

GENERAL SCIENCE

New Culture Emerging

► A NEW CULTURE is emerging as the thoughts and things of science continue to enter the arts and humanities, claims Dr. Glenn T. Seaborg, chairman of the U.S. Atomic Energy Commission.

This new culture is vastly increasing the distance separating man from lesser forms of life, Dr. Seaborg said in *Science*, 144: 1199, 1964.

He points to the "varied and intensive" philosophical speculations of contemporary scientists and mathematicians, such as Niels Bohr, Max Planck, J. Robert Oppenheimer and the late Norbert Wiener.

The new tools and methods placed at the disposal of humanistic studies by the physical sciences alone is impressive, Dr. Seaborg said.

For example, the proton magnetometer, which can detect things buried underground that disturb the earth's natural magnetic field, has helped archaeologists discover the ruins of the fabulous ancient city of Sybaris.

The use of carbon-14 dating methods has revealed where the great monuments at Stonehenge in England came from, has placed the date of Hammurabi's ascension to the Babylon throne at about 1750 B.C.,

and has shown that the city of Jericho existed as early as 7000 B.C., when the Ice Age had not yet ended in much of Northern Europe.

A new method, called activation analysis, is exposing ancient pottery and old paintings to neutron bombardment from nuclear reactors. Much is learned about the destruction of works of art without damaging them.

This method may be used also to detect forgeries.

The aqualung, Dr. Seaborg said, has opened an entire new world of underwater exploration and has let us study the patterns of ancient Mediterranean trade routes.

Computers are making a concordance of St. Thomas Aquinas' "Summa Theologica" in only a fourth of the time and effort required by the old method. A similar program to study the words of the famed Dead Sea Scrolls is underway.

Electronics has opened new vistas in many fields, including designing and music.

Dr. Seaborg predicts that as more is learned about the universe, there will be renewed efforts to achieve "a philosophical integration" of science.

• *Science News Letter*, 85:388 June 20, 1964

ASTRONOMY

Jupiter Temperatures

► THREE SIGNIFICANT temperature measurements of the giant planet Jupiter and its satellites have been announced by a team of geologists and astronomers from the California Institute of Technology, Pasadena.

The measurements, taken with a heat-sensitive detector fitted to the 200-inch Hale telescope at Palomar Observatory by a group from the institute's geology division, revealed that:

1. The apparent temperature of the great planet's atmosphere increases more than 100 degrees in areas darkened by the shadows of one of its moons. The planet's atmosphere averages minus 230 degrees Fahrenheit in sunlight, but jumps to minus 117 degrees in the spots darkened by the lunar shadow. This was contrary to what was expected.

2. The temperature of the planet's atmosphere of ammonia, methane, hydrogen and helium is higher the deeper one penetrates into it. This confirms what was expected.

3. One of Jupiter's 12 moons, Callisto (about half again larger than our moon and 1,168,700 miles from Jupiter) apparently radiates about twice as much heat as a "normal" moon would be expected to do.

The observations were made by Dr. Bruce C. Murray, associate professor of planetary science; Dr. Robert L. Wildey, research fellow in astronomy and geology; and James A. Westphal, senior engineer who also designed and built the infrared photometer.

This instrument served as the "eyepiece"

for the big telescope, a facility of the Mt. Wilson and Palomar Observatories, which is operated by the Carnegie Institution of Washington, Washington, D. C., and California Institute of Technology.

The group's research is supported by the National Aeronautics and Space Administration and by the National Science Foundation.

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METEOROLOGY

Weather Bureau Seen As 'Supermarket'

► THE U.S. WEATHER BUREAU is in the process of becoming a "supermarket" for all Government agencies involved in meteorology.

Dr. Robert M. White, chief of the Weather Bureau, said the Department of Commerce is developing a plan to furnish all basic meteorological services to every Federal agency needing them. This would mean saving money, since it would eliminate duplication.

People everywhere have a large stake in weather, and all possible ways of exploring and advancing meteorology and allied sciences should be investigated, Dr. White said.

One step in doing this, he noted, is the development of a joint laboratory to study air-sea interactions by the Weather Bureau and the Coast and Geodetic Survey.

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Questions

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BACTERIOLOGY—Which bacteria ties itself in knots? p. 393.

CHEMISTRY—What acid is used in making cottage cheese by a new process? p. 392.

ENGINEERING—What were the basic causes of the Montana dam failure? p. 390.

PUBLIC HEALTH—How many cases of typhoid were reported in South America in 1961? p. 391.

ZOOLOGY—When were most of the European bison wiped out? p. 387.

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