

## TECHNOLOGY

**Automatic Machine  
Can Replace Solderer**

► AN AUTOMATIC ELECTRICIAN that can put together complex wiring circuits has been developed by the Bell Telephone Laboratories in New York.

The experimental machine, called "M-4," sets up the circuits from punched tape instructions that its electronic "brain" translates to cam and gear settings in its interior.

The machine does not use solder to connect wires to posts. Instead it wraps the ends of each wire tightly six times around square terminals. The high tension provides a firm, corrosive-resistant contact that lasts for the equipment's lifetime.

After making the connection, the wrapper moves onto the next electrical connection, taking its supply of wire from a spool. The "M-4" was designed by R. F. Mallina.

Science News Letter, September 10, 1955

## PHYSICS

**Cosmic Rays Intense  
When Sun's Activity Low**

► COSMIC RAYS bombard the earth more intensely when the sun is at a low point in its 11-year sunspot cycle than when solar activity is high, new evidence reported to the American Physical Society meeting in Mexico City, Mex., showed.

Records of atomic disintegrations occurring miles above the earth's surface, gathered over many years by high-flying balloons, seem to confirm the theory that cosmic ray intensity varies inversely with the sunspot cycle, Dr. H. V. Neher of California Institute of Technology said.

The theory was suggested by Dr. Scott E. Forbush of Carnegie Institution of Washington, D. C.

Cosmic rays are the mysterious particles from outer space continuously smashing into the earth's atmosphere. Their tracks are caught in photographic emulsions or in mist-filled cloud chambers.

Primary cosmic rays have energies measured in billions of electron volts. Their origin is unknown. Some scientists believe the sun may be a source of a small percentage of cosmic rays.

Low-energy cosmic rays are usually stopped high in the earth's atmosphere. When the sun was very inactive during 1954, Dr. Neher said, low-energy cosmic rays were detected at the earth's surface, thus seeming to confirm Dr. Forbush's theory.

Dr. Forbush said his recent studies showed that shifts in barometric pressure near 50,000 feet do not cause the world-wide changes in cosmic ray intensity to vary inversely with solar activity.

An interplanetary cavity lacking the magnetic field of the Milky Way galaxy might account for these variations in cosmic ray intensity, Dr. Leverett Davis, Jr. of California Institute of Technology said.

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**WIRING BY MACHINE**—This ambidextrous machine, developed at Bell Telephone Laboratories, can automatically wire complex electrical apparatus. Called the "M-4," it follows punched-tape instructions such as held here by R. F. Mallina, the machine's designer. A series of relays translate the information into electrical signals that control the machine's cams and gears.

## AGRICULTURE

**Soviet Farm Science**

► "RUSSIAN AGRICULTURAL research often seems aimless," is how Ralph Olsen, a farmer from Ellsworth, Iowa, summed up his impressions of Soviet farm science upon returning from a tour of Russia.

On the day the 12-man team left the United States for their inspection tour of Russian agriculture, Mr. Olsen said he was eager to learn what forward strides have been taken by their farm scientists.

Specifically, since stock feeding is his specialty, Mr. Olsen said he wanted to know if the Russians were up to or ahead of the U. S. in use of antibiotics, hormones and vitamins to fatten stock quicker on less food.

The Russians are neither up to us nor ahead of us in this important scientific advance, Mr. Olsen found. So far as he could learn, they do not use any of these chemicals as feed supplements. There is some use of antibiotics in treating animal disease, but not as part of the feed rations, he said.

Although the Russians seem to have many fine agricultural research stations and capable scientists to staff them, their work often seems aimless, he said. Not being free to follow specific agricultural problems as they arise, but bound to politically dictated projects such as the new corn-hog program being pushed with doubtful success, he said their scientists cannot work with the effectiveness of our own researchers.

Herbert W. Pike, one of the delegation who raises hogs near Whiting, Iowa, said the Russians pay premiums for pork with three inches of fat or over, while in the United States, pork with more than half an inch of fat is discounted.

This is a very expensive way to obtain fats—feeding corn to hogs for the animals to produce it, Mr. Pike said. U. S. scientists learned long ago that they can get fats more efficiently directly from cereal crops.

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## SOCIOLOGY

**U. S. Boys Worry Less  
Than English About Girls**

► AMERICAN BOYS aged 13 and 14 worry less about relations with girls than English boys of the same age. But the American boys worry more than the English ones about relations with family and brothers and sisters, self-confidence, material symbols of social status and school situations.

These findings, from a study of 600 boys in the greater London area and 744 in Seattle and Spokane, Wash., were reported by Dr. Joel B. Montague of the State College of Washington, Pullman, Wash., at the American Sociological Society meeting in Washington.

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