

has not been until recently any instrument that could make a record of an earthquake occurring in the immediate neighborhood. The usual instruments are so delicately built that a strong earthquake directly under them would wreck them. The new instruments are more ruggedly built, record only relatively large earth movements near by, and turn themselves on automatically when a quake begins.

The distribution of these instruments was undertaken by the Federal Government largely as a practical aid to engineers and architects in designing and placing buildings so as to avoid earthquake damage as far as possible.

Science News Letter, March 18, 1933

PHYSICS

Cooperative Phenomena New Term in Physics

"COOPERATIVE phenomena" is a new term introduced into physics by Dr. F. Zwicky, of the California Institute of Technology, to designate what happens when a great number of elementary particles, such as electrons and atoms, interact.

Cooperative phenomena would explain the existence of crystals, Dr. Zwicky believes.

Four groups of problems in modern physics are listed by Dr. Zwicky in the *Physical Review*:

(1) The problem of the nuclei of atoms and the existence of elementary particles such as the proton, the electron and the photon; (2) the problem of the interaction of the electromagnetic and the gravitational fields with matter and the problem of unifying the fields; (3) the problem of the universe as a whole; (4) the problem of cooperative actions of a great number of elementary particles, and, in particular, the problem of the solid state.

"The first three problems will probably necessitate radical changes of our current notions about time, space, causality, fields, etc.," he writes. "The fourth problem is of an entirely different nature inasmuch as it seems that no fundamentally new laws must be invented for its solution. The difficulty rather lies in our present inability to visualize the simultaneous cooperation of a great number of particles and the lack of mathematical methods to obtain exact solutions for sufficiently general cases of interactions between many elementary particles."

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DACTYLOGRAPHY

Fingerprints May Be Used to Protect Checks From Forgery

FINGERPRINTS to protect checks against forgery and theft.

This is seen as a possible outgrowth of the present banking situation if the proposal to expand the United States Postal Savings System to provide for checking accounts becomes a reality.

Fingerprints are required of all depositors and those withdrawing money from postal-savings depositories in the larger post offices today.

When you open your account and make your first deposit, your fingerprint is taken and filed with a description of you and other identifying material in that post office. To withdraw your money, you must go in person to that same post office and again have your fingerprint taken. If the fingerprints are identical, you get your money. But the forger or thief, if he should have the boldness to submit to the fingerprinting process, would betray his false identity.

If fingerprints were required on all checks, this would serve as practically a positive guaranty against forgery. For your fingerprint is your own personal property, and unlike that of any other individual in the world. Even the fin-

gerprints of identical twins differ sufficiently so that they can be distinguished.

Expanding the Postal Savings System to allow depositors to draw negotiable or transferable checks on their accounts, might make it necessary to establish at a clearing house, a fingerprint file of the depositors in that locality with which all checks could be compared before payment. Such comparisons could be handled very quickly; the U. S. Bureau of Identification checks daily over 2,000 fingerprints against their file of over 3,000,000 prints, and in addition the criminal record of each individual is looked up and reports sent to all police systems interested. For the purpose of clearing checks it would only be necessary to look up the name in a card file and verify the print. It would not even be necessary to classify the print.

Fingerprints can be made easily without special equipment or any particular muss or bother. Just press the finger on a clean rubber stamp pad or other inked surface, then roll the finger firmly on the check.

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ZOOLOGY-PUBLIC HEALTH

Rat-Catching Cats Are Bred To Protect France From Plague

SELECTIVE breeding of rat-catching cats is the best way to keep down rats in the opinion of Dr. Adrien Loir, medical officer of the port of Le Havre, France.

Dr. Loir's interest in the subject of rats and cats arises from the fact that rats may spread horrible bubonic plague. France, like other countries, keeps hourly guard on her ports lest plague-stricken rats, with infected fleas ready to pass on this scourge to human beings, gain entrance.

Dr. Loir recently reported the success of his cat breeding to the French Academy of Medicine, the most important forum of medical science in France.

He discoursed before this gathering of learned men on such an apparently frivolous topic as his cat, Poupette, and another rejoicing in the name of Lico.

Lico is a champion and is first holder for 1930 of the cup of the Rat-Catching Cat Club of Normandy. The Rat-Catching Cat Club, which sounds like a tongue-twister, was founded by Dr. Loir, with its chief object the breeding of cats with a constant and intense craving for catching rats. Not all cats chase rats. Some establish a tacit neutrality pact with rats, with whom they may be seen in some streets at night, the one ignoring the other studiously. Such is not the case with Dr. Loir's cats.