

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.

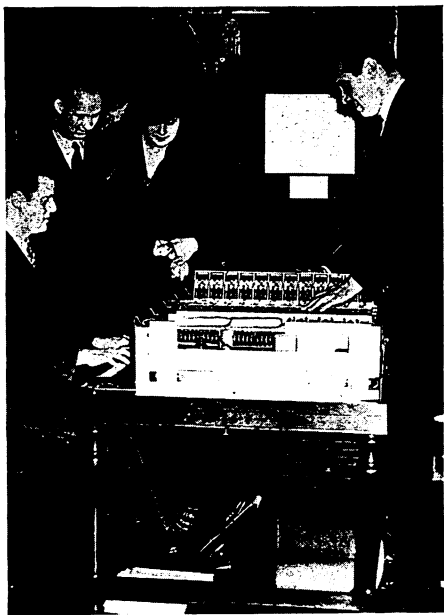
*Science News Letter, February 25, 1939*

## 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.

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### 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.”

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## 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

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