

NEW BOOKS

The Role of Atomic Energy In Agricultural Research

C. L. COMAR AND S. L. HOOD. ix + 483 pages. Technical Information Service, Office of Technical Services, Dept of Commerce, Washington 25, D. C. \$3.10 Reviewed by CLAYTON McAULIFFE, North Carolina State College, Raleigh, N.C.

THIS book is a compilation of the papers presented at the Proceedings of the Fourth Annual Oak Ridge Summer Symposium. Aug. 25-30, 1952.

The first section of the book is devoted to a general discussion of the value of agricultural research, isotope utilization and brief elementary nuclear structure, all of which have been presented numerous times elsewhere and which could well have been omitted from this book.

The section on instrumentation and methodology consists of 5 papers of particular value to the worker who plans to start a radioisotope laboratory. Instruments and laboratory design are given. Two very good papers on C^{14} preparation and counting (one gas, one solid) will be of interest to all radioisotope users.

Of eight papers dealing with animal nutrition, three are review while the other five give original results. Synthesis of protein in the Rumen from non-protein sources was demonstrated with S^{34} while C^{14} was used to demonstrate carbon reservoirs in the milk cow. Carbon-14 labeled precursors were used to study milk ingredient formation in detached cow's udder. Skeletal metabolism was strikingly shown by deposition, immobilization and resorption of Ca^{45} , Sr^{90} and P^{32} in bones of cattle, sheep and pigs as revealed by autoradiography.

Plant investigations are represented by paper chromatographic separation of products of photosynthesis and a study of the translocation of these products. Using C^{14} labeled organic acids, the Krebs tricarboxylic acid cycle was shown to operate in plants. Furthermore, the connection of organic acids with fats, carbohydrates, and proteins was demonstrated.

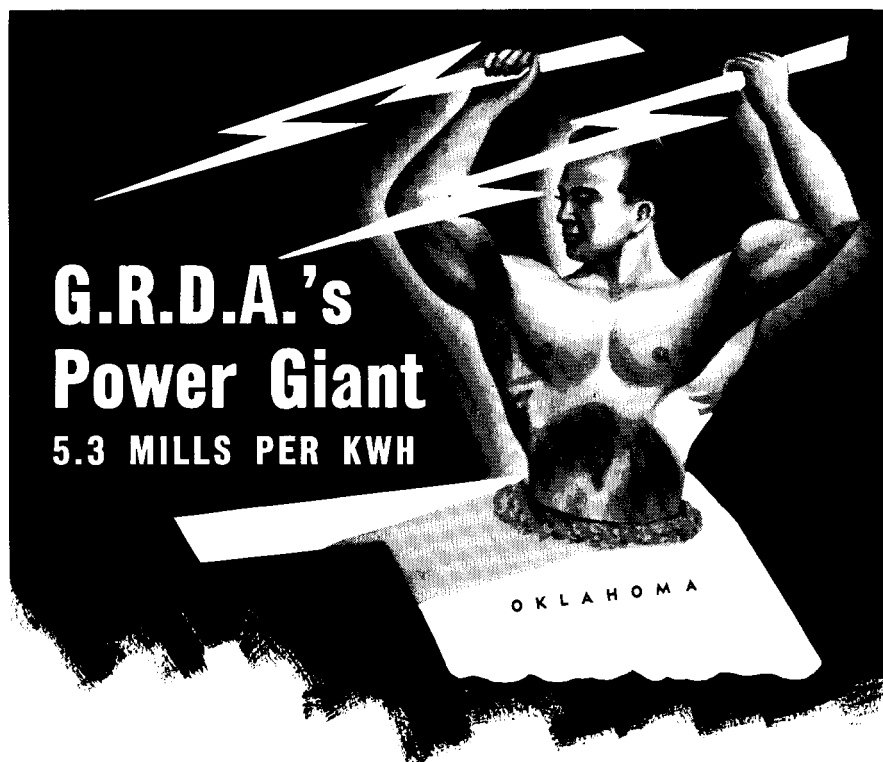
In the fields of soils and soil fertility, P^{32} was used to measure the surface phosphate in calcareous soils and to correlate surface phosphate with phosphate available for plant growth. Using radio-cations, a theory of ion absorption visualizing a specific ion carrier in the plant root membrane was tested. By injecting P^{32} in various geometrical configurations, the extent of the root system of various plants was determined by

analyzing the plant for this radioisotope. In addition, zones of highest phosphorus uptake were measured.

Several of the papers are excellently written; however, many were written for oral presentation and not for publication and since no editing of these papers has been done, several are verbose and not well organized.

For the agricultural research investigator who plans to use isotopes, the book

is of particular value in demonstrating types of possible investigations, the results of original experiments, as well as review papers covering the fields mentioned above. For the noninitiated, the section on instrumentation and methodology is valuable. For investigators familiar with the use of isotopes, the presentation of the latest work will be of interest; however, much of the book is of lesser value.



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