INVENTION

Nails Can Be Used With New Concrete

➤ A CONCRETE into which nails can be driven as into wood, and which resists withdrawal to the same degree that wood does, is made of portland cement, the mineral known as vermiculite, and vitrified clay granules. It is the vermiculite which is flexible enough to yield and receive the nails.

Vermiculite is a mica-like material, found in several places in the United States, now widely used in lightweight concrete and plaster. It has the property of expanding by heat-treatment to a permanent volume some 15 times its volume as mined. It is this expanded mineral that is used in the nailable concrete.

Patent 2,542,992 was granted to Lyle Clapper, University City, Mo., for this invention. One-half the patent rights are assigned to Leon B. Schumacher, Kirkwood, Mo. Particularly claimed is its ability to accept a nail, without bending, driven into it with an ordinary hammer, and without chipping off concrete adjacent to the nails.

Science News Letter, March 10, 1951

PHYSICS

Man-Made Vacuum Is Far from Ideal

➤ EVEN the best man-made vacuum is far from being the scientist's dream of "nothing at all surrounded by a glass bottle."

Prof. E. N. da C. Andrade, director of the Royal Institution, finds that a reasonably good vacuum, such as you might find in the glass lining of a thermos flask, still contains enough air molecules so that if they were apportioned among all the inhabitants of the earth a pint of such vacuum would supply each person with 1,000 molecules.

At his best, man can achieve a vacuum so empty of gas molecules that its pressure is only one ten-million-millionth of normal atmospheric pressure. To picture just how small that pressure is, Prof. Andrade drew the analogy that if the normal 30-inch column of mercury in a barometer were stretched to the height of Mt. Everest, then on that scale the pressure in man's best vacuum would be represented by one twenty-fifth the thickness of a cigarette paper.

Prof. Andrade then deflated this achievement of human vacuum makers by pointing out that the pressure in Nature's vacuum, which fills the space between the stars, is one ten-million-millionth lower still than man's best effort.

The physicist's effort to create emptier and emptier vacuums might seem "a great deal of fuss about nothing," Prof. Andrade said, but in reality vacuums have most important and commercial applications.

Without the relative emptiness of high vacuum for them to travel through, it would be impossible to spin sub-atomic particles around at atom-smashing speeds in such machines as the cyclotron, betatron and synchroton. Another important application of high vacuum is in the freeze drying of blood plasma so that the plasma can be stored safely in powder form to be ready for any emergency.

Science News Letter, March 10, 1951

PHYSIOLOGY

Struggling Helps You Survive in Icy Water

➤ YOUR chance of escaping alive after being dumped into icy water from an airplane or boat is better if you swim or struggle as hard as possible for as long as possible. To try to preserve your strength by clinging to wreckage or floating on a lifebelt is the wrong method.

This advice on how to keep from dying in cold water is offered by Dr. E. M. Glaser of the Medical Research Council. Before and during various swimming activities, as well as while at rest, he tested the body temperature of a man swimming in cool—about 65 degrees Fahrenheit—water.

His results, nevertheless, apply to icy conditions. This is because the amount of body heat produced has been found to be independent of the water temperature when there is no shivering.

A man who is swimming hard produces about as much heat as he loses in water near freezing and he should not die of cold as long as he can swim. Also, muscles being exercised hard may remain warm enough to keep them from becoming stiff, Dr. Glaser reports in NATURE (Dec. 23), British scientific journal.

After rescue, a man who has been swimming would not require warming of his arms or legs at the expense of more important parts of his body.

Science News Letter, March 10, 1951

NUTRITION

Radio Chemicals Tell How Protein Is Used

➤ RADIOACTIVE CHEMICALS are helping scientists learn more about how dairy calves utilize the protein in their feed.

Digestion and absorption of casein, the chief protein of milk, starts very quickly, G. P. Lofgreen of the University of California's animal husbandry division reports from such studies.

Casein digestion continues for 24 hours, in contrast to the short time required for fat absorption. And phosphate exchange goes on at a high rate in the omasun, one of the three stomach compartments of the calf and other ruminants.

Science News Letter, March 10, 1951

IN SCIEN

METALLURGY

Corrosion Is Studied By Electric Method

➤ CORROSION, including rusting, is being measured as it takes place at the Illinois Institute of Technology by a method that picks up the minute electrical currents created by the chemical reaction, enabling scientists to measure and study the process.

Corrosion, of which rusting is an example, is caused by thousands of local cells similar to microscopic flashlight batteries The electrochemical cells are formed by corrosive chemicals and the metal itself, Dr. Howard T. Francis of the Institute's staff explains.

By studying the action of these tiny, unwanted electrical cells, electrochemists can learn more of the fundamental facts regarding corrosion. From this knowledge, more effective controls may be developed.

In the process, a metal cylinder is used as the laboratory sample on which corrosion occurs. This cylinder is dipped in some corrosive solution, such as sea water, rotated several hundred times a minute, and scanned with a stationary probe electrode.

The probe is a plastic arm containing 11 silver wires. In use it is placed very close to, but not touching, the submerged cylinder. It picks up the minute electrical currents caused by corrosion and carries them through an amplifier to observation and measuring devices.

Science News Letter, March 10, 1951

DENTISTRY

More Children With Green Teeth Predicted

➤ MORE and more small children with bluish green baby teeth may be seen in the future, predicts Dr. Gertrude Tank, Philadelphia dentist, in a report to the JOURNAL OF THE AMERICAN DENTAL ASSOCIATION (March).

The bluish green teeth can result from the kind of jaundice babies get because of Rh blood trouble. And since more and more babies are being saved from Rh blood death, more of them will be showing up with the bluish green teeth.

Dr. Tank reports details on two such children, a boy and girl, not related, who were brought to the Community Health Center at the age of four. It will be "interesting," Dr. Tank observes, to see whether the first permanent molors which begin their enamel and dentin contact at birth will come through green in color.

Science News Letter, March 10, 1951

CE FIELDS

RESOURCES

Oysters Transplanted To Chesapeake Bay

➤ MORE oysters for your dinner table are expected from transplantation studies being made at Solomons, Md.

Baby oysters have been taken up from their original home in South Carolina and transplanted to Chesapeake Bay, where it is hoped they will grow successfully this coming season.

A major problem in Maryland oyster culture is the production of sufficient seed oysters to meet the needs of planters. In South Carolina waters, the difficulty is exactly opposite: Oysters set in such great numbers as to cover up and crowd out the large oysters, thus cutting down on the quality of the final product.

So biologists of the Chesapeake Biological Laboratory and of the Bears Bluff Laboratories in South Carolina are testing out a trade—growing some of the extra South Carolina seed in the Chesapeake Bay.

Plantings have been made under various conditions and scientists are now watching the beds to see how the transplanted oysters will thrive.

Science News Letter, March 10, 1951

INVENTION

Midget Fish-Finder Developed for Anglers

➤ A MIDGET version of the sounding equipment used by commercial fishing boats to locate underwater fish will soon be available to pleasure boat anglers. Like its big brother, it sends high frequency sound waves from the boat to the bottom of the ocean. It receives and records the reflected sound waves.

Anything in the water which has a greater density than the water itself will cause a reflection. This includes fish. This small version, developed by the Pacific Division of Bendix Aviation Corporation, has a valuable feature which makes in chart form a detailed picture of reflecting objects beneath the boat.

This baby model weighs only 14 pounds, is about the size of a small radio receiver and can be mounted in any boat. It operates off storage batteries if necessary because it uses no more current than a 40-watt electric light bulb: It has a depth range up to 50 fathoms.

The electric current is used to produce electrical impulses which in turn are converted into high freqeuncy sound waves. The sound wave sending device is usually attached to the bottom of the hull of the vessel but with the new instrument can be placed on the inside bottom of the boat, transmitting its signals through the wood.

The primary use of the instrument from which the midget version was developed is in taking soundings of the depth of the ocean or other deep water. Its use is called echo-sounding. The depth of the water is determined by the time required for sound waves to travel from a point near the surface to the bottom and back to the starting point.

Science News Letter, March 10, 1951

PHYSIOLOGY

Demand for Brightness Puts Strain on Child

➤ THE DEMAND put on children to be very intelligent puts a strain on even bright youngsters, Dr. Bruno Bettelheim, psychiatrist of the Orthogenic School of the University of Chicago, told the meeting of the American Orthopsychiatric Association in Detroit.

At this special treatment school, an attempt has been made to provide conditions of living that will bring mentally and emotionally disturbed children back to health. In so doing, much has been found out about the strains that cause children to break.

It was realized, Dr. Bettelheim told his colleagues at the meeting, that the problem of preventing mental illness is not just one of helping the child to meet the demands put upon him by life. Certain features of life which stand in the way of mental health must also be changed, he indicated.

Other "middle class" values besides the high regard for intelligence are obstacles to mental health, Dr. Bettelheim said.

Science News Letter, March 10, 1951

METEOROLOGY

Nation To Be Wet Until End of March

➤ THE NATION is going to be wet during March. The Weather Bureau's Extended Forecast Section predicts mild weather with frequent showers in the East and cool, wet weather in the Far West.

Only exception is the Southeast, where precipitation will not exceed normal amounts.

The dividing line for the country, according to the bureau, will be the Continental Divide. East of the divide, temperatures will average warmer than normal for March, and west of the Divide, it will be colder than normal.

There will be more than normal amounts of rain over all of the nation except the Southeast.

Science News Letter, March 10, 1951

PSYCHOLOGY

Wolves and Dogs Act Somewhat Like Humans

➤ WOLVES and dogs show certain similarities to human beings in basic behavior patterns, Dr. J. P. Scott, director of the division of behavior studies of the Roscoe B. Jackson Memorial Laboratory, finds.

The behavior pattern similarities show up particularly in connection with a long period when the offspring are dependent on parents.

For successful domestication, Dr. Scott suggests that a high degree of development of patterns of social behavior plus considerable similarity in these patterns to those of human beings is necessary.

Dr. Scott's findings are reported in a publication of the New York Academy of Sciences.

Science News Letter, March 10, 1951

TECHNOLOGY

Straw Used for Boxes, Replacing Wood Veneer

➤ STRAW can serve as a raw material for boards to make boxes, replacing critical wood veneer, the Technical Association of the Pulp and Paper Industry was told.

Drs. E. C. Lathrop and T. R. Naffziger of the Agriculture Department's Northern Regional Research Laboratory at Peoria, Ill., developed the straw box board in cooperation with E. R. Stivers and co-workers of the Stapling Machines Company of Rockaway, N. J.

The new board-making process uses standard equipment, and the thickness of the board can be varied from one-sixth to one-quarter inch, depending on the type of box needed. Demand for wood veneer, now used in making wire-bound shipping containers, is increasing for other uses.

Science News Letter, March 10, 1951

MEDICINE

Hospital Staff Will Be Walking Blood Bank

➤ A "WALKING BLOOD bank" for use in case of atomic attack is being set up at the Presbyterian Hospital, New York, Charles P. Cooper, president, stated in his annual report of work at the Columbia-Presbyterian Medical Center.

The walking blood bank is the blood flowing through veins and arteries of the hospital personnel. All of them are now being blood-typed, so they can be called on in emergency. In addition, the hospital has purchased stocks of plasma and all medical supplies in big enough quantities to carry on until the American Red Cross or Army can take over.

Columbia-Presbyterian Medical Center, Mr. Cooper said, is equipped to handle from 30,000 to 40,000 casualties.

Science News Letter, March 10, 1951