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April 4, 1953
VOL. 63, NO. 14 PAGES 209-224

SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE

Spring Azalea

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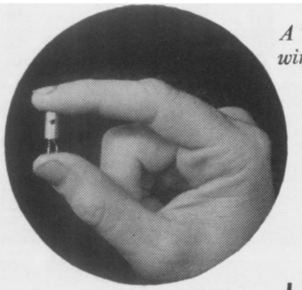
A SCIENCE SERVICE PUBLICATION



A ***Transistor*** *of point-contact type. Two hair-thin wires control current flow in germanium metal.*

It's helping to win the Battle of the Watts

Laboratories engineer examines ***Transistor*** *oscillator. It is used in Englewood, New Jersey, where 10,000 subscribers can personally dial distant cities.* ***Transistors*** *generate the signals which carry the dialed numbers to other towns and cities. Other uses are in prospect.*

When you keep down the power needed to send voices by telephone you keep down the special equipment needed to supply that power. A great new power saver for telephony is the ***Transistor,*** invented at Bell Telephone Laboratories, and now entering telephone service for the first time.

Tiny, simple and rugged, the ***Transistor*** can do many of the things the vacuum tube can do, but it is not a vacuum tube. It works on an entirely new principle and uses much less power than even the smallest tubes. This will mean smaller and cheaper power equipment, and the use of ***Transistors*** at many points in the telephone system where other equipment has not been able to do the job as economically.

It's another example of how Bell Telephone Laboratories makes basic discoveries, then applies them to improve telephone service while helping to keep its cost down.

TRANSISTOR FACTS

Created by Bell scientists. First announced in 1948.

Has no glass bulb, requires no filament current or warm-up period. Operates instantly when called upon. Uses no energy when idle.

BELL TELEPHONE LABORATORIES

Improving telephone service for America provides careers for creative men in scientific and technical fields.

What General Electric people are saying . . .

I. F. KINNARD

Mr. Kinnard, with GE since 1922, is manager of the Engineering, Meter, and Instrument Department.

". . . The importance of development engineering to business and industry in general can hardly be overestimated. Successful development engineers are constantly bringing along new products for a new age.

Sometimes developments occur in time-tested and proved products, where they are least expected. Over the past half century G.E. has produced many millions of watthour meters. They have undergone a gradual evolution and refinement so that many considered this a barren field indeed for the development engineer. Yet, as recently as 1948, a completely new watthour meter was developed. It successfully employed for the first time in the engineering world the principle of magnetic suspension of a rotating part. The maintenance-free life of the meter was increased manyfold by this development—a development that was the product of close collaboration of development engineers and materials specialists, particularly metallurgists working on new permanent magnet alloys.

An important part of the development engineer's job is to take that believed to be possible and prove it practical. And in doing this job, he contributes significantly to the evolution of new and better products for a constantly rising standard of living. And whether he realizes it or not, he is one of the vital links in our American economy. His developments are helping to win acceptance throughout the world for the kind of system that brings them forth.

General Electric Review

J. E. BURKE

Dr. Burke is manager of the Metallurgy Section of the Knolls Atomic Power Laboratory

". . . Nuclear reactors are new, but many of the design problems facing the metallurgist are strictly old-fashioned. Such properties as strength, formability, thermal conductivity, resistance to corrosion at high temperatures, and of course, cost and availability, are as important in controlling the selection of materials for nuclear reactors as they are in controlling the selection of materials for other applications.

In addition to these properties, however, it is necessary to consider the interaction of the materials with neutrons. Everything enclosed in the heart of the reactor interacts to some extent with the neutrons, and a very careful control of materials that are included in the reactor is thus necessary.

Since vanadium appeared to be a possible material for use in nuclear reactors, a program to investigate its properties was undertaken several years ago. Although nominally pure vanadium had been available for a number of years, it was brittle and could not be fabricated. Some ductile vanadium had been prepared by calcium reduction of the oxide, but only beads and small pellets were produced. In improving this product, additions of iodine were made to the mixture of V_2O_5 and calcium. Upon heating this charge in a closed pressure vessel, the additional heat provided by the combination of iodine and calcium raised the temperature enough so that a large ductile button of vanadium was obtained. Unfortunately, subsequent runs yielded buttons that were brittle. After extensive investigation it was finally found that the brittleness was due to nitride in the oxide, and the final procedure used involved a careful denitriding of the vanadium oxide by heating in moist oxygen for several hours. The product as now produced can be rolled into thin foil, drawn to wire, or given any of the standard metallurgical treatments except hot working. Because it avidly absorbs oxygen to become brittle, it cannot be heated in air.

There are, of course, a vast number of other metallurgical problems encountered. As in other fields, improvements in materials are imperative if important advances in reactors are to be made. These require continuing work not only directly in the development of better materials but also on the fundamental studies that pave the way for the applied developments.

General Electric Review

C. W. LaPIERRE

Mr. LaPierre is a Company vice president and is general manager of the Aircraft Gas Turbine Division

". . . In 1952 the Aircraft Gas Turbine Division produced over 90% more engines than it did in 1951. And with this increase in production, the General Electric Company became the world's largest known producer of jet engines.

This all-time production high came as a climax to the Company's observance of the "Fastest Ten Years in History" which saluted the decade of aviation progress from 1942 to the end of 1952 . . . from the running of America's first turbojet, the General Electric I-A, to the development of today's advanced turbojets . . . from the flight of the first Bell P-59 to the tremendous speeds of the latest military aircraft.

As the first American designer and manufacturer of jet engines, we at G.E. feel that the expanded need for jet aircraft has justified our pioneering in the field of jet power plants.

In the commercial jet field, G.E. has two engines certified for commercial transports at the present time, the first certification being obtained in 1949. With this background, and the flight experience of thousands of jet engines now flying over Korea and elsewhere, there is no doubt in my mind but that an excellent, economical, American jet engine will be ready for commercial transports by the time the transports are ready to receive them.

Cincinnati, Ohio

You can put your confidence in—

GENERAL ELECTRIC