

MARINE BIOLOGY

**Number Razor Clams
In Research Project**

► RAZOR CLAMS, about 700 of them, have been tagged with a number on their shells and replaced in the sands of the Clatsop beaches somewhere between Seaside and Astoria in a "growth study" by Oregon fish commission scientists.

A carborundum-tipped rotary drill was used in numbering the shells.

"We hope to determine the differences in growth by beach levels," said biologist Robert J. Ayers of Oregon fish commission's Astoria research laboratory, who is in charge of this investigation.

"Do clams off-shore that take food from the water, in an 'inter-tidal habitat,' according to biologists' vernacular, grow at a different rate than clams living high on the beach? We would like to know.

"For observations on other species of clams reveal that some clams grow faster off-shore than those on the beach and in some the reverse is true."

One group of clams will be recovered in six months and the remaining mollusks will be dug in a year.

The study is one of a series, designed to increase knowledge of the species, that has been conducted on razor clams on the Clatsop beaches over several years by fishery biologists of the Astoria laboratory.

Science News Letter, August 25, 1956

ANIMAL HUSBANDRY

**Tables Show Amount
Of Water Cattle Need**

► THE BEST WAYS of rationing water among livestock during drought are indicated by newly compiled data at the U. S. Department of Agriculture.

A livestock producer, using the new tables, can estimate the daily water consumption of any large herd of cattle and plan an adequate water system for his farm or ranch.

The information, which has not been generally available, was obtained at the request of livestock producers, county agents and agricultural engineers from many parts of the country.

The material represents research and experiments by two Department of Agriculture scientists, Dr. C. F. Winchester and M. J. Morris, who say feed and water consumption are closely related. If water is limited, feed should be curtailed. In a severe drought, livestock raisers can cut their animals' water consumption in half simply by giving them half their normal feed ration.

The scientists warn, however, that this method should never be used with lactating cows if it can be avoided, because milk production may be impaired by the procedure. They investigated the amounts of water consumed by different classes and sizes of beef and dairy cattle at varying

temperatures and at various rates of feed consumption.

A 1,000-pound animal kept on just enough feed to maintain its weight will consume four gallons of water a day when the temperature is 40 degrees Fahrenheit. It will consume six gallons at 70 degrees and nine gallons at 90 degrees.

A 1,000-pound steer or heifer gaining a pound a day, the normal gain on good range land, needs seven gallons of water a day at 40 degrees, ten gallons at 70 degrees and 17 gallons at 90 degrees.

The scientists say their tables, called the Winchester-Morris tables, should not be used to judge the water needs of individual animals or small herds because each animal's water requirements vary widely.

The tables are available from the Information Division, Agricultural Research Service, U. S. Department of Agriculture, Washington 25, D. C.

Science News Letter, August 25, 1956

GENETICS

**Suggest Premarital Test
To Check Mental Defect**

► ENGAGED COUPLES may in the future have a blood test to forestall the chances of having offspring afflicted with one kind of mental defect.

This suggestion comes from research by Dr. David S. Hsia, Miss Kathleen W. Driscoll, Walter Troll and Dr. W. Eugene Knox at Harvard Medical School, Children's Medical Center and New England Deaconess Hospital, Boston.

The mental disorder or defect is called phenylketonuria. It occurs on the average of once in every 40,000 births. Afflicted children fail in both mental and physical development. Some may be idiots, others imbeciles.

The disease is due to a defect in the way the body handles the amino acid, phenylalanine. This acid is normally metabolized at a high rate by a liver enzyme. A high amino acid level in the blood points to a lack of the gene that carries the potential for production of the vital liver enzyme.

Testing the blood of engaged couples for the level of phenylalanine will show whether either of the two lacks this gene. If both lack it, there is "a distinct possibility that one in four of their offspring might be mentally defective," Dr. Hsia declared in a report to the First International Congress on Human Genetics in Copenhagen, Denmark.

One in every 100 persons, he estimated, lacks in varying degree a normal amount of the liver enzyme in the blood. Unless both parents have the genetic lack, however, the disease does not attack their offspring. The odds of a marriage between two persons with similar lacks are about one in 10,000.

For children already afflicted with the condition, a diet excluding most of the phenylalanine shows considerable promise.

Science News Letter, August 25, 1956

IN SCIEN

GENETICS

**Sex Life of One-Celled
Animal Made Clearer**

► A MYSTERY in the sex life of a one-celled animal has been cleared by Dr. T. M. Sonneborn of Indiana University. He discovered that paramecium is of two distinct types sexually, the inbreeders and the outbreeders.

The inbreeders, Dr. Sonneborn said at the First Annual Lectures in the Natural Sciences at the University of Colorado, Boulder, mate with close relatives. Outbreeders mate with strangers.

This explains the wide differences found among varieties of the same species of the tiny animal widely used in heredity studies, he said. "Arrays of ingenious devices," he pointed out, assure self perpetuation of the one-celled creature.

The inbreeders, for example, mature young, while the outbreeders have a long period of immaturity, giving them time to wander from their kin before they mate.

Science News Letter, August 25, 1956

CHEMISTRY

**Chemistry Helps Place
Missing Link Animal**

► CHEMISTS have found new knowledge on the evolution of mystery animals that should be missing links between backbone and non-backbone animals.

The studies were made by Drs. J. F. Morrison, D. E. Griffiths and A. H. Ennor of the John Curtin School of Medical Research, Australian National University, Canberra.

The mystery animals live in the water, although they are not fishes. Scientists know them as protochordates. The particular group of protochordates studied by Dr. Morrison and associates are called tunicates because their bodies are encased in a little tunic or jacket looking like a small bag. Sea-squirts, which send forth a couple of jets of water if touched, are tunicates.

The tunicates' place near the vertebrate animals seemed challenged by earlier chemical findings. Chemically, animals are classed as vertebrates if they have creatine in their bodies and as invertebrates if they have arginine.

The earlier findings suggested that the tunicates contained arginine.

Dr. Morrison and associates, however, now report that at least two species of tunicates do have creatine and do not have arginine. So the tunicates probably will continue to be classed as protochordates, they report in *Nature* (Aug. 18).

Science News Letter, August 25, 1956

CE FIELDS

PHARMACOLOGY

Tranquilizer and Atomic Drug Go in Pharmacopeia

➤ AN ATOMIC AGE CHEMICAL, sodium radiophosphate (P-32), and one of the modern tranquilizing drugs, chlorpromazine, are going into the U. S. Pharmacopeia through a supplement to the U.S.P. XV.

The Pharmacopeia is a book providing standards for the most important medicines used in the United States and many Latin American countries. Its standards are enforced by the U. S. Food and Drug Administration and by many state and municipal health agencies.

The Pharmacopeia was established in 1820 and is revised every five years by a national voluntary committee of medical and pharmaceutical experts.

The first supplement to the Fifteenth Revision was published Aug. 20, and all changes and additions given in this supplement are effective as of Sept. 1, 1956.

This first supplement was scheduled for earlier publication, but was held with the hope of including another famous tranquilizing drug, reserpine. Even with the delay in publication, however, the reserpine material could not be got ready because of difficulties with respect to assay.

It is hoped now that these difficulties can be overcome so reserpine will be able to get official U.S.P. standing before the end of 1956.

Science News Letter, August 25, 1956

MEDICINE

Ice Bath and Massage For Heatstroke Victims

➤ HEATSTROKE VICTIMS should be promptly and totally immersed in an ice bath and given vigorous massage to bring down their high body temperature, advise Drs. Martin G. Austin and John W. Berry of St. Louis on the basis of experience with over 1,000 heat victims.

These 1,000 were seen at the St. Louis City Hospital in three of the six hottest summers in 125 years in St. Louis.

Heatstroke victims have characteristically hot, dry skins. Their temperature usually goes above 106 degrees Fahrenheit. They show signs of brain and nervous system abnormality ranging from lethargy to coma, or unconsciousness.

The ones in greatest danger are those showing the most severe nervous system symptoms.

Heat victims can be expected under the following conditions: 1. unusually high temperature, above 95 degrees Fahrenheit, in late spring or early summer; 2. extremely high temperatures, over 100 degrees Fahrenheit,

later in the summer or in early fall; 3. a prolonged, continued heat wave.

Mortality from heat stroke has been reported as high as 38% to 70%. The St. Louis physicians had only a 17% mortality in the cases they saw during the three very hot years of 1952, 1953 and 1954. They attribute the improvement to the rapid methods of cooling used, use of drugs to keep the blood pressure up, determination of salts in the blood stream and correction of any abnormalities, and use of antibiotics prophylactically.

Signs of impending heatstroke are nausea, vomiting, dizziness, headache, muscle cramps, feeling of hotness and breathlessness.

Patients with heart and blood vessel disease are particularly vulnerable to heatstroke.

Such patients and those showing the warning signs of heatstroke should be promptly protected from further exposure to heat during sudden or prolonged hot spells. Air-conditioning units, fans and other devices, the St. Louis doctors state, will help reduce the number of heatstroke casualties.

They report their experiences in the *Journal of the American Medical Association* (Aug. 18).

Science News Letter, August 25, 1956

GENETICS

Males Responsible for Spontaneous Mutations

➤ PAPAS are more responsible than mamas for spontaneous, or non-radiation-caused genetic changes, or mutations, in their offspring and descendants.

This is true for fruit flies. Whether or not it is also true for humans and other species is not yet known.

This hitherto unsuspected sex difference in mutability was discovered by Prof. Bentley Glass and Mrs. Rebecca K. Ritterhoff of Johns Hopkins University, Baltimore.

The discovery raises again the whole question of the relative danger of radiation to the two sexes.

The finding applies so far only to mutations with visible effects, such as change in eye color. Whether it holds true for deadly mutations is not known yet. Prof. Glass and Mrs. Ritterhoff are trying now to find this out.

If this unsuspected sex difference in mutability applies to all genes, it would change the "doubling dose," or the dose of radiation that would double the spontaneous mutation rate. It might mean that a much smaller radiation dose to females might be serious.

The large sex difference in mutability in fruit flies, about one order of magnitude greater in males than in females, makes it "imperative," the Hopkins scientists declare, to investigate the question of whether a similar difference exists in humans and other species.

Details of their findings are reported in *Science* (Aug. 17).

Science News Letter, August 25, 1956

EDUCATION

Suggest Changes in Educational Programs

➤ LARGER DOSES of mathematics and the basic sciences in both high school and college is the best cure for the nation's current deficiency of engineering talent, members of the American Society of Mechanical Engineers reported.

Questioned by the Society at a recent meeting, the engineers said changes in high school and college educational programs, together with steps to be taken by industry, could remedy the shortage.

The engineers suggested that courses in mathematics, physics and chemistry should be added, improved or made compulsory in the high schools. In college, the majority of respondents urged, emphasis should be placed on the fundamentals of mathematics and science and the emphasis on specialized courses reduced.

In suggesting industry's part in alleviating the shortage, 34% of the engineering group who answered the questionnaire said engineers now in industry should be relieved of routine work that could be done by less-highly-trained technicians.

The results of the survey, released by C. E. Davies, secretary of the Society, also showed that those engineers who graduated from high school before 1936 held a significantly better opinion of their own education than did later graduates.

Similarly, pre-1946 graduates tended to rate their colleges higher than did the post-war graduates.

Science News Letter, August 25, 1956

TECHNOLOGY

Old Wood as Strong as New

➤ OLD WOOD is as strong as new wood, research by U. S. Department of Agriculture scientists shows.

Recent tests by Forest Products Laboratory researchers showed the floor joists of the Octagon Building, Washington, D. C., are as strong as when they were installed more than 150 years ago.

Stress tests indicated the southern yellow pine timber was strong enough to stay in service at the historically famous building. The wood passed the examination with as high a score as newly cut timber.

Some of the strength values were lower than average for southern pine, but Forest Service officials say this does not mean a deterioration from age, but rather reflects the variations in timber.

Tests were made on sections from several parts of the joists, all of which came from protected areas.

The Octagon Building dates back to 1798. It is historically famous because it served as President Madison's residence after the White House was burned during the War of 1812. Since 1899 it has been occupied by the American Institute of Architects.

Science News Letter, August 25, 1956