

MEDICINE

Hormone Gives Hope For Anemic Children

► **SUCCESSFUL USE** of the male hormone testosterone in combination with corticosteroids gives hope for children with aplastic anemia, a usually fatal disease.

A defect of the bone marrow, where red blood cells are formed, is responsible for aplastic anemia. Reports of treatment of 17 children with acquired aplastic anemia show regeneration of bone marrow in 13 patients.

Drs. Nasrollah T. Shahidi and Louis K. Diamond of Harvard Medical School and the Children's Hospital Medical Center, Boston, report the daily oral dosage of testosterone was one or two milligrams per kilogram of body weight. This was combined with a daily dosage of corticosteroids ranging from eight to 20 milligrams, they report in the *New England Journal of Medicine*, 264:953, 1961.

Similar treatment given to seven patients with inherited aplastic anemia resulted in improvement of six, but these patients were dependent on continued treatment.

In successfully treated patients with the acquired form of the disease, the physicians said remission continued for three to 22 months after withdrawal of medication.

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MEDICINE

Family Doctors Needed On Medical Faculties

► **TO OVERCOME** the shortage in family doctors, more "specialists" in general practice should be asked to join the faculties of medical schools.

Dr. Thomas E. Rardin of Ohio State University College of Medicine, Columbus, says in the lead article of the *Journal of the American Medical Association*, 176:479, 1961, that he will be "challenged" for suggesting that family practice is a specialty.

However, Dr. Rardin says there is good argument supporting the thesis that a family doctor can be "expert" and deserving of the designation "specialist" if he has been trained for and develops skill in "relating his wide general perspective of comprehensive medicine to a single person or a family group over a continuing period of time."

Dr. Rardin is vice chairman of the American Medical Association's section on general practice.

Physicians also read in the official magazine:

There is an increased number of deaths in operating and delivery rooms because of risks in administration of anesthetics. Inexperienced personnel and inadequate equipment add to the danger of death for both mother and child.—Dr. James Henry Ferguson, University of Miami School of Medicine, Miami, Fla. (p. 483).

Use of Sabin oral live poliovirus vaccine in Czechoslovakia "gives real hope for the complete eradication of poliomyelitis" in

that country. For the first time in 30 years not a single case of paralytic polio was confirmed following 1960 vaccinations. Before the 1961 summer season, it is planned to vaccinate children born after last year's immunization program and to revaccinate children vaccinated in 1960.—Drs. Vilem Skovranek, Ministry of Health, and Karel Zacek, Institute for Sera and Vaccines, Prague, Czechoslovakia (p. 524).

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GEOLOGY

"Soft" Rock Layer Deep Within Earth Predicted

► **A SOFT** rock layer is probably lying underneath the dense continents and oceans deep within the earth.

The layer was found when sound waves traveling through the earth slowed down temporarily when they passed through the upper part of the earth's mantle, a thick shell surrounding the core. The existence of the low-velocity layer shatters the previously held idea that the velocity of sound waves increases with depth after they reach the earth's mantle.

At these depths may be the well or reservoir of molten rock that reaches the surface of the earth and spews out of volcanoes, Dr. Frank Press, director of the California Institute of Technology Seismological Laboratory, Pasadena, suggests in *Science*, 133:1455, 1961. The low velocity through this region could indicate that the rocks are near the melting point, Dr. Press states.

Very high temperatures at depths approaching 100 miles outstripped the influence of tremendous pressures from overlying rock to form the "softer" layer, the scientist believes.

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TECHNOLOGY

Round Trip to the Moon For \$600 Possible

► **FUTURE VACATIONERS** could be taking a round trip to the moon for the bargain price of \$600.

This low price, which does not include tips, could become a reality if a single stage nuclear rocket was used for the trip, M. W. Hunter of Douglas Aircraft Company, Inc., reports. The \$600 figure does include the cost of pilot, stewardesses, food and other direct operating factors.

The success of the venture hinges on making the space craft reusable, as conventional aircraft now are. Multi-stage rockets would skyrocket the costs to an impractical figure, Mr. Hunter states.

About 200 tons of payload a year would be needed to keep a 20-man expedition continuously supplied on the moon, Mr. Hunter reports in the *SAE Journal*, publication of the Society of Automotive Engineers, 69:85, 1961.

The \$600 price tag is actually much less than the present average cost for a vacation trip to Europe.

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IN SCIENCE

SURGERY

Emergency Operations Becoming More Rare

► **HEART STOPPAGE**, massive hemorrhage and obstructed breathing are the only operations left on the "absolute emergency" list, Dr. Marc Iselin, chief surgeon, Hospital of Nantes, Paris, France, said at the meeting of the North American Federation of the International College of Surgeons in New York.

Preparation before the operation actually yields better results than the emergency type, the French surgeon said. The use of antibiotics, blood restoration and transfusions, with the administration of various chemicals plus drugs to reduce stress reaction have made much emergency surgery unnecessary. Local wounds also should be prepared—even patients with severely wounded limbs are best treated in advance of operation.

Such treatment is of great use when there are large numbers of injured patients requiring care, Dr. Iselin pointed out.

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ASTRONOMY

Red Star Gas Moves At Trillion Tons a Second

► **RED GIANT STARS**, the largest stars known, continuously send as much as a trillion tons of gases into space each second, an astronomer has discovered.

Dr. Armin J. Deutsch of Mt. Wilson and Palomar Observatories, Pasadena, Calif., first found these stellar gases spewing from the "cool" red giant Alpha Herculis, which is about 186,000,000 miles in diameter, compared to the sun's 864,000 miles.

Spectroscopic observations showed that stellar winds, containing the gas from the red giant, are blowing about a hundred billion miles away from the star, past a small companion star that travels around it. The "cooler" or the larger a red giant star is, the more gas escapes per second.

Gas also streams away from the sun but at a lesser rate than in the red giants. The sun is, like all yellow stars, smaller but hotter-burning than a red giant star.

Dr. Deutsch said the winds that blow from the red giants probably supply the main portion of interstellar gas, which is constantly being used up as new stars form. Astronomers have estimated that half of the material in a new star came from other stars.

The red giants are often called "dying stars," since they gradually shrivel up as they release their matter into interstellar winds. Red stars are believed to end up as white dwarf stars, the last stage of stellar evolution.

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CE FIELDS

MEDICINE

Electrocardiograph Reveals Heart Condition

► **STRESS TESTS** to reveal heart conditions have been modernized through a new radio-electrocardiograph system originally used for astronauts, the American College of Cardiology learned at its meeting in New York.

The instrument, called the RKG 100, consists of a pocket-sized transmitter that broadcasts a patient's heart beats to a receiver as far as 500 feet away. The receiver relays the information to an oscilloscope, electrocardiogram recording machine or tape recorder for the physician's interpretation.

Dr. Samuel Bellet, chief of the division of cardiology, Philadelphia General Hospital, reported 58% abnormal responses among 147 patients with high blood pressure or hardening of the arteries. The abnormality was noted only or chiefly during exercise.

Stress tests such as these offer a clue to the reason patients have heart attacks shortly after a standard electrocardiogram has shown normal functioning.

Telemedics, Inc., a subsidiary of the Vector Manufacturing Co., Inc., Southampton, Pa., developed the RKG 100.

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GEOLOGY

Ocean Bottom Layer Formed in Miocene Era

► **THE MYSTERIOUS** second layer that lies beneath the soft ocean bottom probably formed about 30,000,000 years ago during the Miocene era.

The layer formed when molten lava spewing up from the earth's interior spread a thick carpet of basaltic rock on the ocean floor, Dr. Harry S. Ladd, member of the Project Mohole, reported. Mohole scientists recently reached the layer for the first time while test drilling near Guadalupe Island off the western coast of Mexico.

Project Mohole is an attempt to drill through the earth's outer crust to the underlying mantle.

The softer layers overlaying the basalt in the test area have definitely been identified as of Miocene age, but scientists cannot pinpoint the age of the basalt until more drilling is done, the U. S. Geological Survey scientist said.

One of the biggest handicaps facing Mohole scientists is to find a drill that can quickly penetrate through the dense basaltic layer. A new turbodrill, designed by French engineers, was tried out during the test drilling over the ocean waters and was very successful, Willard Bascom, the project's technical director, said. The drill rotates 750 times a minute, compared to

the customary slow drilling rate of 40 rpm.

The drill was also tested on land in California when the drilling ship returned from its sea drilling and the results were excellent, Mr. Bascom said.

Plans are now being drawn up for the design of a new ship and more preliminary drilling before the final assault of penetrating through the earth's crust to the underlying mantle is attempted. Mohole scientists hope to make the final attempt in two or three years.

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ASTRONOMY

Twinkling Stars Caused By Entire Atmosphere

► **TWINKLING OF STARS** in the night sky is probably due to air swirling throughout the entire atmosphere and not in just a few layers, as many scientists believe.

Circulating air masses cause changes in temperature that bend or distort the star's light rays as they penetrate the earth's atmosphere, Dr. S. H. Reiger of the Rand Corporation, Santa Monica, Calif., told the joint meeting of the Institute of Radio Engineers and the U.S. National Committee of the International Scientific Radio Union in Washington, D. C.

Dr. Reiger believes the entire atmosphere must be in a turbulent state to account for the high temperature fluctuations measured by air-borne instruments. Many scientists have thought stars twinkle because of relatively thin but highly active layers of air about three to eight miles above the earth's surface. However, temperature changes within these "seeing layers" much be much greater than those actually measured if this were true, Dr. Reiger stated.

The observed twinkling agreed quite well with the calculated results, the scientist reported.

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ASTRONAUTICS

Balloon Reduces Speed of Space Capsule Re-entry

► **A HUGE BALLOON** that inflates in a fraction of a second could be used to slow down manned space capsules re-entering the earth's atmosphere.

Nose cones or manned space capsules hurtling toward earth at three times the speed of sound, or about 2,000 miles per hour, would quickly slow down due to the balloon's drag, F. R. Nebiker of Goodyear Aircraft Corporation, Akron, Ohio, reported in the SAE Journal, 69:97, 1961, publication of the Society of Automotive Engineers. The balloon, which is packed in the space vehicle, is automatically inflated and sent swirling into the atmosphere when the vehicle approaches the earth.

The balloon can be used with a Mercury capsule such as that which brought the first U.S. astronaut, Alan B. Shepard, safely back to earth. Reverse rockets and parachutes were the braking forces in that shot.

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PHYSIOLOGY

Protein Type Hormone Causes Weight Loss

► **TWO HEALTHY** male medical students lost weight on a free choice menu of meat, vegetables, potatoes, bread, fruit, ice cream, sandwiches, eggs and cereal. But they ate less because they were taking doses of a protein type hormone called glucagon.

Drs. Sydnor Barksdale Penick and Lawrence E. Hinkle Jr., with the assistance of E. Grace Paulsen, all of the New York Hospital-Cornell Medical Center, New York, report in the New England Journal of Medicine, 264:893, 1961, that it is possible that "glucagon and insulin, which oppose each other in the regulation of the blood glucose, also oppose one another in the regulation of food intake."

The only side effect noted in these two students was some glycosuria (sugar in the urine).

Glucagon has been studied mainly for its effect on carbohydrate metabolism.

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ENTOMOLOGY

Queen Bee's Saliva Keeps Hive in Order

► **THE QUEEN HONEYBEE** rules the hive and keeps the worker bees attentive with, of all things, saliva.

Some strange chemical in the queen's mouth juices makes her attractive to the workers. Because of it, they constantly surround her, groom her body and feed her, and life in the hive is orderly.

This chemical, as yet unidentified, comes from the queen's mandibular glands, the large salivary glands beneath the lower jaw, Dr. Norman E. Gary of Cornell University, Ithaca, N. Y., reports.

When these glands are removed, the queen's power over her subjects is destroyed almost completely. About 85% of her attractiveness is lost, Dr. Gary said. Her attendants wander away and she may die of neglect.

Apparently the queen's attractiveness to the workers is not related to her egg-laying ability, for workers swarm to mated and virgin queens, or even dead ones, with equal loyalty, so long as their mandibular glands are intact and the attractant chemical is detectable. Very young virgin queens, however, do not secrete as much of the chemical as do older ones, and they attract fewer attendants.

The newly found chemical, Dr. Gary reported in Science, 133:1479, 1961, is one, or perhaps more than one, that the workers can smell. It is more than a lure for grooming and feeding the queen. It is the key to the entire hive activity, for it brings the attendants into bodily contact with the queen, from whom they gather other chemicals, known as pheromones. These substances, passed from one bee to another by mouth, dictate the behavior and physiological responses of every bee in the community.

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