

## PSYCHOLOGY

**Lightly Sleeping Person Is Readily Suggestible**

➤ PERSONS in a "light sleep" are even more suggestible than those under hypnosis, tests by Dr. Theodore Xenophon Barber of American University, Washington, have shown.

Dr. Barber gave seven standard tests of suggestibility to 22 subjects in the middle of the night while they were sleeping in their own rooms.

The test was begun by entering the bedroom and whispering "Clasp your hands together." All 22 clasped their hands within ten seconds. Three of the subjects woke up. Another seven either moved or opened their eyes and later stated that they were "drowsy" during the experiment.

The other 12 seemed to be sleeping lightly. They did not stir and continued to breathe slowly and easily.

The majority of these sleepers responded to the tests of suggestibility as if they were in at least the third stage of hypnosis. They later remembered nothing of the experiment or they followed the suggestion "you are becoming very thirsty and will wake up in exactly five minutes and drink lots of water."

After Dr. Barber had repeated the same tests on the same subjects when they were under hypnosis and when normally awake, he found that in light sleep the persons were more suggestible than under hypnosis. When they were wide awake, they responded very little to the suggestions.

Dr. Barber, who is now located at the Psychological Clinic at Harvard University, reports his preliminary findings in *Science* (Aug. 31). The experiments were designed to determine the relationship between the hypnotic state and the condition of normal sleep.

*Science News Letter, September 15, 1956*

## GENERAL SCIENCE

**Atoms Could Make Antarctic Inhabitable**

➤ ATOMIC ENERGY could turn the Antarctic into the globe's seventh habitable continent, the president of the British Association of Science reported to the annual meeting in Sheffield, England.

Sir Raymond Priestley, who accompanied the English explorer Ernest Shackleton to Antarctica in 1908, made his prediction in the form of a question during his presidential address. Sir Raymond is also chairman of the British Royal Commission on Civil Service.

"If atomic-powered icebreakers can be built," he said, "why not atomic-powered settlements on the Antarctic mainland?"

Sounding the note, "anything can happen in this day and age," Sir Raymond foresees the Antarctic as the world's surplus food locker, as well as a great mining area. He cautioned that everything depends on an economic objective. The chances are, he

said, that Antarctica will be the scene of scientific investigations only for the next 50 years.

However, these possibilities exist, Sir Raymond told the Association:

1. The Antarctic might have a future use as a vermin-free store for the world's periodical surpluses, where they might be preserved against the needs of future generations.

2. There must be great and valuable mineral deposits in any continent of this size and kind, even though nothing of significance has so far been found. Once located, however, the entire mining operation could be moved underground.

3. Atomic power could maintain populations in remote areas like the Antarctic.

4. Antarctic gales might be harnessed as another source of power.

In reviewing the battle of "Twentieth-Century man against Antarctica," Sir Raymond said "now that atomic energy is available and atomic power is immediately ahead, the mere strategic threat of a monopoly of Antarctica by any one power should by itself suffice to keep the interest of nations alive."

*Science News Letter, September 15, 1956*

## PSYCHOLOGY

**Curiosity Pays Dividends, Psychologists Are Told**

➤ IT PAYS to be curious about the world around you, especially if you are a high school science student.

That was reported to the American Psychological Association meeting in Chicago by Dr. Stuart Henderson Britt and Dr. Harold A. Edgerton, members of the board of judges for the annual Science Talent Search for the Westinghouse Science Scholarships.

They emphasized that students should take practical steps to satisfy their curiosity as a major step to be considered for the scholarship awards.

The Science Talent Search is conducted by Science Clubs of America, administered by SCIENCE SERVICE.

*Science News Letter, September 15, 1956*

## PUBLIC HEALTH

**Test New Drug for Athlete's Foot**

➤ A NEW COMPOUND is under test as an athlete's foot remedy at Rutgers College of Pharmacy, Newark, N. J. It combines iodine and thymol, the synthetic form of the spice, thyme.

A cream or ointment containing the compound is being tested against athlete's foot and other fungi both in the test tube and when transplanted into shoes.

The research has been carried on by Drs. John M. Cross, Clarence A. Discher, Pierre Smith, Morton J. Rodman and Louis D. King and Prof. Michael Iannarone.

*Science News Letter, September 15, 1956*

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## BIOLOGY

**Dean of Gorillas Has 30th Birthday**

➤ THE WORLD'S OLDEST GORILLA in a zoo had his 30th birthday party in August.

Bamboo, who lives at the Philadelphia Zoological Garden, is the dean of all gorillas in captivity. His exact age is unknown, because he was born deep in West Africa's tropical forest, but gorilla experts figure he was about one year old when he came to the zoo on Aug. 5, 1927.

No one thought he would live very long during those first critical months in captivity. Gorillas do not thrive behind bars. But he was given a chimpanzee playmate and plenty of medical care. Today the burly anthropoid is about as old as a man of 60, figured by gorilla time.

No one has weighed Bamboo recently, but his keepers say he probably tips the scale at well over 400 pounds.

He is still active, especially on his birthdays, when he scatters his gifts in a display of temper.

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## GENERAL SCIENCE

**Apprentice System for Talented Science Students**

➤ AN APPRENTICE SYSTEM for talented science students that would bring the superior high school or college student into close contact with a scientist who would act as his sponsor was urged by Dr. Randall M. Chambers of the Operator Laboratory, Air Force Personnel and Training Research Center, San Antonio, Texas.

Dr. Chambers reported to the American Psychological Association meeting in Chicago results of science training programs at the Roscoe B. Jackson Memorial Laboratory, Bar Harbor, Maine.

Superior college and high school students picked competitively from a variety of schools in the United States live for two and a half months at Jackson Laboratory. There they work in close association with active research scientists in the fields of experimental medicine, biology and psychology.

The personal relationship between a talented science student and a scientist is a very powerful influence in promoting development of the student's scientific abilities, aptitudes interests and social values.

To have such an influence made available to a student at a critical period in his life exerts beneficial effects on his later scientific development and achievement, Dr. Chambers said.

*Science News Letter, September 15, 1956*

# CE FIELDS

## MEDICINE

### Cancer Resistance Transferred by Blood

► BLOOD SERUM from rats that have grown resistant to a transplanted cancer can make other rats resistant to the cancer, Drs. B. Sekla and M. Barvic of Charles University, Prague, Czechoslovakia, report in *Nature* (Sept. 1).

The reason, they think, is that the transplanted cancer came originally from the Walker strain of rats while those that developed resistance transferable to other rats were of the Wistar strain.

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## RADIO ASTRONOMY

### 2,000 Radio "Stars" Spotted in Heavens

► NEARLY 2,000 invisible radio "stars" have had their positions in the sky mapped, the British Association for the Advancement of Science meeting in Sheffield, England, was told.

Radio "stars" are heavenly sources radiating energy in radio wavelengths just as the twinkling stars humans see radiate energy in the visible wavelengths. Very few of these sources have been identified with objects visible to the eye or caught on photographic plates, Dr. J. R. Shakeshaft of the University of Cambridge reported.

Only two bands of radiation that can penetrate the earth's atmosphere to reveal information about what lies beyond are now known. One is the visible and nearby wavelengths, the other radio waves about an inch long to those about 100 feet long.

Radio waves broadcast by heavenly sources are picked up here on earth by giant antennas known as radio telescopes. Because the signals are extremely faint, about ten thousand times smaller than those received by a typical television antenna, large aerials are needed to scan the skies.

An aerial with the same ability to determine the position of a radio "star" as the eye has to tell the location of a visible star would have to extend for ten miles, Dr. Shakeshaft said.

To obtain accurate positions in order to identify more sources, a radio telescope consisting of four aerials each 320 feet by 40 feet at the corners of a rectangle 1,900 feet by 170 feet was built at Cambridge. Area for area, Dr. Shakeshaft noted, the antenna cost about the same as linoleum.

Counts of the number of heavenly radio "stars" brighter than a particular intensity show that there are more faint sources than would be expected if they were distributed uniformly through space. Evidence on how the radio sources are distributed conflicting

with this non-uniformity has been obtained in Sydney, Australia.

If the uniform distribution is correct, Dr. Shakeshaft said, most of the 2,000 radio sources so far found are beyond the reach of the world's most powerful telescope, the 200-inch Hale telescope at Mt. Palomar.

When the conflicting evidence is resolved, conclusions may then be drawn about different cosmological theories, whether the universe is evolving with time or whether it is in a steady-state, involving the continuous creation of matter.

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## ZOOLOGY

### Crabs Change Color In Time With Tides

► CRABS with built-in "clocks" and diving ducks with "slowed-down hearts" were described by zoologists at the American Institute of Biological Sciences meeting at the University of Connecticut.

Both blue crabs and fiddler crabs have been found to change their color in perfect co-ordination with coastal tides, Dr. Milton Fingerman, assistant professor of zoology at Tulane University, reported. Each crab, the zoologist said, seems to have a personally adjusted "clock."

Tiny black spots on the crabs' bodies spread during the daylight hours to darken the small sea animals. The change apparently is caused by a hormone secretion. The crabs are darkest in accordance with the stage of the tide wherever the crab has made its home.

On the Atlantic coast, where there are two high tides and two low tides each day, the crabs are darkest at low tide only. On the Gulf coast, where there is only one high and one low tide per day, the crabs are darkest at either tide when it falls during daylight hours.

The crabs used by Dr. Fingerman in his experiments kept their same rhythmic pattern of color change when placed in the laboratory in constant darkness.

When birds peel off and dive head-on into water, their heart beat slows down an average of 75%, Prof. Perry W. Gilbert and Charles F. Bond of Cornell University, Ithaca, N. Y., reported.

This, coupled with a relatively higher volume of blood, may explain how diving birds manage to stay under water for long periods.

The Cornell zoologists used an electrocardiograph to record the heart rate of diving ducks, wild pigeons, dabbling ducks, chickens and turkeys. They found that, when water birds were ducked, their heart rate slowed down from 180 to 45 beats per minute. The land birds' heart rates dropped only 10 to 25%.

A heart running at quarter-speed, they explained, uses much less oxygen and the relatively greater blood supply provides more oxygen. This increased oxygen may be the clue to why aquatic birds can survive for as long as 15 minutes underwater.

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## CLIMATOLOGY

### World Weather Changed About 11,000 Years Ago

► A WORLD-WIDE temperature change, reflected in the ocean's surface water, occurred about 11,000 years ago, new studies of deep-sea sediments show.

Four scientists on the staff of Columbia University's Lamont Geological Observatory in New York report new radiocarbon dates for the climate change in *Science* (Aug. 31).

Although the samples of ocean floor, taken at widely spaced locations beneath the Atlantic Ocean, "show evidence of a gradual beginning of climatic change 13,000 to 15,000 years ago," the major break was close to 11,000 years ago. The shift from more or less stable glacial conditions to mild postglacial climate resembling the present was "rather sudden."

The usual view is that there was a gradual change from the relatively cold to the relatively warm regime.

Differences in the kinds of tiny sea animals, the planktons known as *Foraminifera*, in hundreds of cores of ocean sediment show the transition from glacial to postglacial periods. The radiocarbon dating was done to correlate this change with known events on the continents.

The studies are reported by Drs. David B. Ericson, Wallace S. Broecker, J. Lawrence Kulp and Goesta Wollin. The research was financed by grants from the National Science Foundation.

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## PSYCHOLOGY

### Mathematical Theory Can Predict Prisoners' Bets

► DECISION THEORY can be used to predict what men will bet on the throw of dice when they have a choice in gambling at various odds.

This was reported to the American Psychological Association meeting in Chicago by Dr. Paul M. Hurst of St. Lawrence University, Canton, N. Y., and Dr. Sidney Siegel of the Pennsylvania State University.

They based their conclusion on what happened when bets were offered to prisoners at the Northeastern States Federal Penitentiary. The bets were real and were paid off in cigarettes, a very valuable commodity in a prison and one which is negotiable.

An accurate prediction is possible, however, only when the scientist knows the subjective value placed by the individual prisoner on a cigarette. The same objective quantity of cigarettes has a different subjective value for different prisoners, the scientists found.

The decision theory applied in this experiment is related to Prof. John von Neumann's theory of games. The decision theory can be used, Dr. Siegel explains, to understand important social conflict situations, economic competition, war, political conflict and intergroup strife.

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