

## EDUCATION

**'Team Approach' Urged In Medical Education**

► MEDICAL STUDENTS should be trained now to use the "team approach" in caring for the nation's health, a committee of leading physicians and educators recommends.

Although the physician has historically been noted for his "self-sufficient independence," the rise of specialization and the decline of the "family" doctor have made teamwork essential.

"There is no clear alternative to the organization of the modern practice of medicine as a team effort and the doctor must be trained specifically to function as leader of the team," the committee reported to the executive council of the Association of American Medical Colleges.

Teamwork requires a variety of specialists and allied health personnel to work with the attending physician in hospitals, clinics and group practices, they said.

The report pointed out the need for "closer ties" between research and teaching, which can be prompted by better medical school-university relations.

A study of computer uses in the medical field was also recommended by the committee, headed by Dr. Lowell T. Coggeshall, vice president for special assignments and Frederick H. Rawson, professor of medicine at the University of Chicago.

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## ARCHAEOLOGY

**Federal Law to Guard Ancient Relics Urged**

► AN AMERICAN ARCHAEOLOGIST on a Fulbright Grant in Copenhagen at the Danish National Museum thinks there ought to be a Federal law to protect ancient valuables still buried many places in the United States.

Dr. Moreau Maxwell said Bronze Age (3,500 to 2,500 B.C.) burial mounds, rich archaeological treasure chests easily visible in most parts of tiny flat Denmark, are protected under a rigid national law.

Most apparently never have been opened or even pilfered down through the ages, the Michigan State University professor of anthropology told SCIENCE SERVICE.

Dr. Maxwell said America has parallel treasures: Indian burial mounds as old or older than their Danish counterparts with human remains and ceremonial grave goods.

"But most of the states with these Indian relics do not have antiquity laws," he said, adding: "As an archaeologist I would prefer to see a Federal law."

In many situations, the scientist said, it is better to let sleeping relics lie and not rush into excavation. "We are learning so much now about archaeological techniques that it often pays to wait," he said.

He said the buried past is a nonrenewable resource, and archaeology is a destructive process.

"The significance of finds lies in their

context. Do they all belong together? Do they represent different periods? Once out of the ground this information may never be established," Dr. Maxwell said.

He noted that last summer in Aarhus, Denmark, construction of a 5,446-foot private airport runway was halted and the airstrip resituated so as not to disturb an ancient Viking burial mound.

In 1959 Dr. Maxwell, an authority on the Canadian Eskimo, began excavation of Fort Michilimackinac, an early American outpost on the Straits of Mackinac.

"Fortunately," he said, "a surveyor who was developing the land commercially around 1868 set aside the part of Sandy Beach which he thought—correctly—overlay the buried fort. He deeded this to Mackinaw City so that the site lay undisturbed for all that time.

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## PHYSIOLOGY

**Light and Dark May Help Man Adjust to Jet Flight**

► BY HAVING DINNER in Paris, taking a jet and arriving at Kennedy Airport in time for dinner again, today's passengers can be out of phase by six hours, and require two to three days to get their systems back to local time.

Perhaps short periods of light and darkness may help these jet travelers adjust their time-clock in a shorter time, suggests Dr. Jurgen Aschoff, professor of physiology and director at the Max-Planck-Institut für Verhaltensphysiologie, Germany. By manipulating outside factors of light and darkness, human beings may change their inner rhythm to fit the new environment.

Man and other animals on this planet have an inherent self-sustained oscillation in their bodies that is basically attuned to a 24-hour rhythm, Dr. Aschoff reported in *Science*, 148:1427, 1965. This circadian rhythm, as the 24- or 25-hour cycle rhythm is called, originates primarily in the organism itself, and continues even when such obvious time factors as night and day illumination are absent.

Sometimes man is temporarily required to shift his circadian rhythm, for instance as he takes a night shift in industry or a jet flight across several longitudes. Night workers are able to become adjusted to a shifted work-rest cycle, says Dr. Aschoff, yet they are in conflict with influences of a normal environment. Accidents and errors are most likely to happen at three o'clock in the morning. It is still an open question whether these night shifts should last long enough to make use of man's adaptation or whether frequent changes between shifts are preferable.

By analyzing finches in artificial light-dark environments and human subjects in soundproof underground rooms, scientists are finding that every organ and function of the living body sustains a 24-hour rhythm.

During this time, body functions such as physical or mental exertion, rest, body temperatures and waste elimination have periods of maximum activity and periods of minimum activity.

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## TECHNOLOGY

**New System Improves Military Communication**

► STRATEGIC military information collected by reconnaissance aircraft can now be sent back to the command post as soon as it is recorded.

In the past the problems of communication between the battlefield commander and the battlefield itself have been very difficult ones.

Now, by adapting a unique digital data transmission system to an existing infrared video data link, pictures of the infrared and radar readouts are transmitted to and displayed by a ground console. At the same time precise aircraft position and flight condition information is transmitted and displayed on the same console.

The equipment has already been installed on the U.S. Army's Mohawk aircraft. The technique was reported by Arnold Kashar of General Precision's Aerospace Group, Little Falls, N.J.

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## OCEANOGRAPHY

**Crisscross Grid Surveys Urged for Ocean Study**

► TWO U.S. SCIENTISTS are urging wider application of a more modern oceanic survey method based on detailed crisscrossing of a specified area.

With this method, systematic north-south tracks are run at a spacing of 10 nautical miles with cross lines added as checks. Modern navigation methods enable the surveyors to pinpoint locations. Precision depth recorders trace the bottom. Sea-gravity meters record the gravity field, and a towed magnetometer provides a continuous record of the earth's total magnetic field.

Writing in *Nature*, 206:1018, 1965, Dr. H. B. Stewart and G. Peter of the U.S. Coast and Geodetic Survey sharply criticized the tendency to stick to the old method of steaming ahead in a straight line and recording only ocean features lying directly below the ship. Dedication to this "single track line" approach, according to the researchers, is the major reason for the recent decline in the rate of new marine discoveries.

The oceanographers cited the new findings of a systematic area-type survey conducted off the West Coast of the United States as proof of what could be accomplished by the newer method. That expedition, conducted with the survey ship *Pioneer*, "gained world-wide attention with the discovery of the Mendocine, Pioneer, Murray and Clarion fracture zones."

Despite such evidence, the researchers maintain, "other systematic surveys on an area basis have been discouragingly slow in developing."

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# CE FIELDS

## PUBLIC HEALTH

### Deadlock Looms Ahead On Tobacco Control

► THE RESULTS of the Senate-House conference on bills to require health warning labels on cigarette packages will give a clear picture of the prospects for effective controls on tobacco labeling and advertising.

At issue is whether the Federal Trade Commission is to be barred from exercising authority over cigarette advertising for three years, as the Senate measure proposes, or for an indefinite period as the House voted.

The cigarette industry has been known to be willing to give in easily, if not publicly, to a bill requiring a health hazard label on packages. It is also known to be adamantly opposed to any Federal legislation to regulate advertising.

In the Senate, tobacco state legislators and friends successfully beat down an effort to give specific regulatory authority to the FTC. In addition the Senate-passed bill would ban the FTC for three years from using its present powers to control cigarette advertising.

Meanwhile, the House, where it had been anticipated that the tobacco interests would be stronger than in the other body, barred the FTC indefinitely from any regulation.

Now the two measures go to conference where leaders from both Senate and House are reported to be firmly against any change.

If the conferees should be unable to come to some sort of compromise that would be accepted by majorities of the House and Senate, the deadlock would mean no legislation could be passed. In that case, the whole issue would be right back where it was before the Congress convened last January.

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## CHEMISTRY

### Fuel Cell May Provide Practical Applications

► THE FUEL CELL, which may someday provide light for the home and power for the family car, is now another step closer to efficient practical use.

Using an experimental cell that can be watched while it works, researchers at Purdue University in Lafayette, Ind., have discovered that the amount of current from a conventional cell can be tripled by a simple change in design.

Fuel cells are valuable because they can convert chemical energy directly into electricity and, in theory, can produce, for a given amount of fuel, more than twice as much electricity as is now being obtained in a modern power station. Although in principle it sounds great, practical use has given a different story. The proportion of chemical energy actually converted to electrical has been limited, the current-to-weight ratio

has left much to be desired and power generated has usually been small.

The Purdue model was built to permit close investigation of the cell's triple interface—the point where hydrogen, electrolyte and electrode all come together in the cell to create the reaction.

The research team, headed by Dr. Lyle P. Albright, has uncovered many previously unknown facts about what happens at and around this interface, facts critical in the generation of current.

From the studies it has been possible to establish that a change in the position of the electrode has a great effect on reaction rate and current generation.

If they can be perfected, fuel cells could substitute for the automobile's internal combustion engine and thus, according to experts, eliminate a major cause of air pollution. They are also being studied as future power sources for homes and factories. Already they are being used to power radar stations, harbor buoys and other remote installations. They are also providing energy for military field use and auxiliary current aboard space vehicles.

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## GENERAL SCIENCE

### Teen-Age Space Experts Report Science Projects

► TEEN-AGE SCIENTISTS are currently undertaking such projects as photographing the galaxies, measuring micrometeorites and developing aerospace gliders.

Twenty-four of the young scientists from around the country reported their research findings at the National Youth Science Congress in Washington, D.C., sponsored by the National Aeronautics and Space Administration and the National Science Teachers Association.

One such teen-age scientist, Frederick Way of Bethlehem Senior High School, Delmar, N.Y., designed and built an astronomical camera that uses a movable mirror to divert the incoming image first to the eyepiece, and then, at the turn of a handle, to the camera. This technique enables easier direct focusing than previous methods.

A Maine high school student has developed a way of measuring the density of micrometeorites or "space dust" by watching not the dust, but asteroids.

Cary Snider, Biddeford High School, Biddeford, Maine, designed and built a clock-driven eight-inch reflecting telescope for the experiment.

In a third project, teen-age scientist Gordon Mandell, Great Neck North Senior High, Great Neck, N.Y., is building and testing models of a type of aerospace vehicle known as the boost glider, which takes off as a rocket-powered missile, then glides back to earth. This type of glider may some day return astronauts to earth from an orbiting space station.

Other projects reported at the congress included: work with nuclear forces using lasers, an experimental magnetohydrodynamic power generator, study of the solar atmosphere, and a study of mice that were "frozen," but not dead.

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## MEDICINE

### Lower Insulin Doses Urged for Children

► TOTAL DIABETES and some behavior problems are often induced in diabetic children who take accepted standard dosages of insulin, a Danish woman physician believes.

"The physiologic changes a long-term overdose develops in an organism," Dr. Agnete Braestrup told a medical meeting in Sandefjord, Norway, "may result in at first transitory, later manifest, and ultimately irreversible effects, especially in the vessels."

Dr. Braestrup reported gratifying five-year results in 22 youngsters given an average of 20 units insulin a day instead of the calculated standard average dose of 32 units. Five others got the standard amount.

Treatment began at a special home in Copenhagen for poorly managed and disturbed diabetic children. The home is run by a Danish affiliate of the International Union for Child Welfare.

The children were weighed and put on a diet governed by age and activity. Insulin dosage was adjusted to give normal weight, sugar output and freedom from clinical signs of insulin reaction. Many got extra medical attention and vaccination against common diseases.

After they lived in the home, where Dr. Braestrup is consulting physician, and attended public school for a few months, their health improved markedly in most cases. Personality difficulties arising from poor diabetic management were resolved with little or no further adult intervention, the doctor said.

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## TECHNOLOGY

### Electric Field Identifies Spaceship Without Radar

► IT MAY SOON be possible for one space vehicle to detect another in space without using radar and without producing any telltale electronic beams that would reveal the location of a transmitter.

A U.S. Navy scientist explained that the motion of a spacecraft or jet plane causes measurable changes in its electrostatic field. These changes can be sensed without the need for any sort of outgoing beam or transmitting device.

Besides being undetectable, this "passive" technique uses much simpler equipment than does radar, which could mean important weight savings and increased reliability in space.

The scientist, Maxime G. Kaufman of the U.S. Naval Research Laboratory in Washington, D.C., tested his idea by placing an experimental detector on the ground and measuring the field changes caused by jet aircraft flying 100 feet overhead. The tests showed an error of about eight feet, but Mr. Kaufman told a Space Electronics Symposium in El Monte, Calif., that accuracy would be improved in space where there was no interference from the ionosphere and troposphere.

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