

PHYSICS

Test Now for Time's High-Speed Contraction

► **WHETHER TIME** slows down for objects traveling at very high speeds, as suggested by the late Prof. Albert Einstein, can be tested now. Conclusive experiments do not have to wait until the usual clocks can be whizzed through interplanetary space at extreme speeds.

The exploding atoms of short-lived radioactive chemicals whose disintegration rates are known can serve as suitable clocks, R. Herman of the Standard Telecommunication Laboratories, Ltd., Enfield, Middlesex, England, proposes.

The particles could be speeded up as fast as required in a giant atom smasher, he reports in *Nature* (Sept. 29).

Some of the radioactive particles would disintegrate while being whirled around in the giant accelerator. By comparing the number of particles emerging after a given time with the number injected into the synchrotron, any increase in the life of the particles could be measured by a stationary observer.

If an increase in the lifetime is recorded, Dr. Herman notes, the method might be used to "freeze" short-lived particles so their reactions could be studied in detail with more time than available when they disintegrate at the usual high rate.

Dr. Herman has a further suggestion to forestall any objection that the circular path of an atom smasher, which implies continuous acceleration, is not the same as the flight path in space travel.

His alternative method would be to accelerate the particles in an electric field, allow them to coast for a relatively long distance in a field-free region, then reflect them by a second electric field or a magnetic field to return them by the reverse route to the starting place.

The number of particles returning would be compared to the number injected into the linear accelerator.

Science News Letter, October 13, 1956

HEMATOLOGY

Find New Blood Group Links to Disease

► **DISCOVERY** of new links between blood groups and disease are announced *British Medical Journal* (Sept. 29).

Mothers of blood group O may predispose some of their children to duodenal ulcer, it is suggested.

Pernicious anemia patients of both sexes are more likely to belong to blood group A than other groups, other studies at a large number of medical centers in England and Scotland show. These findings are considered statistically significant, although the reason for the relationship between group A and pernicious anemia is not known.

The maternal role in duodenal ulcers was considered in attempts to learn why blood

group O has been reported more often in patients with duodenal ulcers. A group O person is not more likely to have duodenal ulcer than his A, B, or AB sisters and brothers, it was discovered.

That lends support to the idea that a group O mother might pass along to some of her children a tendency to ulcers. Or perhaps group O mothers feed and otherwise raise their children differently than mothers of A, B and AB groups, which could affect their tendency to develop ulcers. No information is available on this.

Inherited, however, is the ability to secrete in saliva and other body fluids blood group antigens. Not all persons do this. Duodenal ulcer patients are less likely to secrete these antigens. The mucus-like character of the antigens may give some protection against ulceration in those secreting them.

This possible explanation of the group O-duodenal ulcer relation is given by Dr. C. A. Clarke and associates of Liverpool and Dr. P. M. Sheppard of Oxford, England.

Science News Letter, October 13, 1956

METEOROLOGY

Weather Computed for Satellite Spotting Sites

► **THE PLACES** from which the earth-circling satellite will be tracked are being selected for their viewing weather by a new electronic "brain" now operating in Asheville, N. C.

This is only one of the many problems the high-speed machine at the nation's weather record center there is being asked to solve.

Weathermen around the world, including those in Russia, are turning more and more to electronic processes to help make sense out of the millions of observations taken every year. The new computer, an International Business Machines' 705, is the biggest yet to be put to work on the weather.

It will be used by the Air Force's Air Weather Service in climatological studies for the nation's military defense. The Air Force meteorologists will draw on the vast stores of data maintained in Asheville at the National Weather Records Center, a joint operation of the Weather Bureau, Navy and Air Force.

When a particular military weather problem for some area comes up, a quick run on the electronic machine will yield a detailed analysis of it.

The new machine was set into operation by Brig. Gen. Thomas S. Moorman Jr., commander of the Air Weather Service. By providing a single continuous system for processing weather data, it will do in one step computations that formerly took 42 separate steps.

It will perform 504,000 additions, 75,000 multiplications, or 33,000 divisions per minute. More important than these figures, however, it can make 1,764,000 logical decisions each minute.

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PHYSICS

Sentence-for-Sentence Translator Being Studied

► **SENTENCE-FOR-SENTENCE** translating by machine is under study at the Massachusetts Institute of Technology, the American Institute of Electrical Engineers meeting in Chicago was told by Victor H. Yngve of M.I.T.'s research laboratory of electronics.

He said "the translations produced by a routine that translates on a sentence-for-sentence basis will be vastly better than the output of a word-for-word translation machine."

He cautioned that such a translator of languages "will require a great deal of effort to work out the linguistic details," but stated that "most output sentences" would be "grammatically correct."

The M.I.T. scientist summed up the state of mechanical translators today as follows:

1. Word-for-word translators can be made now on high-speed, general purpose digital computers.
2. Word-for-word translations could be made more economically by special-purpose machines built with existing technology.
3. Word-for-word translations promise to be considerably cheaper than man-made translations.
4. Word-for-word translations are very crude, but may be useful when more accurate translations are not worth the additional cost.
5. If something better than a word-for-word translation is desired, the best hope is to take into consideration the sentence structure in designing a translation routine.
6. Providing translation routines on a sentence-for-sentence or structural basis requires a considerable amount of detailed linguistic work.

Science News Letter, October 13, 1956

DENTISTRY

Dentists Urge Mouth Protectors in Football

► **THE NATION'S DENTISTS** assembling in Atlantic City for the annual session of the American Dental Association urged that all high school football players be equipped with mouth protectors.

"About 54% of all high school football injuries are facial and dental," Dr. Lon W. Morrey of Chicago, editor of the association's journal, noted.

"Experience has shown that mouth protectors lessen drastically this damage," he reported. With mouth protectors, damage to teeth and jaws and even the head is reduced substantially.

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CE FIELDS

DENTISTRY

Urges Early Diagnosis To Save Teeth of Adults

➤ GROWN-UPS over age 35 lose more teeth because of gum diseases than from any other cause including tooth decay, Maj. Clifton O. Dummett of Elmendorf Air Force Base, Anchorage, Alaska, reported at the American Dental Association meeting in Atlantic City.

Early diagnosis is important to save teeth threatened by these gum diseases, popularly known as pyorrhea and gingivitis. Dentists call the conditions periodontal diseases.

The toothbrush used effectively is "an essential home weapon" against these diseases, Maj. Dummett said.

In one study half of all men by the age of 45 were either afflicted by periodontal disease or had lost all their teeth as a result of it.

The condition affects men at an earlier age than women. It starts gradually and can often progress to the point of destructive bone loss without the patient being aware of having the disease. The gums first become inflamed and, if untreated, begin to recede.

The condition progresses until the inflammation extends deep into the tissues. With the breakdown of the hammock-like structure of bones and fibers supporting each tooth, perfectly sound teeth may be lost.

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METEOROLOGY

Hurricane Paths Follow Tongues of Warm Water

➤ HURRICANES follow the ocean's tongues of warm water and fizzle out when they move over colder water, a New York University research group has reported.

Project director Edwin L. Fisher said careful study of sea surface temperatures surrounding 11 hurricanes showed "distinct, although not conclusive" evidence of these findings, and confirmed that the tropical storms are spawned over warm ocean areas.

Reporting results of the project's first phase to the U. S. Weather Bureau, which sponsors the research, Mr. Fisher said both Hurricane Edna in 1954 and Hurricane Connie in 1955 provided dramatic evidence that storms in their early stages will swerve away from cold ocean areas.

For their studies, warm water is considered to have a temperature of at least 83 degrees Fahrenheit, while water at 80 degrees or below is considered cold.

Hurricane breeding grounds, the Caribbean and Gulf of Mexico, have many "pools" of cold water, some covering as

large an area as the tropical storms do. The New York University scientists suggest these cold "pools" may account for the meandering habits of young hurricanes.

As hurricanes roar forward, many leave cold water turned up from deeper ocean layers in their wake. Analysis of Hurricanes Connie and Diane (August, 1955) showed that the cold trail left by Connie greatly weakened Diane.

Once a hurricane stands still over an area where cold water underlies a warm surface, it will probably die out even though high winds may be churning within it.

Mr. Fisher noted that the surface temperature findings apply primarily to the area below 35 degrees latitude, about the level of Cape Hatteras. North of that, hurricane paths are more apt to be affected by the strong westerly winds in which they are embedded rather than by oceanic conditions.

The NYU scientists are now examining the transfer of energy from the sea to the atmosphere. Since hurricanes in energy of motion at any given moment equal about 1,000 atom bombs, they are trying to make a direct investigation of the energy distribution within the air masses around the storms.

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BIOLOGY

Says More Homosexuals Due to Kinsey Report

➤ A RECENT INCREASE in homosexuality was blamed on the Kinsey Report in a statement by Dr. Edmund Bergler of the New York Psychoanalytic Institute.

Kinsey's statistics, pointing to a 37% incidence of homosexuality, were apparently created by a mass pilgrimage of homosexuals who found their way to him as soon as his project became known, Dr. Bergler said at the Academy of Psychosomatic Medicine meeting in New York.

He suggested the name "statistically-induced" homosexual for this new type of deviation.

The role of the general physician in the handling of homosexuality, he said, lies in pointing out that it is a curable neurosis, requiring psychoanalytically oriented psychotherapy.

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ASTRONOMY

Comet Crommelin Rediscovered

➤ COMET CROMMELIN 1928 III has been rediscovered by Miss Ludmilla Pajduškova of Skalnaté Pleso Observatory in eastern Czechoslovakia.

It is of tenth magnitude, too faint to be seen without at least a six-inch telescope. News of the comet's recovery on Sept. 29 was cabled to Harvard College Observatory here, clearing house for astronomical information in the Western Hemisphere.

Science News Letter, October 13, 1956

CHEMISTRY

Pure Silicon Lightens Rocket and Jet Devices

➤ THE TECHNIQUE for making an almost pure silicon, with only one part of contaminants in 6,000,000,000 parts of the element, was reported to the American Chemical Society meeting in Atlantic City by Dr. Bernard Rubin of the Air Force Cambridge Research Center, Bedford, Mass.

The near-pure silicon permits producing transistors to withstand heats up to almost 600 degrees Fahrenheit. Present germanium transistors operate at temperatures up to about 200 degrees.

Capt. Guy H. Moates and Joseph R. Weiner, chemists at the research center, worked with Dr. Rubin in producing the purified silicon.

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PHYSIOLOGY

Find Unsuspected Kidney Function

➤ AN UNSUSPECTED FUNCTION of one part of the kidney with possible bearing on some kidney disorders has been discovered by Drs. R. Richterich-Van Baerle, Leon Goldstein and Earl H. Dearborn at Boston University School of Medicine.

The discovery is about cells in the collecting ducts of the tubular portion of the kidney that does the secreting job. Heretofore, these collecting duct cells had been supposed to do the purely mechanical job of conveying urine from one part of the secreting tubules to the cavity in the kidney from which it drains to the bladder.

The Boston scientists find, however, the collecting ducts may also have the function of producing ammonia for excretion. Details are reported in *Nature* (Sept. 29).

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PSYCHOLOGY

Doctor's Hidden Feeling Can Halt Patient's Dieting

➤ AN EXCELLENT EXCUSE for an overweight patient to stop his "obnoxious" weight-reducing diet may come when the doctor's "hidden" feelings percolate through to the patient who has failed to lose weight as desired.

This subtle change in the doctor part of the doctor-patient relationship was pointed out by Dr. Wilfred Dorfman of Brooklyn at the Academy of Psychosomatic Medicine meeting in New York.

A judicious mixture of firmness and tolerance on the doctor's part is the most important element in treatment of overweight patients, Dr. Dorfman said.

Before putting a patient on a weight-reducing diet, the patient should be carefully studied, especially with regard to his emotional make-up, Dr. Hilde Bruch of Columbia University declared at the same meeting.

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