

determined by tone color—the basic tone plus the harmonics of that tone—and the “envelope”—the speed with which a note is built up and dies away. Percussion instruments such as the piano give a tone which starts almost at its height and dies away gradually. String tones are built up and die gradually.

One group on the left controls the actual tone color, while the other varies the “envelope.” The player can thus pick the tone color and “envelope” he desires.

Mr. Hammond does not consider the Novachord strictly an imitative instrument. It does, however, bring up distinct new possibilities for varied orchestral effects and for greater diversification of home entertainment.

Science News Letter, February 25, 1939

PHYSICS

Tests Show 200-Year-Old Paper To Be Good as New

PAPER more than 200 years old has been found by National Bureau of Standards tests to be almost as good as when made. A page from a book printed in 1722 was subjected to the standard accelerated aging test, heating for 72 hours at the temperature of boiling water. The rag fibers of the paper were found practically in perfect condition; the loss of folding endurance after test was only three per cent.

Science News Letter, February 25, 1939



INSIDE

Under the case, the resemblance to a spinet ends. Mr. Hammond (right) explains to an interested group the workings of the vacuum tube “strings” in his Novachord.

PSYCHIATRY

Adolescent Crime Has Its Beginnings in Babyhood

A MASKED bandit enters the lonely filling station and points a gun at the proprietor. Quick action results in the capture and unmasking of the culprit. One expects to see revealed a man hardened in crime. But, no, most likely, it is a youngster in his teens, and off he goes on the first leg of that long journey that leads so many to reform school, jail, and prison.

Why are so many criminals young adolescents? Does adolescence itself produce crime? These questions were put to Dr. Ben Karpman, of St. Elizabeth's mental hospital, experienced with criminals and the mentally abnormal.

His reply is characteristic of the physician.

“Diseases are preceded by an incubation period,” he said in the journal *Mental Hygiene*. “You may find that the measles rash on a child appeared on a certain day, but the disease was no doubt contracted perhaps several weeks before. In mental diseases the incubation period is much longer.

“I submit, therefore, that it is not possible to speak of adolescence as a stage in which crime finds its first expression, but rather that we have to go to the earliest stages of the child's development in order to uncover the true period in which the anti-social behavior began.”

Responsibility for a child's development of criminal behavior is placed squarely upon the family by Dr. Karpman. A broken home is particularly culpable—not just a home deprived of one of the parents, but a home which the child feels for some reason does not belong to him. Affection is essential.

“The making of a good citizen can be traced directly to his early years, and

to his reaction to the affection given by the various members of the family

“The responsibility of the family is grave. It cannot be denied that criminals develop through failure on the part of the family to provide binding emotions, necessary to keep the child within the family.”

Science News Letter, February 25, 1939

PHARMACY

Profession of Pharmacy In Need of Recruits

IN THESE days of overcrowded ranks in many professions, it is both interesting and gratifying to learn that one of the oldest, pharmacy, is sending out a call for recruits—not to swell the ranks of clerks in department drug stores, but to join with physicians in healing the sick.

A shortage in the supply of “properly qualified pharmacists available for active service in professional practice” exists in New Jersey, Delaware and Pennsylvania, the Philadelphia College of Pharmacy and Science reports.

Part of this shortage is due to more stringent requirements for entrance to pharmacy colleges, more rigid regulations of pharmacists by state boards and the lengthening of the professional course in pharmacy to four college years. Another factor is the general economic improvement which has caused a return of pharmaceutical retail practice to predepression levels and which has increased the demand for trained pharmacists in other fields.

On the economic side, a career in pharmacy looks bright. It will be at least four years, it is estimated, before enough new pharmacists have been

See Page 127-128 For Book Reviews



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trained and registered to fill the present demand. Encouraging also is the fact that while wage levels in pharmacy dropped during the depression, there was almost no unemployment.

Filling prescriptions or performing other duties in retail pharmacies is by no means the only occupation open to pharmacy graduates. About one-third of the graduates of schools of pharmacy become retail store owners, a survey showed. Nearly another third are employed in such stores. The remaining third are listed as industrial owners, executives, teachers, research workers, physicians and other professional men, technical organization and journal executives, manufacturers' representatives or as having engaged in a host of other related occupations.

Science News Letter, February 25, 1939

ORDNANCE

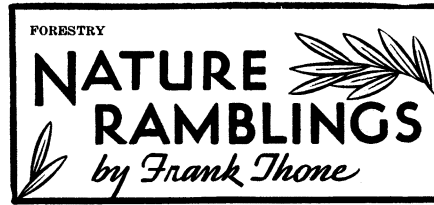
Invent Shells That Burst When They "See" Target

SHELLS that can "see" their target, and burst when they see it, are the newest device of anti-aircraft warfare brought out by the great Bofors ordnance factory in Stockholm.

In the nose of the shell is a cartridge of magnesium, that burns with a brilliant light during flight. The light streams out through radial openings in the shell casing. If some of these light beams strike the target (an airplane) they are reflected back to the shell, where they strike photocells which are in turn electrically connected to the detonating mechanism.

An anti-aircraft shell need not actually strike its target to destroy it. The concussion of the explosion, together with the flying cloud of steel splinters, will ordinarily suffice to destroy the plane. Present anti-aircraft shells are detonated by a clockwork fuse, which has to be set mechanically before firing.

Science News Letter, February 25, 1939



The Dangerous Dead

NEW ENGLAND'S hurricane of last fall is old news now. The rest of the country has pretty completely forgotten it. Only the New Englanders have no chance to forget: the corpses of millions of trees still litter their hills and choke their valleys. Removal before spring releases swarms of boring insects and the danger of ravaging fire is imperative. The dead, even dead trees, are always dangerous.

Logging the blowdown is lagging seriously, warns Stewart H. Holbrook in *American Forests* (February). The public assistance set-ups that were established within a few days after the disaster are in full swing, and are bending every effort to get the timber clear before the deadline of warm, dry weather, but still it is not enough.

There are many obstacles and handicaps. Crews of WPA and CCC men are doing part of the clearing, but there are not enough recruits to bring their numbers up to the necessary level.

The federal government has acquired numerous ponds in which to sink the logs to keep them from spoiling. Federal money is ready to buy the logs if the

farmers will bring them to the ponds. But labor costs are high, farmers and their hired men are inexperienced in handling timber, and snagging logs out of a tangled heap of down trunks is more difficult than taking them from a standing forest.

The clean-up forces have received important help from the north, in the husky shapes of "Bangor tigers"—stout sons of Paul Bunyan from the Maine woods. They are working wonders in the tangled masses of giant jackstraws tossed by the great wind.

Right now is the critical time, says Mr. Holbrook. There must be a trebling of CCC and WPA crews. "Either that or New England is in for the smokiest summer it has ever known. And the smoke won't be that of industry."

Science News Letter, February 25, 1939

MEDICINE

Infantile Paralysis Cases Often Run in Pairs

CASES of infantile paralysis often come in pairs—two cases in the same family, two cases in different families in the same dwelling, two cases in a children's institution, three cases from adjoining houses. This has been the situation in the District of Columbia in the period between 1925 and 1938, according to survey figures announced by the U. S. Public Health Service.

What this probably means is that "either there is a strong element of contagion" in infantile paralysis in its early stages or that there are common sources of infection or both.

The survey was made by Dr. C. C. Dauer of the District of Columbia Health Department (*Public Health Reports*).

Science News Letter, February 25, 1939

Sacred lakes near Egypt's great temples were artificial pools providing water for ritual purposes and also a place to float model boats used in religious processions.

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Dr. George D. Stoddard, director of the Iowa Child Welfare Research Station, Iowa City, will be guest scientist on "Adventures in Science" with Watson Davis, Director, Science Service, over the coast to coast network of the Columbia Broadcasting System, Thursday, March 2, 7:15 p. m. EST, 6:15 p. m. CST, 5:15 p. m. MST, 4:15 p. m. PST. Listen in to your local station. Listen in each Thursday.