

TECHNOLOGY

First Coat of Paint Is Little Protection to Wood

THE FIRST coat of paint by itself is almost useless in protecting wood against weathering. The assumption that the second and third coats were for appearance and durability alone is shown to be incorrect from tests conducted by F. L. Browne on many types of paints at the Forest Products Laboratory, Madison, Wis.

It is claimed that the major portion of the protection offered by paint comes from second and further coats. Mills that supply lumber primed for protection against shipment and handling are wasting their efforts.

There are two general types of primers on the market, aluminum and granular white pigment paints. As a primer alone aluminum paint is less effective than white paints but it seems to serve as a better base for further coats of ordinary paints to make a complete protective cover.

Mr. Browne states that special primers can be developed that will offer good protection against moisture by themselves and will serve as suitable bases for durable coats of ordinary paints. A perfect primer would be one that would contain enough pigment in the proper form to exert a capillary action in opposition to that of the wood so that absorption of oil out of the top coats of paint would be kept at a minimum.

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ORNITHOLOGY

White Pelicans Need Study and Care

WHITE pelicans, among the most interesting of the water birds of western America, are in need of careful scientific study and additional protection of their few remaining nesting grounds if the species is to be kept alive. So declares Ben H. Thompson, well-known naturalist, in a study just completed for the U. S. National Park Service.

There are still from 20,000 to 25,000 of these great birds in the United States, plus an unknown but probably smaller number in Canada. But their tenure of life is not so secure as their numbers might indicate, Mr. Thompson says. In the old days, before the West became so well settled, they had plenty of nesting grounds. Mr. Thompson's study of

the record indicates something over 70 known locations of colonies scattered over the western parts of Canada and the United States in earlier times, whereas there are now only seven known large nesting colonies. Fortunately, five of these are in government-protected areas.

Several years ago there was a brief period of artificial control of the pelican numbers on Molly Island in Yellowstone Lake, because of the pelican's role as carrier of a parasite of the trout. However, this policy has been given up and the Yellowstone pelicans now enjoy absolute protection by the National Park Service. No one is even allowed to land on Molly Island without written permission from the Park administration.

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ASTRONOMY

Companion to Dog Star May Test Relativity Theory

RELATIVITY is on the witness stand again just because the companion star to Sirius, the brightest star in the sky, has been found to be three times as bright as previously thought.

The trouble that arises from this is explained by Dr. A. N. Vyssotsky, University of Virginia astronomer, in a communication to the *Astrophysical Journal*. The size of a star is known from its brightness so the companion star must be much larger than heretofore assumed. Thus bodies on its surface weigh less than before. Scientists are interested in the force of gravity on heavenly bodies for it is this force that produces the Einstein "red shift," which means that light coming from this star has had its frequency of vibration decreased or its color reddened by a minute amount. The heavier the star, the redder the light it gives off.

Values of this red shift obtained by Dr. Walter S. Adams at the Mount Wilson Observatory are greater than can be accounted for from Dr. Vyssotsky's observations.

This little star has caused trouble in the past, for astronomers had to assume that it was made of something about 2400 times heavier than gold. This trouble is partially overcome by Prof. Vyssotsky's observations which indicate that it is about 400 times as heavy as the densest object on earth.

This article corrects the one used in *SNL*, Aug. 19, page 121.

Science News Letter, August 26, 1933

IN SCIEN

PALEONTOLOGY

Rare Marine Animal Fossils Discovered in Mexico

THE DISCOVERY of fossilized bones of a sirenian, prehistoric marine mammal, was announced in a publication of the Biological Institute, a branch of the Mexican National University, by Dr. Frederick G. K. Mülleried, member of the Institute.

The sirenian is a very rare species of animal, and its fossil ancestors apparently were as well. Their remains have not often been found in America, and this is their first fossil discovery in Mexico. They were found in the southern state of Chiapas, between Tumbalá and Yajalán, and consisted merely of two ribs, lying parallel, and a fraction of an inch apart. This and other evidence indicated that the bones had lain that way without being carried away from the spot where the animal died many years ago.

It is supposed that the creature was about fifteen feet long. Its ancient habitat was shores of seas and rivers near the coasts.

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ASTRONOMY

White Spot is One of Row on Saturn's Middle

THE WHITE spot that now decorates the ringed planet Saturn is in reality the brightest of a row of spots strung over some forty degrees in longitude, or one ninth of the length of its equatorial belt, Prof. Otto Struve, director of the Yerkes Observatory, has informed Harvard College Observatory.

Prof. G. Van Biesbroeck, using the 40-inch Yerkes telescope, observed the passage of the spot over the central meridian, and using earlier data given by U. S. Naval Observatory observers, has found that the period of rotation of Saturn is 10 hours 15 minutes, a value that compares favorably with past determinations.

The discovery of the white spot is described in *SNL*, Aug. 19, p. 115.

Science News Letter, August 26, 1933

CE FIELDS

GEOLOGY

British and Americans Agree on Names of Minerals

BRITISH-AMERICAN accord, faced with difficult problems in the economic field, is by contrast almost perfect in one branch of science: the correct naming of minerals. At the recent International Geological Congress in Washington, a joint committee representing the two national groups thrashed out the divergences in naming many mineral substances that have long caused difficulties both in purely scientific work and in such applied branches as mining, quarrying and oil production. It is announced now that a standard set of names has been adopted to replace the old divergent ones, and that uniform spellings and use of symbols have also been arrived at.

On a very few items the committee did not reach a definite agreement, and these have been referred to a subcommittee for further discussion.

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RADIO

Unbreakable Metal Replaces Glass in Radio Tubes

BBETTER radio reception is available through the development in England of metal tubes in which the glass and one element of the old tubes are replaced by a copper cylinder.

It was no doubt a matter of chronological laziness that made engineers construct the outside of radio tubes from glass, for the technique was already developed for electric light bulbs. The first essential for a tube is that it must contain a vacuum and in some ways glass is the handiest material to satisfy this condition. But glass can not be machined to a definite size so that old tubes were not as similar as the peas in a pod. Also the heat developed in the glass tubes could not be quickly dissipated, for glass is a fine heat insulator and this overheating led to a shorter life for the tube. Perhaps worst of all, the tube is fragile. The new metallic tubes were developed by the General

Electric Company in conjunction with the Marconiphone Company.

By replacing the glass cover with a metal one which at the same time takes the place of the anode it is claimed that all these difficulties have been overcome. A greater accuracy in the spacing of the elements is possible which will mean more uniform quality in reception for the listener.

The copper cylinder that forms the outside of the tube is closed at the top and is sealed directly to the glass at the bottom. The electrodes that project through the glass to the inside of the copper tube are held rigidly in a steel clamp with mica insulation. This glass sits on a rubber cushion which acts as a sound insulator and keeps the tube from being upset by noise vibrations.

Since this copper anode is exposed to the air it cools rapidly so that the tube is kept at a low temperature.

Science News Letter, August 26, 1933

CHEMISTRY

Improved Analysis Helps Oil-Prospecting

TWO YOUNG scientists, W. A. Sobolov and M. G. Gurevich, have gone to the Baku oil-fields to locate new oil-wells by means of a method of gas analysis that was originally designed to probe the transmutation of elements.

The improved method allows the analysis of exceedingly small quantities of gases such as marsh gas (methane) and other hydrocarbon gases which accompany oil and, being so much lighter and gaseous, penetrate through the rocks to the very surface. During actual prospecting, samples of gas are pumped out at a depth of one meter. The presence of a certain amount of hydrocarbon gases indicates the probability of oil below.

Tests made at Grozny and Baku in 1930 gave good results, comparing very favorably with the drill-method of prospecting. The latter even under favorable conditions average only one oil-pocket discovery for ten borings.

The improved method of gas-analysis was originally devised by Messrs. Sobolov and Gurevich in order to detect the minute amount of gases liberated during atomic disintegration. It is hoped that by means of the new high precision method a full identification of the products of disintegration of certain atoms will be accomplished.

Science News Letter, August 26, 1933

ENTOMOLOGY

Insect Sheds Five Legs To Avoid Capture

LOSING legs seems to mean nothing at all to that strange insect of prey, the praying mantis, devil's horse, or devil's walking-stick, to use only a few of his aliases. Prof. C. G. Guthrie of the University of Pittsburgh tells in *Science* of one that sacrificed five of his legs in an effort to escape capture—three of them after his head had been cut off.

Prof. Guthrie found the insect in a tree, with his forelegs raised and folded over his feelers. He tried to pick him up gently by those same forelegs. The insect shed them as soon as they were touched. Since the poor mantis cannot capture food without his front legs, Prof. Guthrie snipped off his head with a sharp knife so that he might not be doomed to slow death by starvation. Then he attempted to pick up the body by another leg. This also was promptly shed, and the self-amputation was performed on a fourth leg and a fifth.

Only when but one leg remained could the insect be picked up by it—and even then the body struggled as though in an endeavor to free itself.

Prof. Guthrie tried picking up immature mantises by the legs, and found that they could not shed them. Likewise the Old-World praying mantis, which has become naturalized in the Eastern states, is unable to amputate its own legs when threatened with capture.

Science News Letter, August 26, 1933

AERONAUTICS

Germans Strive to Fly By Muscle Power

BRAWN alone as the motive power for airplanes is the hope of the Polytechnic Society of Frankfurt in offering a prize of 5,000 marks to the first man to fly 550 yards in a muscle-powered machine.

Competitors are allowed to store up energy in the machine for a half hour just before the flight. Some ideas that have been suggested are twisting of strong rubber bands or the pumping of compressed air to drive the propeller.

It is hoped that workable inventions will provide valuable help to gliders caught in dangerous air currents.

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