



IS MAN DEPRESSED?—Some stories of the picture-story test changed from exciting and violent ones with a happy ending to depressed stories with possible happy endings. This illustrates confidence in youth that is dampened by disillusionment in later life.

two accidents plotted by crooks but still in the end keeps his job. In his later story about this picture, he sees a man who is moping over a setback, and although he predicts the man in the end will be happy, he sees him in the picture as depressed.

• Science News Letter, 79:154 March 11, 1961

PHYSICS

Atomic Clock Shown To Top Young Scientists

See Front Cover

► A COMPACT "atomic clock" capable of measuring frequency and time intervals with high precision was demonstrated for top winners of the 20th Science Talent Search when the teenagers visited the National Bureau of Standards in Washington, D. C., on an especially arranged tour.

The portable measurement device will be valuable in determining precise orbits of satellites, in radio propagation studies and in navigational and communication systems.

The atomic clock monitors a microwave frequency of approximately 6835 megacycles, using rubidium vapor and light. The amount of light transmitted through the vapor measures the exactness of the microwave frequency being applied, with a variation of as little as one part in 100 million greatly reducing the light absorption.

The oscillator of the clock is automatically controlled to maintain such hyperfine frequency, precise to one part in 10 billion, over a period of months. It is even more precise for shorter periods.

During their visit to the Bureau, the Science Talent Search winners also saw demonstrations of the properties of materials at high temperatures.

A mass spectrometer for analyzing the gas components is shown on the cover of this week's SCIENCE NEWS LETTER by Dr. A. V. Astin, director of the Bureau (third from right) to the winners (left to right) Frederick Albert Matsen III, 17, Austin, Texas, Robert Lee Raymond, 17, South Bend, Ind., Dale Thorpe Smith Jr., 18, Tipp City, Ohio, Harriet Jane Fell, 16, Jamaica, N. Y., James Ivan Lepowsky, 16, New York, N. Y., Roger Paul Peters Jr., 17, South Bend, Ind.

The annual Science Talent Search for the Westinghouse Science Scholarships and Awards is conducted by Science Clubs of America, an activity of SCIENCE SERVICE, and is supported by the Westinghouse Educational Foundation.

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TECHNOLOGY

New Electronic Principle In Unusual Radio Set

► ONE OF THE WORLD'S most unusual radio receivers has been developed to illustrate the principle of molecular electronics.

Built by Westinghouse Electric Corporation, the radio receiver is the first step toward an electronic system in which the whole system function is performed within a single block of material.

The U.S. Air Force reported this unit to be "the most complex electronic system yet achieved through such principles. It contains no tubes, no transistors, and no traditional electronic circuits. Its main working parts are simply six small silicon wafers about the size of a dime, but only one-fourth as thick."

The "working" area of each wafer is about the size of the head of a carpet tack. Yet, the receiver tunes in stations all across the standard broadcast band. Ordinarily such a set requires some 50 individual electronic components, including capacitors, coils and resistors.

The new receiver was demonstrated for the first time on March 3 to the 40 winners of the 20th Science Talent Search at the Science Talent Institute in Washington. The experimental model is designed to test the possibility of making complicated military electronic systems through the use of molecular electronics.

The next step will be the development and construction of an Air Force communications receiver, operating at high frequencies and based on the technology of molecular electronics.

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PHYSICS

Progress on H-Bomb Power for Peaceful Uses

► ATOMIC energy scientists are hopeful they will soon be able to harness the H-bomb's thermonuclear reaction for peaceful uses.

The Atomic Energy Commission reported to the joint Senate-House Atomic Committee that scientists are scheduled to test a device, a magnetic machine that fuses hydrogen, before the end of March.

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