

**SOIL SURVEY PROPERLY CARRIED OUT  
 STANDS FOR ALL TIME**

**"Russia Has The Only Published Australian Soil Map  
 In Existence"**

**THEORIES THAT HAVE BEEN UPSET**

"The position of soil survey and systematic descriptive work is one of the least satisfactory features of our past agricultural development."

"The only published soil map of Australia in existence emanates from Moscow, and this map was revised by the Russians as recently as 1928."

So said Professor J. A. Prescott, of the Waite Agricultural Research Institute, yesterday.

MR. Harold Darling's recent gift of £10,000 for the development of a division of soil research at the Institute calls attention to one of the most outstanding aspects of the contribution of science to the study of agricultural problems.

Professor Prescott, interviewed yesterday by The Register News-Pictorial representative, said that soil investigation had been an important feature of the work of agricultural chemists throughout the Commonwealth.

Owing, however, to pressure of advisory and administrative work, in few cases had it been possible for those concerned to make many advances in fundamental knowledge of Australian soils and soil processes.

"One difficulty in co-ordinating this work," the professor said, "has been the fact that each State employed a different set of standards, so that it has been hard to compare conditions of one State with those of another."

"Recently, however, the importance of soil research has been recognised in Australia, and apart from the work at the Waite Institute, staffs of State departments in Victoria, Queensland, and West Australia have been considerably strengthened in this respect recently."

"New South Wales has taken action to secure the adequate training of one of its younger officers."

The work of the Waite Institute, Professor Prescott said, which had been able to keep in close touch with that in other parts of the world, had resulted in a definite move for uniform methods in Australia.

**Lines of Investigation**

"What are the possible lines of investigation?" the reporter asked.

The Professor said they were grouped into four sections, which, however, partook by no means of the nature of watertight compartments.

"These are," he added, "soil survey and classification, soil chemistry and plant nutrition, soil physics, and soil microbiology."

"Some apparently simple problems involve research in many of these branches. One example of immediate interest to Australian wheat farmers is a complete

understanding of the principles of fallowing."

"The theory that the most important aspect is the conservation of soil moisture has received some very considerable shocks in recent years, and the question is being reconsidered in several parts of Australia."

"Chemistry, Physics, and Bacteriology are all concerned."

"A better understanding might easily result in the modification of field practice such as the reconsideration of rotations and the improvement of cultivation implements."

Professor Prescott said that important soil fertility problems were associated with the development of irrigation areas.

Not only was the question of the choice of suitable land involved, but the maintenance of fertility, even in cases where suitable soils had been developed; the appearance of salt troubles, seepage problems and loss in permeability to irrigation water were among some of the questions involved, which would repay further study.

**Safeguarding Settlers**

"What does soil survey mean?" the scientist was asked.

"It means," he replied, "that no new project involving the more intensive use of land should be developed without a proper survey of soil conditions. The detail necessary will depend on the character and intensity of the proposed development."

"Much of the soil survey work so far carried out at the Waite Institute has been with a view to establish standards for use in all future work."

"A soil survey properly carried out stands for all time, and although the field data may need to be reinterpreted from time to time in the light of advances of knowledge, the field work itself should never need repeating."

Professor Prescott said that much of the survey work could be carried out by State organizations.

Queensland, particularly, was doing good work in west tropical areas, but there was still necessity for all soil survey to be done on uniform lines, and for an organization outside the States to secure this.

**Sir Douglas Mawson  
 And His Work**

**ANTARCTIC PLANS**

(By Professor Kerr Grant)

THROUGHOUT the scientific world today, the name of Sir Douglas Mawson commands respect and interest. All eyes are turned towards his latest venture.

There has never been any emphasis on the sensational throughout his brilliant career—no "dash for the Pole," with its brief glory. He has always insisted, instead, on the importance of the solid work of scientific research, with its abiding values for the world. His personality has emerged before the public by its sheer power and compelling interest.

A man after the Cecil Rhodes pattern, he takes by nature the wide view and the large aim. All his Antarctic work has been dominated, first by purely scientific interest, and then by Imperial considerations. He interests Governments and enlists support by his own enthusiasm for matters of large purport.

**CAME HERE EARLY**

Australia can justly claim him, for, though he was born in England, he came out in his early youth, and received his education at the Sydney University. He graduated with distinction in the faculty of science, and in 1905 he became attached to the staff of the Adelaide University.

Three years afterwards he joined the Shackleton South Pole expedition as a member of the scientific staff, in company with Professor Sir Edgeworth David. This expedition was successful in locating the South Magnetic Pole, and the credit for this achievement was assigned by Professor David to Mawson.

In Lieut. Shackleton's reports of the expedition, there are numerous references to the splendid work done by Sir Douglas Mawson, who was evidently held in high esteem by the leader.

The hardships he endured then only inspired a determination to carry Antarctic exploration further, and this resolve took effect in 1911, when an expedition was organized under the leadership of Dr. Mawson, as he was then, to explore unknown parts of the Antarctic coastline and continent in the region directly south of Australia.

**INTEREST IN ANTARCTIC**

Sir Douglas has always emphasised the desirability of Australia taking an active interest in the Antarctic continent and the waters that lie between Antarctica and Australia, and in this he is actuated both by scientific interest and by an Imperial outlook.

On this expedition he and two companions made an excursion overland in which terrible privations were undergone. Both the others succumbed. Mawson only survived by virtue of extraordinary powers of endurance and resolution to win through.

In spite of this tragic disaster, the expedition was successful in its main objects, and resulted in a large increase of our knowledge of Antarctic geography and conditions.

Fortunately, his hardships left no permanent disabilities in their train. Today Sir Douglas Mawson is as young in mind and spirit as he ever was, and feeling that there is still work to be done, and that he is the right man to do it, he has undertaken this new expedition.

I do not claim to be anything of an authority on the Antarctic; and can scarcely do justice to Sir Douglas's scientific achievements; but all Australians must be interested in his aims and ideas.

**MAIN OBJECT**

The main object of the expedition is to map in the coastline of portions of the Antarctic continent which are still unexplored, and at the same time to carry out scientific research. There is still much oceanographical work to be done, some of it purely scientific interest, and some with highly important economic aspects, especially in connection with whale fisheries.

Many problems of the polar regions are particularly interesting to physicists. The riddle of the Aurora Borealis would perhaps first claim attention. The precise nature and origin of these electrical displays are still incompletely understood.

The expedition will also undertake certain observation work in co-operation with the Federal Solar Observatory. One particular problem is the determination of the amount of ozone in the upper air. Unfortunately, the most valuable information could only be obtained during the days when the upper air within the polar circle was no longer irradiated by the sun.

Sir Douglas Mawson is held in high esteem by his colleagues at the University, with whom his relations have always been of the friendliest. Our good wishes will follow him on his new adventure. We feel sure that it will add fresh laurels to his renown as an explorer, and that all its objects will be crowned with success.

**CATALYSIS**

**ACCELERATION OF CHEMICAL REACTION**

**MARGARINE AND MOTOR OILS**

Professor A. Killen Macbeth delivered the first of a series of two lectures on "Catalysis, the Acceleration of Chemical Reaction," at the Prince of Wales lecture theatre, Adelaide University, on Tuesday evening. The vice-chancellor of the University (Sir William Mitchell) presided. The lecture was illustrated by lantern slides.

The lecturer said that over a hundred years ago it was noted that the addition of a minute trace of certain impurities, or substances foreign to the main reagents, caused an ordinarily slow chemical reaction to proceed at an appreciably greater rate. Such cases were grouped by Berzelius and defined by him as catalytic reactions, the catalyst being the agent which unloosed the forces in the reaction. During the past century the phenomenon of catalysis, instead of being recognised in only a few particular cases, had been found to be very general, and there were not many chemical reactions that could not be accelerated by the addition of a trace of a foreign substance. By means of catalytic action the technologist was able to carry through processes which would otherwise be impracticable, if not impossible. Such considerations led about a quarter of a century ago to the prediction that the active use of catalytic agents would bring about great advances of chemical industry. Although the action of catalysts was discovered upwards of a century ago, the industrial applications of the various principles only took place many years afterwards, and indeed some of the most successful developments had occurred within comparatively recent years. Discovery had had to wait for invention. A good example of the tardy following of invention in the footsteps of discovery in the field of catalysis was seen in the case of surface combustion. Sir Humphrey Davy in 1817 discovered that the constituents of a combustible gaseous mixture such as hydrogen and oxygen could be made to combine slowly below their ignition point. This led to the discovery that solids might be made to glow by gaseous mixtures without the gas burning in the ordinary way with flames. That was known as surface combustion. About 25 years ago Bone began his researches which led to the application of the method in industrial work.

**Industrial Applications**

One of the industrial applications of surface combustion was a simple type of radiator plate which could be applied in many varied cases for horizontal or vertical heating. In it a mixture of gas and air was allowed to flow under slight pressure through a diaphragm of refractory material and was set alight at the front. Soon the diaphragm began to glow, and after a short time the flame disappeared and the diaphragm continued at bright incandescence as long as the supply of gas was continued. The actual combustion was confined to a very narrow layer of the diaphragm—perhaps at a maximum of a quarter of an inch—and the combustion of the gas was complete and the heater was very efficient. Reports from users stated that they had been able to effect a saving of gas amounting to one-half their previous consumption. The surface combustion process was also applied in almost all kinds of furnace operations, and temperatures of about 2,000 degrees Centigrade could readily be obtained, and metals such as platinum could easily be melted. The method had also been applied to steam raising boilers with excellent results. In them the refractory material was packed in granular form in a tube about three inches in diameter and three feet in length. Larger boilers were fitted with several of such heating units, which were operated independently. The gases, after leaving the tubes, passed through a second series of tubes to remove the waste heat which was used to warm up the feed water. Exhaustive tests by British, American, and German engineers had shown that the efficiency of the system was 0.925, or, in other words, more than nine-tenths of the heating power of the gas was utilised. Water gas, producer gas, or any other gaseous fuel available, could be used in the heating units, but if the gas was dusty a different refractory material had to be employed.

**Hydrogenation Methods**

Many natural oils, both animal and vegetable, were of little commercial value on account of their low melting points. These, by the addition of hydrogen, could be converted into the corresponding saturated substances with the result that the oil was converted into a hard fat. Until fairly recent times the only methods of reduction available were those in which nascent hydrogen was employed, but Sabatier and his collaborators had proved that finely divided nickel was

**AUSTRALIAN POETS**

**"KENDALL STILL GREATEST"**

**Sir Archibald Strong's Views**

Has Australia any great poets? This question has aroused much controversy in South Australia during the past few days. Sir Archibald Strong (Professor of English at Adelaide University) has entered the fray.

"If there appears to be no poet of the first order in Australia today there are some true poets at work, and some of their compositions have great beauty," he said.

"Henry Kendall appears to me still to be the greatest of the Australian poets, living or dead."

"This seems certain—that Australia has not yet reached in literature the high level which she has achieved in painting, black and white drawing, and etching."

"In poetry it must be remembered that the general level of achievement of the world is low in comparison to the levels sometimes reached in previous periods. The output of English poetry today is vastly inferior to that of the Victorian period, the Romantic period that preceded it, and the Elizabethan period."

"So it is not a matter for wonder if Australian poetry is not today achieving great heights. I prefer not to mention names of living poets or dramatists," added Sir Archibald.

"There is no reason to think that Australian literature in future will not reach a high level. It is running upon right lines, and is content to develop in the way

laid down by the glorious tradition transmitted by the great English poets of the past.

"Naturally, adherence to this tradition does not preclude originality. It rather furthers it. But it does prevent Australian poetry from attempting the sterile and fantastic experiments conducted in England under the title of 'modernism.'"

**Lecture on Commerce**

Mr. F. W. Eardley, B.A. (registrar of Adelaide University) advises that copies of the Joseph Fisher lecture on commerce recently delivered by Prof. R. C. Mills (Professor of Economics at Sydney University) can be obtained at his office.

The subject of the address was "Public Finance in Relation to Commerce."