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position they occupy on the sward. The tall, strong growing grasses, e.g., cocksfoot and tall oat grass are top grasses. The dwarf varieties, e.g., sheep's fescue, foxtail, and crested dogstail form the sole or bottom herbage. For good pasturage top and bottom grass should be included, though for hay mixtures tall varieties should predominate. Grass seeds may be sown in spring or autumn, but in most districts the spring months and summer are too dry to ensure rapid germination and establishment before the summer sets in. Early autumn sowing will usually give best results. Usually the best results are obtained without a nurse crop, though under certain circumstances the use of a nurse crop may be advisable. In lighter rainfall country the growing of a nurse crop should be dispensed with.

The method of seeding a grass crop is of importance. Whether the seed is sown by broadcasting, by the seed barrow, or by a grass seed attachment to the drill, it is of importance that it be sown as shallow as possible, and, if possible, the seeds should be barely covered. On a fine, well-prepared seed bed the use of a brush harrow or a very light-tined harrow will be sufficient to cover them.

The second method of developing grass lands, feeding the grass through the use of liberal dressings of fertilisers applied to cereals, e.g., wheat (in the north), oats, roots, or fodder crops (in the south), is practicable over the whole arable area of the State. There are large areas of country in the eastern parts of the State where the stock-carrying capacity of the land has been greatly increased by ploughing up the virgin sod, sowing an oat or a wheat crop with a liberal dressing of superphosphate, and allowing the land to revert again to pasture. The herbage has greatly increased both in quantity and quality as a result of this treatment, and the stock-carrying capacity of the land has been increased. On many of the large sheep stations on the eastern plains this practice has been found to be most advantageous. In the wheat belt there is no question that the stock-carrying capacity of the farm is greatly increased by the use of liberal dressings of superphosphate on the wheat crop. Experience has shown that the use of liberal dressings of superphosphate not only guarantees a full wheat crop, but materially stimulates the stock-carrying capacity of the grass and herbage that follow the wheat. This leads to increased stock-carrying capacity, more sheep being kept on the wheat farm, and this, in turn, assists the farmer to secure higher wheat yields. For arable areas in a large rainfall country, this is undoubtedly the best means of securing an increase in the stock-carrying capacity of the farm.

Topdressing is the most direct method of immediately securing increased returns from grass lands, and is capable of wide application. It is in the areas of more liberal rainfall, however, that the effects of topdressing will be most marked. There are several reasons for this. The moister regions of the State have been longer settled, and more heavily stocked than the lighter rainfall country. Hence the drain on the mineral constituents of the soil has been heavier and more continuous than on the lighter rainfall areas. Moreover, losses by leaching, particularly of nitrogen and lime, have been heavier in these areas. It is commonly believed that grazing improves the fertility of the soil. It is well to understand precisely what grazing does. Plants gain 95 per cent. of their dry matter from the atmosphere, and only 5 per cent. from the soil. The growing of plants and the decomposition of their residues will cause the soil to become richer in organic matter, but not in mineral nutrients. There may be a transfer of mineral nutrients from the subsoil to the surface soil, but the zone within which plants feed does not become richer in mineral nutrients. By grazing a large amount of the organic matter in the herbage, and from 50 to 60 per cent. of the mineral matter, is returned to the soil in the faeces of the animals. As the organic matter is obtained by the plants wholly from the atmosphere, it follows that under grazing the soil will increase its content of organic matter. The mineral nutrients, however, must show a decline by the amount removed in the wool, milk, and bodies of the animals. Hence, while the organic matter increases, the total mineral nutrients must show a decline. If these mineral nutrients are replenished and augmented through the medium of artificial fertilisers, then grazing will lead to increased fertility, but not otherwise. Our soils are notably deficient in phosphate. They are, however, well furnished with potash and other mineral nutrients. Wheat-growers have realised how necessary soluble phosphates are for a wheat crop, and no wheat-grower would now attempt to grow a wheat crop without the use of superphosphate. Grass needs phosphate as much as wheat, and the grower of grass will not secure full value from his pasture without the liberal use of phosphates. Phosphates are of special value of grass lands. They supply an essential mineral plant food, which is most likely to be lacking in ordinary soils. Any deficiency in phosphate leads to starved grass, and the stock grazing on phosphate-starved grass, cannot remain profitable to their owners. Soluble phosphates have a most stimulating influence on the development of the young root system. They give the wheat and the grass an early start. With wheat crops this early start does much to secure the crop against drought. Soluble phosphates improve the feeding value of the pastures, and in grazing, stock will always prefer the manured to the unmanured grass land. Phosphates stimulate the growth of leguminous plants, i.e., clover and trefoil, and thus enable a store of nitrogenous humus to be added to the soil. The effects of top dressing are most marked over a very large area of Victoria.

Registered 22 JUL 1924 also advertiser

A STUDY OF PERSONALITY.

LECTURE BY PROFESSOR STEWART.

Professor J. McKellar Stewart, at the Prince of Wales lecture room, Adelaide University, on Tuesday evening, delivered a thoughtful address on "The machine, the individual, and the person; a study in the nature of personality." It was the first of a course of three addresses on the subject, the others of which will be delivered on July 29 and August 5. A representative audience listened attentively to the lecturer.

The professor said that problems connected with personality and the personal world had appeared in the foretront of philosophic thought from the time of Socrates down to the present day. It might justly be said that philsophy had claimed the realm of personality as its own peculiar domain, and that it had sought to render intelligible such experiences as were constituted in the pursuit of truth, the conviction of duty, and the faith of religion. The modern development of natural science, however, had led to the enquiry whether philosophy had its own independent domain. It had been claimed that the keys of the kingdom of knowledge had been given to scientific reason alone. That claim had been based mainly on the advance of natural science into the domain of life. In the investigation of the living organism, similar methods had been employed to those used in the interpretation of inorganic nature; and the result had been one of apparently remarkable success. Not only had many forms of bodily activity been shown to have had a physico-chemical basis, but also it was claimed that certain forms of action, which hitherto had seemed to involve mental process, were now seen to be explicable without reference to mental process at all. Consequently, the view had been propounded in some quarters that it was only a matter of time when it could be shown that the roots from which man's inner life developed were capable of being analysed into physical and chemical elements. In view of such claims, it became a matter of importance that the method of natural science should be examined, and that the limitations inherent in it should be recognised. The standpoint of the natural scientist might be described as that of the external spectator. Science observed its world through the senses, and therefore from without. It was dependent for all its data upon the senses, and that fact constituted an inherent limitation; for if there were such things as purpose and power in nature those were facts of such a kind that they could not stimulate the senses. To such facts science must therefore be blind. When the scientist was true to his standpoint he must, as a scientist, conceive the world as a mechanism. The standpoint of science in regard to Nature might be contrasted with that of the poet of Nature. The poet was no external observer of his world. He lived into his object by an effort of sympathetic imagination. He got within Nature, and saw her as she might see herself. He read his own spirit into Nature, but he also entered into hers; he filled Nature with a life and spirit like his own, but what he saw was that life and spirit lived according to the nature of the object. The beauty which, for example, he saw was not a fictitious glamour which he projected into Nature. It was really there. It took no room in space, though it pervaded it; it altered nothing, and yet it transfigured everything. The poet revealed the truth of Nature, and, although he might not be able to express that truth in propositional form, he still had his own fitting medium of expression, by means of which he could stimulate others to see what he saw. To get the full truth of Nature the external standpoint of science needed to be supplemented by the internal experience, for example, of the poet.

That conclusion was confirmed when the present state of the biological sciences was taken into account. The prevailing idea was that there was probably no ultimate distinction between living and non-living matter, and that physiology was assured of indefinite progress on the assumption that "the living being is to be regarded, for the purposes of physiology, as a physico-chemical mechanism, to be investigated by methods in which quantitative chemical processes and measurable physical processes are alone dealt with." From that standpoint the material body of a living thing was a mechanism or machine. But among physiologists themselves that attitude was being questioned, not in the name of philosophy, but in that of biological science. It was maintained that when the living body was treated as a mechanism what was characteristic of it as living was left out of account. The organism as living was an individual with its own peculiar form of unity, and the successful interpretation of its activities must take account of that essential feature of wholeness or individuality. That amounted to saying that the external attitude of physics and chemistry needed to be supplemented by the internal point of view. The living organism must be described as it was for itself, acting from its own centre as an individual. The question of method in biology was one to be decided by biological science itself. Should it decide to make the individuality of the living organism its fundamental guiding idea, then biology would by that decision dissociate itself from the physical sciences and become included in the philosophical disciplines. It would have exchanged the attitude of the external spectator for that of the observer from within. Unless and until such an exchange took place the living organism could be for biological science no other than a machine, a peculiar machine, but still a machine. This was at once the triumph and the limitation of physical science.

advertiser 23 JUL 1924

SIR LANCELOT STIRLING,
who has been President of the Legislative Council for over 22 years.

On University Course News 23 JUL 1924

Mr. L. Laybourne Smith, B.E.

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Dr. Lewis Thyer had quite a cheery send-off, when numbers of friends assembled at the Melbourne express on Tuesday afternoon, by which he left en route for the Benalla, which leaves for London from that port. Dr. Thyer is the South Australian Rhodes Scholar.

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Dr. A. R. Southwood is to be honorary assistant physician at the Adelaide Hospital in place of Dr. Cowan, who has been promoted.

AFFORESTATION.

VALUABLE OBSERVATIONS ON "AFFORESTATION AND PLANT PATHOLOGY IN SOUTH AFRICA."

In the course of a lecture to the Field Naturalists' Section of the Royal Society on Tuesday evening Mr. Geoffrey Samuel said the indigenous low scrubby vegetation of South Africa had been supplemented by the magnificent efforts of a scientific and energetic Forestry Department granted ample powers by the enlightened Union Government. The barren slopes of Table Mountain and large areas elsewhere had been closely planted with imported trees, and these splendid plantations were rapidly spreading by natural dissemination. The character of vast stretches of country had been thereby greatly transformed, resulting in increased rainfall, and in arresting the destructive floods that formerly scored out deep channels in the low-lying ground. Most of these trees thus acclimatised were of Australian origin. There, as indeed also in California, a traveller would meet with avenues miles long and vast plantations of our own stately eucalypts, immense groves of wattles especially (Acacia decurrens), and even the despised Casuarina (sheoak) is planted as an ornamental tree along the highways. Australians cut down and burnt these shapely and valuable trees without a thought of the incalculable loss to posterity. The hillsides were ruthlessly denuded of untold wealth and natural avenues of eucalypts along the roadsides were sold by district councils for a few paltry pounds. Wattles, too, were allowed to be stripped without discrimination. Like spendthrifts, Australians spent their patrimony on present enjoyment, and had afterwards to look for supplies to outsiders. This had actually happened in the case of the wattle, and we were forced to the ridiculous expedient of importing wattle bark from South Africa, to which we originally supplied the seed. And but very feeble efforts were put forth to restore our indigenous forests, which yielded for all commerical purposes the finest timbers in the world. A great forestry expert from South Africa could not refrain from expressing his surprise on a visit to Adelaide at the sight of the bare hillsides, which might be clothed with forests of our native trees, enhancing the beauty of our city, and adding to the wealth of the State.

Lessons to be Learnt.

Another useful lesson we might learn from South Africa, continued Mr. Samuel, might be found in the vigorous measures taken by the Union Department of Agriculture to eradicate the dreaded citrus canker, which threatened to wipe out the orange industry. The infected trees to the number of several hundreds of thousands and the young nurslings numbering five times as many more were covered by straw, sprinkled with petrol and burnt, the roots being thoroughly grubbed out. Twenty inspectors were appointed to examine the orchards, thus the disease was extirpated, and for the last two years absolutely no recurrence of the symptoms has been reported. Compare with this the lamentable vacillation of our Government some 25 years ago in relaxing the regulations dealing with the introduction of the codlin moth, and the consequent labour and expense—running into many thousands of pounds—entailed on the apple growers, and the recent permission to export black spot apples to London, of which we have not yet felt the full damage.

Further Research Necessary.

Professor Harvey Johnston, in returning thanks, referred to his own interesting experience in both countries. He also contrasted the wasteful methods of Australia in dealing with our valuable timber, and the prudent measures taken in California and in South Africa to conserve the native trees and to acclimatize aliens, especially the eucalypts and acacias (wattles) of Australia, and showed how highly prized these trees and the casuarinas were especially for avenues and parks, by both Americans and South Afri- and resolute and thorough measures in connection with afforestation, and also in dealing with plant diseases. A beginning had been made in the appointment of an eminently competent man to the Chair of Plant Pathology. But a single man could do but little, unless his efforts and investigations ere supplemented by a number of experts on these diseases, who should travel the country, and at once report the appearance of any suspicious appearance in orchard or plantation. The destructive citrus canker had already appeared, and unless prompt steps were taken would quickly spread to the other States.

Prickly Pear.

As an instance of the value of such inspection he quoted the experience of Durban in dealing with the prickly pear. In India an investigation discovered an insect that lived on this plant. Some of these insects were imported to Natal, and in a few years almost wiped out this pest. The importation by California of the Australian ladybird to combat the ravages of the codlin moth was another case in point. These valuable insects were sedulously cared for, and their virtues proclaimed in the usual effective Yankee fashion.