MARCH 25, 1949

THE GENETIC EFFECTS OF RADIATION ON HUMAN BEINGS
ROBLEY D. EVANS

NEOMYCIN, A NEW ANTIBIOTIC ACTIVE AGAINST STREPTOMYCIN-RESISTANT BACTERIA
SELMAN A. WAKSMAN AND HUBERT A. LECHEVALIER

TECHNICAL PAPERS
BOOK REVIEWS
NEWS AND NOTES

COMPLETE TABLE OF CONTENTS ON PAGE 3
VOLUME 109, NUMBER 2830

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International Refrigerated Centrifuge

Centrifugation under controlled temperatures at or well below 0°C. offers new possibilities to the biochemist. The cancer program—virus investigations—poliomyelitis research—enzyme research—low temperature solvent fractionation—all have benefited by the use of this new research tool. Countless other applications are waiting the guidance of the research scientist.

The International Portable Refrigerated Centrifuge, Model PR-1, is now equipped with a larger capacity compressor. Centrifuge speeds and capacities remain unchanged, but much lower controlled temperatures are now possible. For example, with six 100 ml. tubes at 5000 r.p.m., temperatures as low as -15°C. can be maintained; with four 250 ml. bottles at 2600 r.p.m., -8°C.; with four 25 ml. tubes at 18,000 r.p.m., -5°C.

Here is a scientifically designed research instrument definitely worth investigating. Write for descriptive Bulletin RC, 1949.
THREE DECADES OF CHEMISTRY

THIRTY-TWO years ago Van Nostrand published the first edition of a book on chemistry, the work of Dr. Wilfred Welday Scott, titled "Standard Methods of Chemical Analysis." The history of this book, now in its fifth edition and universally used in laboratories throughout the world, bears tribute to the selective quality of the Van Nostrand chemistry list, which today offers almost two hundred actively selling books. Threading through this list are such distinguished names as Alexander, Bernthsen, Brewster and Williams, Diehl, Frear, Glasstone, Partington, McAlpine and Soule, Prescott and Johnson, Olsen, Rode bush, Willard, Furman, and Whitmore—men internationally known for their scholarly work in chemistry—men whose names attest the distinction which has marked the Van Nostrand chemistry list for more than three decades.

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In charge, Knolls Atomic Power Laboratory

NEW ELEMENTS: A nuclear reactor may be used for irradiating materials so as to produce either new elements or materials with greatly changed physical properties. . .

One might at first sight think, then, that here is a method for producing a great variety of substances having new properties. This is true, but we must keep very clearly in mind that these altered substances are going to be extremely expensive. For, if the production of these new altered substances involves the absorption of neutrons in the reactor, we have then lost the neutrons as far as the possibility of producing new fissionable material and power from these neutrons is concerned. If a new material of this sort is built up molecule by molecule by the absorption of neutrons, a simple calculation shows that the cost of this new material per pound is really tremendous in terms of the potential electric power which was sacrificed in using the neutrons to make this new material. Such use of the neutrons is obviously justifiable in the case of new fissionable materials like plutonium and uranium-233, but it seems likely at present that the industrial use of such artificially produced or modified substances will be limited sharply by their very high cost.

“General Electric Review”
August, 1948

T. M. LINVILLE
Staff Assistant to Manager of Engineering,
Apparatus Department

SOME NEEDS: A few technical things that industry expects young engineers to do are as follows. The things mentioned are just in the field of electrical apparatus; i.e., in only a small part of the whole industrial field.

¶ Big steam turbines, so far, have a top efficiency of 34%. We are building one for 37%. In the future we must get maybe 45%.
¶ Steam locomotives have a thermal efficiency of 5% to 10%. We want an electric locomotive with gas turbine, burning coal, with an efficiency of 18% or better.
¶ We want stationary gas turbines burning oil or coal with efficiencies higher than 30% and bigger than the 5000-kw unit we are now building.
¶ We want turbo-jet engines for air transportation to drive planes faster than the speed of time—to leave New York at 6 p.m. and arrive at San Francisco at 6 p.m., or even to reverse time and arrive earlier by the clock than we left New York, causing the sun to set in the east en route.
¶ We need heat pumps with motors and control for heating commercial buildings and homes so that buildings will be totally electric.
¶ We need atomic power to help supply increased electric energy from new resources. We need 345-kv transmission with stronger transformers and stronger circuit breakers to transport power from isolated hydroelectric and atomic power plants. We must have more output from turbine and water-driven generating units.
¶ We must have new electric equipment for manufacturing processes to increase production per man-hour of labor. The motors we make must run faster, they must run more automatically, and we must produce them with less man-power.
¶ We must have synthetic materials to make equipment less subject to damage by heat, oil or acid, or mechanical and electrical stress.

If you think men already have enough wealth, just look around and see how much we need better housing and more attractive environment, to name just two of many things. Then reflect that it is the men in industry, big and small, who are responsible for our increasingly higher standard of living.

Rensselaer Polytechnic Institute,
Troy, N. Y.
November 18, 1948

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