

Do You Know?

Shadtree *trunks* are sometimes split open by excessively low temperature.

Some *gelatin* for food and emulsions is made from pigskins.

Color, according to some scientists, definitely possesses properties that make people feel warm or cold, happy or depressed.

The normal time for an *iceberg* to travel from the West Greenland glaciers to the steamer lanes south of Newfoundland is about two and one-half years.

Babies are born calcium-poor because their bones must be soft to permit passage into the outside world; after birth they need calcium-rich food, such as milk, to give strength to their bones so that they will develop normally.

A radio-controlled *lightship*, now about ready for testing in a Maryland bay, carries no permanent crew; the vessel's light, fog signal and radiobeacon will be controlled by radio from a shore station.

The highest *mountain peak* on each of the five principal continents is Everest in Asia, Aconcagua in South America, McKinley in North America, Kilimanjaro in Africa and Mont Blanc in Europe; they are listed in order of their heights.

CHEMISTRY

Chemicals Cut Swelling Of Wood from Moisture

► WOOD in window sash and bureau drawers can be protected from swelling in humid weather and shrinkage in dry periods by recently developed chemical treatments, the American Chemical Society was told at a meeting in Cambridge, Mass., by Dr. Alfred J. Stamm and Dr. Harold Tarkow of the U. S. Forest Products Laboratory, Madison, Wis.

Wood in its natural state contains a relatively large amount of empty space, chiefly in the form of fiber cavities and pores. Introduction of synthetic resins, or plastics, of the phenol-formaldehyde or urea-formaldehyde types within the cell wall structure provides bulk for the fiber walls and minimizes both swelling and shrinkage, they said.

Treating wood with a compound called acetic anhydride, a distant relative of vinegar, also bulks the fiber and reduces shrinking and swelling by altering the basic molecular structure. A type of wax that is insoluble in water may be used but the process of getting the wax inside the cell walls is complicated. Sugar and certain salts give satisfactory temporary results, but they wash out of the wood rather easily.

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ICHTHYOLOGY

Fish Bite When Hungry

Anger or hunger will make fish bite, but when they are full they will take no more for 24 hours. Their appetites vary from day to day, season to season.

► TO BITE, a fish must either be angry or hungry.

So says Dr. Samuel Eddy of the University of Minnesota zoology department and thus he concisely sums up the question pondering anglers for centuries.

Hunger is the main reason fish bite. Normally they start feeding early, spend the middle of the day digesting their catch and then toward evening may look around for a bedtime snack. When they are full they will take no more for 24 hours. Large fish work the hardest and longest getting their fill.

Fish appetites vary from day to day and season to season. Temperature is one factor. Fish are always hungry after spawning.

Last summer's poor fishing in many of the northern states was not due to overfishing or insufficient stocking but to abundant natural food. Instead of highly specialized diets, most fish will take whatever is available, including plants. Many eat their own young. Frogs actually are a small part of bass diet. Northerns and muskies will take almost any swimming animal they can swallow.

Most game fish locate food by sight, which is poor, otherwise they would not strike bits of wood and even pebbles. Motion is more important than details of lure structure.

Fish such as catfish, suckers and carp have well-developed senses of taste and others such as crappies, sunfish and rock bass seem to use a combination of taste and sight.

Some fish travel in schools and when one is caught there should be more. Northern pike tend to travel alone. Only artificial baits that give plenty of action should be considered.

Fishing is mainly an attempt to fool the fish into thinking a lure is something to eat. When the fish is not hungry all the art and cunning may not avail. Again, the biggest fish in the lake may pass up your luscious lure and take the worm offered by your small son at the other end of the boat.

When we cannot explain the fishes' behavior we call it luck. No doubt luck still plays an important part. If it were not for the element of luck, of the chance that you might catch the biggest fish of your life, much of the attraction would be removed.

Inventors of various devices to simplify the knack of catching fish, including calendars, almanacs, barometers and tables of moon phases and tides, probably will be unhappy about Dr. Eddy's conclusions. He implies that all this magic is refinement of

superstitions, conjured up by anglers of prehistoric times.

"Ever since prehistoric man invented the fish-hook," Dr. Eddy declares, "fishermen have tried all sorts of schemes to make fish bite it. Man soon found that sometimes he caught lots of fish and again he caught very few, and for thousands of years he has been trying to figure out why.

"First he blamed the spirits, then he figured moon phases probably were responsible, and even today you can still obtain almanacs and calendars (made out a year in advance) which tell you the days fish will bite."

As for the barometer, Dr. Eddy points out that a fish swimming a few feet up or down will encounter far greater pressure changes than normal atmosphere fluctuations. The fish has in his body a sort of barometer—an air bladder for buoyancy which is sensitive to pressure.

"So the real reason a fish bites," the fish expert asserts, "is because the fish is either hungry or mad."

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GENERAL SCIENCE

New German Science Group Honors Max Planck

► GERMAN SCIENTISTS have organized a new group, the Max Planck Society for the Advancement of Science, to replace the war-ruined Kaiser Wilhelm Society. Its first meeting was held recently at Goettingen in the British Zone, famous for the university where much of the physical and mathematical research that eventually led to the development of atomic energy took place.

Prof. Max Planck, for whom the society is named, in 1918 received the Nobel Prize in physics for his development of the quantum theory, which is basic to much of later development in theoretical physics, especially in the field of light. He died at an advanced age in 1947.

The Max Planck Society is expected to operate throughout Bizonia, and is open to the adherence of all research institutes and other organizations who choose to become affiliated. It guarantees unfettered freedom of research to all component institutes, subject only to the Control Council's regulations on scientific research. It is expected that about 25 organizations, formerly members of the Kaiser Wilhelm Society, will join.

The well-endowed Kaiser Wilhelm Society was organized in 1911, and at the outset was scrupulously kept free of all

political control. However, during the Hitler regime it became so infiltrated with Nazism that after the war the four-power Allied Control Authority decided to dissolve it. Although this dissolution was never actually carried out, it seemed better to organize a replacement society as a nucleus for free research by German workers in scientific fields than to leave matters in a suspended and uncertain state.

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AERONAUTICS

Safer Rough-Water Hulls Promised for Flying Ships

➤ **BETTER** hulls for flying boats, particularly for landings and take-offs in rough water, are promised. They will have long, narrow bodies with curved noses and lengthened afterbodies, the Institute of the Aeronautical Sciences was told at a meeting in Los Angeles, by A. W. Carter, National Advisory Committee for Aeronautics, Langley Field, Va.

A series of related seaplane hulls having a wide variation in length-beam ratio have been investigated at the Langley laboratories, he said. It was found that an increase in hull length-beam ratio from six to 15 reduced the aerodynamic drag without appreciably affecting the hydrodynamic qualities in smooth water, reduced vertical accelerations and motions during landings in rough water, and reduced the structural weight required for a given load factor.

Practical tests of various hulls are now underway, conducted by the U. S. Navy. An amphibian plane has been so modified that interchangeable hulls may be used on it. The hulls can be removed and replaced easily by use of bolts. The first hull undergoing tests is the elongated type now on the new Navy Martin XP5M-1 patrol plane. The most striking feature of this is its so-called afterbody that extends to the extreme end of the plane. Two hulls designed by the National Advisory Committee for Aeronautics, both what are called planing-tail types, will be tested on the same flying boat.

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INVENTION

Stool Perch for Barbers Has Already Been Invented

➤ **RECENT PROPOSALS** that barbers and dentists should have stools on which to perch while they work seem to have been just a trifle late: the thing has already been invented. U. S. patent 2,445,000 has just been issued to Charles E. Paden of Pittsburgh, on an adjustable stool that rides on casters around the chair, to which it is attached by a pair of metal arms. The user can vary his distance, height and angle of operations at will.

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ENGINEERING

Roofs Supported on Air

This type of construction would be advantageous for medium-sized buildings, eliminating such obstructions as columns, trusses and beams.

➤ **ROOFS** of some future buildings will be supported on air, literally.

For medium to large one-story buildings, support of the roof by inside air pressure without trusses, interior bearing walls or columns seems practical. It is one way to decrease present high building construction costs.

The idea is not just an engineer's dream; it has had a successful tryout.

A grain-storage building was erected in Minneapolis in 1934. It was a structure with half-cylinder ends 50 feet in diameter, the over-all length of the building being 250 feet. The one-piece roof, of welded galvanized steel, attached with an air-tight joint at its edges along the outside wall, was satisfactorily supported by an air pressure of eight ounces supplied by ventilating fans. The building was dismantled at the end of a year because of the explosion hazard existing where grain dust is held in suspension.

Roofs supported by air pressure were given serious consideration during the war and tests were conducted at New York University for the U. S. War Production Board in 1944. Herbert H. Stevens, Jr., of New York, who is an authority on this type of construction, describes the roof as of circular or elliptical shape, made of thin, ductile sheet material. The enclosure formed by the roof, the floor and side-walls would be relatively air-tight. Air forced into the structure by ordinary ventilating fans raises and stretches the roof into a shallow dome shape.

"The air pressure would be reduced from about four ounces per square inch, needed to stretch the roof, to about one ounce per square inch which would be thereafter permanently required to support the roof, insulation, roofing, and such structures as lights, fireproofing and sprinkler system hung from the underside of the roof," he states. "About half of this pressure would be in excess of the total roof load and would serve to induce biaxial tensions throughout the roof membrane to resist depressing and oscillating effects of the wind."

The pressure could be maintained by continuous operation of only a small part of the ventilating system. Standby power would be required in case of interruption in the ordinary power supply. In case of extra load on the roof, as from snow, the inside air pressure would be increased automatically or otherwise. About one and one-third ounces of increased pressure would balance a one-foot load of snow.

The pressure required to support the roof would have negligible physiological effects on occupants of the building. Air locks to

retain the pressure need be little more than double-doored vestibules or revolving doors for people.

The merits of this type of construction lie chiefly in medium to large one-story buildings, according to Mr. Stevens. The method of roof support eliminates a great deal of the foundation structures, columns, trusses and beams found in ordinary buildings. Again, the interior is completely free of structural obstructions. A roof of 0.109 inches thick aluminum alloy could be used for spans of 900 feet, he declares.

A British patent has recently been allowed to Mr. Stevens for a roof supported by inside air pressure. An American patent, 2,079,461, was awarded to J. H. MacMillan, Jr., some years ago for similar construction. A report on the investigations at New York University was issued in 1944.

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