggest what a saving of life and misery would have been effected, had the same facilities been at the disposal of the old explorers. As Major Cochran-Patrick, D.S.O., of the British Aircraft Operating Company, says, "we are able to do in a few hours what the earth-bound surveyor would take weeks to do. In Africa and South America, the aeroplane has made it possible to carry out surveys which in the ordinary course of events would not have been done in decades." An area in Iraq, which took five weeks to photograph, and ten months to map, could not have been similarly explored by the earlier methods in less than from two and a half to three years. By aerial photography, the physical contours of vast tracts are brought out much more effectively than by ground surveying; and one cannot but reprove over the money wasted on uneconomic routes for roads and railways, which would have been saved had a bird's eye view been available of the country to be traversed. The service which the new methods would have rendered to the old explorers, are now available for prospectors, of whom it is much to be hoped that, as the result of the present expedition, not a few will be put on the right track.

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