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DR. RICHARDSON'S APPOINTMENT.

SOUTH AUSTRALIA REGAINS A "LIVE WIRE."

As had been expected by those who knew him best (says the "Weekly Times," Melbourne), Dr. A. E. V. Richardson, the Superintendent of Agriculture and Dean of the Faculty of Agriculture at the Melbourne University, has decided to accept the offer of the Council of the University of Adelaide to take charge of the new Agricultural Research Institute in that State. In adopting that course he has been actuated, not by financial considerations, but by a long cherished desire to devote his energy entirely to research work, for which, by Nature and long years of intensive study, he is so eminently fitted.

His departure from Victoria will be a tremendous loss to the State, which has had the benefit of his services since 1911, and will be deeply deplored by the Government and the farming community alike. At the same time, nobody will be inclined to blame him for having resolved to return to South Australia, where he was born and laid the foundations of his remarkable success as an agricultural teacher and investigator.

When Dr. Richardson first arrived in Victoria his youthful appearance caused many of the older farmers to harbor doubts regarding the wisdom of his appointment. The younger men, however, quickly found him a "live wire," and one who not only wished to do all that was humanly possible to assist them, but also, in the expressive phraseology of the Americans, was able to deliver the goods.

He gripped their minds at the outset, and it was not long before he also had won the confidence of the older men who, as the years passed, came to count upon him in the fullest sense of the term as their guide, philosopher and friend. Among other things, Dr. Richardson demonstrated to the agriculturists and convinced them of the value of science as an essential factor in agricultural development, and had he done nothing more than that he would have placed the State under a big obligation to him.

In addition, however, he designed the Central Research Farm at Werribee, which has become known as the Rothamstead of Australia, and laid down a comprehensive scheme of experimental work relating to the use of fertilisers, rotational cropping, and the production of lucern under irrigation, the results of which have won recognition, and have been of acknowledged advantage, throughout the Commonwealth.

He also planned valuable tests in wheat-growing at Longerenong College and in other parts of the State, and thus collected information which has proved of inestimable benefit to all engaged in the industry, whether in the Wimmera, the Goulburn Valley, or the Mallee. Indeed it may be fairly said that to his enterprise and initiative in this connection are largely attributable the increased average yields which have been registered in recent years.

Dr. Richardson was one of the first to give serious attention to the betterment of our pasture lands, which may be described as the sheet anchor of the great pastoral and dairying industries. He ascertained, on experimenting, that, by top dressing with suitable quantities of superphosphate, not only could the carrying capacity of a vast proportion of the grazing country be enormously increased, but that, at the same time, the palatability of the feed could be materially enhanced, and the health of the livestock improved.

Having completely satisfied himself on these points he has persistently sought, on the platform and in the press, to emphasise the possibilities of the practice of top dressing, and to his enthusiasm, supported by overwhelming evidence, must be largely credited the phenomenal progress of the practice which is calculated to add immensely to the aggregate revenue from the land.

All in all Dr. Richardson has placed Victoria under a deep debt of gratitude to him and when, toward the end of the year, he leaves to enter upon his new duties in Adelaide—arrangements have been made for him to remain in this State until the return of the Director of Agriculture, Dr. Cameron, from America—he will carry with him not only the best wishes of the farming community generally, but also the knowledge that he has left behind a monument which will ever keep his memory green.

That Dr. Richardson will be signally successful in his new sphere cannot be doubted. Apart from his other qualities and qualifications, he possesses rare vision, and it may be fairly assumed that, in planning the work of the institute, he will keep in mind not alone the requirements of South Australia, but also those of the Commonwealth as a whole, so that Victoria, indirectly at least, will continue to derive benefit from his labors.

MANUFACTURE OF INSULIN.

The Metropolitan Abattoirs Board, in addition to the work of slaughtering stock, inspecting and delivering meat, renders a good deal of assistance to medical science by providing for experimental work, glands and portions of internal organs of stock. The board has supplied for some time past pancreas for the manufacture of insulin, which is used for the treatment of persons suffering from diabetes. Professor Brailsford Robertson, of the University of Adelaide, has been responsible for the preparation of this material, has now sent the board the following letter.—"During the past 18 months this laboratory has been engaged in the manufacture of insulin for the treatment of sufferers from diabetes in the State of South Australia. We undertook manufacture at a time when insulin was not available in Australia, and as a result several lives were saved, and the conditions of others very greatly ameliorated. During the whole of this period you have been so good as to supply us, free of charge, with the pancreas required for this manufacture, and it is owing to this that we have been enabled to manufacture over 40,000 does of insulin without financial loss to the University. This work has now been brought to a conclusion, the responsibility for supplying the needs of our patients having been undertaken by the Commonwealth Serum Laboratory at Melbourne. I wish to convey to you on behalf of the University and the sufferers from diabetes in this State my very hearty thanks for the cordial co-operation which you so generously extended to us."

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ACQUIRED CHARACTERISTICS.

CAN THEY BE TRANSMITTED?

BIOLOGISTS SAY "NO."

Sir James Crichton-Browne's claim that Pavlov's experiments on white mice have proved that acquired characteristics can be transmitted, is disputed by Professor Brailsford Robertson, who says experiments similar to Pavlov's, carried out in America, achieved purely negative results.

Perhaps the reason why the never-ending controversy on the subject of the transmission of acquired characteristics is of such perennial interest to man is that deep in the secret recesses of his heart he feels that if he is impotent to transmit the experiences he has gained all the progress he has made, his knowledge, and the intricate web of his civilisation are but an unsubstantial pageant, the figment of a dream. He endeavors to convince himself, and in the face of the growing body of biological opinion, his arguments become the more subtle, that all is well, and that it is his ego and not that insignificant little thing called the germ plasm that shapes his destiny on this planet. But these iconoclasts, the biologists, ruthlessly knocking the great god of Self from its pedestal in their search for truth, hold out little hope for the average man's cherished convictions. They have declared almost unanimously that acquired characteristics cannot be transmitted.

Professor Brailsford Robertson

Pavlov's Experiments.

Recently our hopes revived somewhat when Sir James Crichton-Browne, the famous authority on nervous and mental diseases, told the Educational Congress at the Wembley Exhibition, that Pavlov, the famous Russian physician, and a Nobel prizeman, had proved by experiments on mice that by functional exercise certain changes might be stamped on the nervous system and become hereditary.

Pavlov trained a group of white mice to run to their feeding-place on the ringing of an electric bell, and found that 300 lessons were required in the first instance to accustom the mice to run to the feeding spot when they heard the bell ring. But in mice bred from the mice thus trained a much higher aptitude was displayed, for only a hundred lessons were necessary to obtain the same result. The third generation required only 30 lessons, and the fourth only ten. The last generation on which Pavlov has reported learned their lesson after only five repetitions, and he hoped that the sixth generation, or one still later, would run to the feeding-place on the first occasion of hearing the bell.

Results Purely Negative.

This certainly looked encouraging, and verification was sought by a representative of "The Advertiser" from Professor Brailsford Robertson, of the Adelaide University. Alas, for Pavlov! He may have braved the brutal Bolsheviks, as Sir James asserts, but only to fall foul of the biologists. Similar experiments to Pavlov's, said Professor Robertson, were carried out under the strictest scientific conditions in P. H. Morgan's laboratory by Vicari for a period of four years, and in Yerkes' laboratory for a period of five years, with entirely negative results. He did not think, therefore, Pavlov's deductions from his experiments could be maintained in the face of the experiments carried out in America over such protracted periods and under such strict supervision.

"Very few scientific men to-day," said Professor Robertson, "believe in the transmission of acquired characters and the weight of evidence is all against them."

Recent Research.

Research into cell growth had of recent years considerbaly modfied the Darwinian hypotheses of the origin of species, and these conclusions he had summarised in the [illegible] chapter of his book, "Basis of Growth and Senescence." In this chapter Professor Robertson says an analysis of the phenomena of growth has led to the conclusion that the diversity of cells originates in a diversity of relationships between nucleus and cytoplasm. The communal life of the metazoa and to a less extent that of the multicellular plants, led to the acquirement of a certain degree of independence of short-period fluctuations in the nutrient environment, and a relative constancy of the nutrient level in the pericellular fluids. In this way the first step was taken towards the evolution of the community-controlled environment which is exemplified in the warm-blooded animals. To say that relative independence of the environment was acquired because it was advantageous to the forms acquiring it was not to invoke a teleological explanation of the facts. The forms of organisation which arose in consequence of each successive liberation from environmental caprice could not by any means have arisen had not the corresponding measure of environmental control been previously or simultaneously acquired.

The organism might, in fact, in the majority of cases, have been the spontaneous outcome of the changed conditions of life, consequent upon the acquirement of an additional measure of environmental invariance and the operations of selection may have been directed rather to the internal environmental modification than to its somatic changes, or changes in the body cells as distinct from the germ cells.

A Problem of Evolution.

A fundamental difficulty in the interpretation of organic evolution had always been constituted by the fact that the less organised forms, even to the most lowly, continued to co-exist with the higher. Modern genetic research had shown beyond question that the origin of species lies elsewhere than in the cumulative selection of fortuitous variations, and that natural selection merely determined which of the immense number of variations presented by nature should for the time being survive. The continued existence of the less organised forms became thus more intelligible; out of the infinite multitude of forms created by the varying inter-relations of germ-plasm and cytoplasm many were "fit" and consequently survived, and mere complexity of organisation constituted in itself no criterion of "fitness." Many organisms had survived without change of type from the remotest geological epochs, while, during the same period others had originated the most astounding diversity of types. Indeed when one considered the comparatively slight variations which man had displayed in the four or five hundred thousand years during which he had inhabited the earth, and compared these trivial changes of skull and skeleton with the vast evolutionary interval which separated Pithecanthropus from Amoeba, one could scarcely avoid the conjecture that in our own species a slowing of variation had occurred, and that evolution had not always taken place at this snail's pace. . . . We saw in evolution, now swift, now slow, checked here and blossoming there, an irregular arborescence rather than a concatenated progress.

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Limit of Differentiation.

If in any type the individual steps in physiological differentiation were large that type would the sooner reach the limit of differentiation, and the number of cell-types and the consequent degree of organisation would be small. It had failed to economise its germ-plasm resources, and had consequently attained all its realisable variational potentialities at an early stage of organisation. On the contrary, in a type in which the step-by-step diminutions were small an immense variety of tissues arose, and, moreover, by their existence other types of tissue were enabled to survive, so that differentiation impossible to the more primitive type became accessible to the type which was already highly organised. . . . But when the relative proportions of the most highly differentiated tissues became too great variation must necessarily be rendered increasingly difficult. It was for this reason, no doubt, that in the creation of new forms evolution had so repeatedly harked back to earlier types, or to relatively primitive tissues in the more advanced types. The branch was continued to a certain limit, and then ceased to proliferate, and a fresh outgrowth from a more primitive stem took its place and overshadowed it.

Man at His Zenith.

"Viewing the phylogenetic history of man in this light," says Professor Robertson, "we may perhaps harbor the speculation that if a superhuman type is ever to appear upon our earth it will not arise from a human stock. Since man is now engaged in rapidly exterminating all animal competitors this eventuality may perhaps be rightly deemed impossibly remote." Undoubtedly it may be argued that enormous changes have taken place in the brain of man since he first made his appearance upon the earth, and that these changes have anticipated and rendered unnecessary the changes of form and skeleton which might otherwise have occurred. We have little ground upon which either to affirm or to deny this proposition; but if cerebral volume be regarded as affording any criterion of intellectual capacity, then there has been little or no change in the intellectual capacity of man for thirty thousand years. In seeking to account for the enormous development of the tools and powers of man during this period, it must be remembered that man, by his ability to transmit the products of his thoughts to others has acquired an external heritage, the environment, namely, that his intellectual labor has created. In this environmental form of inheritance, unlike his physical heritage, acquired characters are transmitted."

Thus by a roundabout track we are back at where we started, but with the uneasy feeling that if Professor Robertson and his colleapues are right, man has already touched his zenith.

News 30.6.24

Miss Dorothy McBride and her gifted young husband, Lauri Kennedy, the 'cellist, have left London to join John McCormack in a concert tour in America. A daughter of Inspector McBride, of Adelaide, Miss McBride won a public examinations scholarship for pianoforte at the Elder Conservatorium, where she took her degree of Bachelor of Music, afterwards joining the Kennedy Company in Sydney. After the marriage of the young couple they proceeded to America, bearing a letter from Madame Melba to Cassals, the great 'cellist, from whom Lauri took further lessons. They then toured with John McCormack, in America, afterwards going to London, where the young 'cellist appeared on several occasions with Melba, who has always taken a great interest in him. The ensemble of the two young artists in their work together has more than once been favorably commented upon by London critics.