

"Jetting."

The process of "jetting" was the application at a steady pressure of from 60 lb. to 200 lb. per square inch of a jet of stream of arsenical solution directed especially against the breech of each sheep as it travelled along a narrow race. The pressure used varied according to the amount and density of the wool, e.g., 100 lb. to 125 lb. for animals with four to six months' wool, and 200 lb. in case of those with full fleeces. The amount of fluid used under experimental conditions with thousands of sheep in Queensland averaged about 1 1/2 pints per animal. With four experienced men at work as many as 4,000 sheep were treated per day, the cost of treatment being stated to be about one-fifth penny per animal. It was ascertained that a solution containing 0.7 per cent. arsenic was sufficient to give three, or even more, months' protection in ordinary weather, and also destroyed any maggots already present; but in wet weather the process would need to be repeated at more frequent intervals, as the arsenic is partly removed by rain. A solution containing 1 per cent. of white arsenic had been used as a jet against thousands of sheep without any trace of harmful effect, even in the case of those with skin injuries due to maggot infestation. For pregnant ewes, it was recommended that it flies be not active, jetting should be carried out as near lambing time as possible, but for other sheep the solution should be applied as soon as flies begin to appear. About three applications per year should be sufficient if suitably timed.

"Showering."

The "showering" process consisted in applying to a mass of animals penned in a small space a solution containing 0.2 per cent. arsenic, which fell on them in the form of rain from a shallow perforated overhead tank. This fluid was showered on the sheep for from 7 to 10 minutes, in order to thoroughly wet the fleeces, the excess being drained away from the floor, thence through screens to remove faeces, and back to the poison tank, from which it was pumped back again to the "shower." The solution could be reused provided its arsenical content be maintained. This method was found useful for pregnant ewes and weak sheep, as well as those with six or more months' wool, but for dry sheep and those with little wool another process, viz., dipping, was found to be just as satisfactory and to require less time. The dipping was well known to sheepowners as a means for controlling lice and scab, and consisted of a narrow trough containing arsenical fluid into which sheep were immersed, and through which they swam for a short distance. In this case the amount of arsenic necessary to kill lice (about 0.2 per cent.) was insufficient to kill maggots, and consequently a solution with about double the amount of arsenic (say, 0.4 per cent.—nearly half per cent.) was needed.

Valuable Recommendations.

The most promising lines of action in regard to blowfly control were then— (1) The systematic co-operation of sheep-growers in destroying the chief breeding places of such flies by burning or by thoroughly poisoning carcasses and offal lying about in the paddocks or near the homesteads; and (2) the application to the breech of each sheep of a solution of arsenite of soda containing about 7 lb. of white arsenic (and a similar quantity of caustic soda) per hundred gallons of water, such solution to be applied in the form of a well-directed jet at a pressure of from 100 lb. to 200 lb. per square inch three, or perhaps four, times per year at appropriate intervals. In certain special cases dipping or showering with a weaker solution of arsenic might advantageously replace the jetting process.

REG. 9. 9. 25

PLATO, LITERARY ARTIST.

HIS DESCRIPTIONS OF SOCRATES.

In the Prince of Wales Theatre, University, on Tuesday night Professor W. Barnley Naylor began a course of extension lectures, taking the subject Plato as a literary artist. There was a large attendance. The professor stated that he was fond of Plato and therefore felt that other people might be also. He would ask his audience to go back with him, in imagination, to 407 B.C., and to consider themselves in the city of Athens, beginning a walk to the Piræus about five miles away. One of the walkers was Socrates, a vigorous and energetic man, so extraordinarily ugly that he was known to the Athenians as the sayer. The attraction at the Piræus was a religious procession, which was one of the passions of Socrates. He was a most cosmopolitan man, though he had a keen affection for his own country. People should realize that the two things were compatible, which would make for better feeling all round. Socrates, according to the account of Plato, had seen life with astonishing accuracy and that accounted for his habit of analysis. It was characteristic of him to watch the religious processions of all nations, in spite of the intolerant attitude of the Athenians towards those of other people. The religious of the Mediterranean always had consisted largely of displays in the streets, carrying statues, and waving flags, and it was much the same today. After the procession he decided to walk home, but

had not proceeded far before he was induced to return to the Piræus to see a torchlight procession, having dinner with Cephalus, the owner of a shield factory. Cephalus was a wealthy old man. In the course of the conversation during the meal, Cephalus denied that wealth brought happiness, a position controverted by Socrates, as a matter of dialectics. He gained an admission from Cephalus that it had certain alleviations, among which was the possibility of making certain of a happy future among the gods. It seemed that some people had a similar idea to-day. Socrates then, as a matter of ethics, denied that possibility, and contended that wealth had no real advantages. He asked whether it helped a man to do his duty or to refrain from deceiving his neighbour.

Naturalness of Greeks.

Plato was one of the men who took no money for his teaching, a principal which had an immense moral value. His private means enabled him to teach what he believed, and that should be one of the qualities valued by a university. When a university repressed the teachings of truth, as happened at times in America, it degenerated. His work was extraordinary realistic, and the introduction to "The Republic" was one of the most vivid pieces of language in existence. Another fine work was his symposium on a dinner party, that to which Socrates went on the night of his visit to the Piræus. The Greeks were painfully natural, and had a habit of asking those awkward questions uttered by children nowadays, the questions grown-ups were afraid to answer. In Plato's works they found questions raised which occurred to them every day, and they were studied and answered unflinchingly, which made the books so refreshing. That description of a dinner party was the best-known sketch of Athenian life, and enabled the reader to realize everything which was done and the actual meal. After dinner the guests proceeded to talk about love, and at the end of a dissertation by others Socrates lifted the discussion above the normal level by distinguishing between animal passion and the love which was eternal. He said that the latter was the most charming and lovely thing in life; it outlived all the changes of the body and gave complete happiness to men and women. He talked of that form of love perhaps for the first time in history. Among the characters introduced were Alcibiades, whom the lecturer described as perhaps the cleverest and most erratic statesman of Athens; Agathon, the tragic poet; Aristophanes, Phaedrus, and Aristodemus.

Death of Socrates.

The final division of the lecture was Plato's description of the official murder of Socrates at the age of 70 years. He had been accused of impiety and corrupting the youth of Athens. There was no doubt that Socrates made little attempt to save himself. The voting at the trial was extremely close, no doubt, and if he had shown a little of the ingratiating quality he might have been released. Though Socrates had the greatest respect for the law, he felt only contempt for those who administered it and did not try to get an acquittal by the usual methods. He neither wept nor tried to win sympathy. Instead he defiantly showed the people that he should be treated as a public guest for the remainder of his life rather than imprisoned. He was condemned and after some weeks in prison, during which he refused to attempt to escape on the ground that as a citizen he would obey the law even if he believed it wrong, the day of his death arrived. Plato was not present at the final scene, but he narrated the last conversation of Socrates and his friends as it was related to him. The conversation turned on the question of a future life, and the account of it was sufficiently convincing to men like Cicero and Cato to make them despise the magic they had been taught as religion. Though it might not convince men nowadays of the certainty of a future life, the calm way in which Socrates faced the great mystery of death, confident that his spirit would survive, must have a great effect on the mind.

Nov. 10. 9. 25

PRIMARY PRODUCTION.

METHODS OF INCREASING IT.

LECTURE BY DR. RICHARDSON.

Business methods and executive ability, says Dr. Richardson, are required for successful primary production, in addition to the maintenance of the fertility of the soil.

An address, illustrated with lantern views, was delivered by Dr. A. E. V. Richardson to delegates to the Agricultural Congress in the Victoria Hall on Wednesday evening. A large attendance was provided over by Mr. F. Coleman.

The importance of agricultural and pastoral pursuits to national welfare, said the lecturer, was reflected in the rela-

tive value which production from these sources bore to the total population. Of the £332,000,000 of new wealth created in Australia in 1925, the agricultural and pastoral industries contributed £220,000,000, or 66 per cent. of the total. In view of the relative distribution of rural to urban population in Australia, this record of primary production was remarkable. During the same year the total production of South Australia was £24,000,000, of which £22,000,000, or 91 per cent. of the total, was contributed by the agricultural and pastoral interests. The principal source of revenue from the primary industries came from the 75,000,000 sheep and the 14,000,000 cattle which were maintained on the pastoral lands of Australia. The wheat crop furnished the main source of revenue from agriculture. Wheat was relatively more important to South Australia than to any other State. Though this State normally produced 10 per cent. of Australia's agricultural and pastoral wealth, it contributed more than 25 per cent. of Australia's wheat output.

Possibilities of Increased Production.

During the past thirty years considerable progress had been made in wheat production. This progress was reflected in the increased yields of wheat per acre in all States, but particularly in South Australia and Victoria. For the 10 years ended in 1924, the average wheat-yield of South Australia was 12.45 bushels an acre, compared with 4.74 bushels for the 10 years prior to 1901. For the past decade the average wheat-yield of Victoria averaged 14.6 bushels an acre, compared with 7.3 for the decade prior to 1901. This considerable increase in the average yield of both States had been brought about, despite the addition to the wheat-belt during recent years of large areas of land in the low rainfall country. The development had resulted in a great increase in the annual revenue, and had been an important contributing factor to the prosperity of the State. This improvement had been brought about by the adoption of better farming methods, and in particular to three important factors:—(a) Fallowing; (b) introduction of superphosphate; and (c) development of improved varieties of wheat.

Relationship of Rainfall to Wheat Production.

It was a matter of common observation that a close relationship existed between the average wheat yield and the rainfall, and especially the rainfall during the growing period of the crop. If they compared the average wheat yield of the State in bushels per acre with what might be called the composite average rainfall of South Australia between April and October, a striking correlation was found. To determine the composite winter rainfall for South Australia, the average amount of rain falling between April and October was taken for 20 typical wheat centres for a period of 35 years. For the past ten years, South Australian farmers obtained 6.98 bushels of wheat per acre for each inch of winter rainfall, or practically a bushel of wheat per inch of winter rainfall. For the successful cultivation of wheat under Australian conditions, four factors were essential:—(a) Thorough cultivation of the soil; (b) liberal use of soluble phosphates; (c) regular crop rotation and association of sheep with wheat; (d) rational use of seed. The observance of these principles would enable good crops to be raised and the fertility of the soil maintained. They formed the basic foundation of successful wheat-growing from the cultural standpoint. But more than this was required for profitable wheat-farming. Business methods and executive ability were also required, for if wheat and sheep were produced at too high a cost or marketed unwisely, the farm might bring in but little profit. Efforts must be made to cheapen production at every possible point by the efficient use of plant and labor, and by good business management. The wheat-grower must try to discover the point at which increased labor and fertility applied failed to produce more than a corresponding increase in the crop return, and endeavor to reach this point but not pass it.

Rational Use of Seed.

In order to get the best results from early fallowed, carefully worked, properly rotated, liberally manured land, the seed sown should be the best the farmer could secure. The first requirement was to secure varieties suited to the district. The farmer had a large number of varieties to select from, and he should carefully study the yields of the local experimental plots conducted by the Department of Agriculture, and even test on a small scale a few varieties for himself. The experience of farmers in the district and the results of district experiments would be invaluable for arriving at a selection of, say, two or three types. He should endeavor to raise his own seed and should occasionally secure seed from the Department of Agriculture or the Agricultural College. These institutions had the time, the experience, and the facilities for producing high-grade, select-bred, graded seed. The seed for the farm should be sown on the cleanest and best worked area of the farm. The normal practice was to begin seeding with the late maturing types, and to complete the seeding with the earlier types. It was advisable to increase the dressing of both seed and fertilizer as the seeding season progressed.

Important Factors.

Given suitable climatic conditions and a reasonably fertile soil, the main factors for successful wheat cultivation in the Australian wheat belt were:—1. Conservation of soil moisture by early fallowing and thorough working of the soil. 2. Liberal manuring of the crop. 3. Regular crop rotation and association of sheep with

wheat-growing. 4. Rational use of seed. 5. Efficient implements and equipment. 6. Good management and business ability. In everyone of the more important wheat districts of Australia they might find notable examples of successful wheat-growers who stood out from their fellow-farmers in applying these principles. The many farm competitions organized throughout the States had brought many such illustrations before the rural communities. When extension or publicity work in rural districts was so organized as to bring home forcefully to every rural community the precise reasons for success in these outstanding cases, one important problem in agricultural education would have been solved.

Development of Pasture Lands.

The natural pastures of Australia supported practically the whole of the sheep and cattle of the country. As wool and live stock contributed in such a large proportion to the wealth of the country, the principle underlying the successful production of grass was of great importance. Grass was Nature's forage, the healthiest and most nutritious food for live stock. Australia's native grasses were justly famous for their grazing and drought-resistant qualities. They were noted for producing the finest and best wool in the world, and for withstanding great extremes of heat and drought. No other plants had proved equal to their own for the drier parts of Australia. Though the pasture plants of the dried portions of Australia were unrivalled for their grazing and wool-producing value, introduced grasses and clovers thrived exceptionally well in the moister coastal region. While, therefore, they should continue to rely on native grasses for the great bulk of their pasturage, they should not hesitate to use introduced grasses, clovers, and fodder plants in the moister regions of Australia, where the soil and climatic conditions were very favorable for their development. It was a matter of common observation that many native pastures showed signs of deterioration. The most important causes of deterioration were:—(1) Overstocking and injudicious grazing, and (2) the continual removal from the soil of mineral nutrients.

Improvement of Grass Lands.

Grass lands might be improved in three ways:—(a) Sowing down with native or introduced grasses; (b) Growing a cereal or root crop and using liberal dressings of fertilisers; (c) Top-dressing the pastures with suitable fertilisers. The seeding of native grasses was somewhat costly on account of the scarcity and high price of the seed and the rather low germinating capacity. There was no doubt that under cultivation native grasses would greatly improve in succulence, bulk, and in seeding habits. A great field of work awaited investigation in the improvement of Australian grasses. In the moister districts of Australia the coastal areas and highlands—the growth of introduced grasses offered a sore means of increasing the stock-carrying capacity. For areas dependent on summer rains paspalum, Rhodes grass, and Para grass were extensively used. For areas within the winter rain region (the southern coast of Australia and adjacent highlands) perennial ryegrass, prairie grass, and cocksfoot were useful grasses, and white, perennial, red and alsike the most valuable of the clovers. Subterranean clover was likely to prove of great value to the moister portions of South Australia and the hilly country of the Mount Lofty Ranges. It spread rapidly, grew strongly in early spring, furnished good, succulent pasture, and thrived remarkably well in relatively poor land. It was very responsive to applications of soluble phosphate. With the aid of soluble phosphates and the use of suitable grasses and the rational treatment of grass lands, an even more remarkable change might be effected in the millions of acres of grass lands in the better rainfall districts. This development would usher in a new era of prosperity for their live stock industries, which furnished such a large proportion of the national revenue.

REG. 10. 9. 25.

AGRICULTURAL RESEARCH.

Lecture by Dr. Richardson.

The need for research work in agriculture was emphasized by Dr. A. E. V. Richardson (Director of the Waite Institute of Agricultural Research) in lecturing to the agricultural congress on the methods of increasing primary production on Wednesday evening.

The lecturer said that two important sources of primary production were the wheat and the grass crop. It had been shown that much progress was possible in developing these lines of primary production. To fully exploit these and other possible sources of wealth, more attention should be devoted to agricultural education and research. The purpose was not to benefit the farmer as an individual. If the development of agriculture were merely the concern of the farmers, they might leave them to provide it for themselves, or to let matters rest as they were; but in the final analysis the development of agriculture was a public question. Every day in the year the farmers and pastoralists of Australia produce £600,000, or more than £200,000,000