

## GENERAL SCIENCE

# How to Tell the Crank

► WHEN A widely known scientist or a newspaper editor receives a letter containing a revolutionary new scientific hypothesis, he can now apply a questionnaire which will decide whether he has received a "crank" letter.

Dr. Laurence J. Lafleur, associate professor of philosophy at Florida State University, writing in *SCIENTIFIC MONTHLY* (Nov.), issued by the American Association for the Advancement of Science, explains that such so-called crank letters come from all sorts of people, some extremely ignorant, but a few with good academic backgrounds.

The questions which may be asked of revolutionary hypotheses in order to determine whether the proposer is a crank or a scientist are listed by Dr. Lafleur:

1. Is the proposer of the hypothesis aware of the theory he proposes to supersede?
2. Is the new hypothesis in accord with currently held theories in the field of the hypothesis, or, if not, is there adequate reason for making the changes, reasons of weight at least equal to the weight of the evidence for the existing theories?
3. Is the new hypothesis in accord with the currently held theories in other fields? If not, is the proposer aware that he is

challenging an established body of knowledge, and does he have sufficient evidence to make such a challenge reasonable?

4. In every case where the new hypothesis is in contradiction with an established theory, does the hypothesis include or imply a suitable substitute?

5. Does the new hypothesis fit in with existing theories in all fields, or with substitutes proposed for them, to form a world view of an adequacy equivalent to that of the currently accepted one?

6. If the new hypothesis is at variance with theories capable of prediction or of mathematical accuracy, is the new theory itself capable of such prediction or mathematical accuracy?

7. Does the proposer show a disposition to accept minority opinions, to quote individual opinions opposed to current views, and to overemphasize the admitted fallibility of science?

These questions were part of a discussion by Dr. Lafleur of the recent controversy in which there were put forth in a magazine article and book the idea of comets colliding, the earth standing still and other similar happenings that scientists rejected.

Science News Letter, December 1, 1951

## METALLURGY

# Determine Life of Metals

► THE PROBABLE life of steel alloys, other metals and plastics in moving parts of machines can now be determined in greatly decreased time by a new process based on precise measurements of samples under controlled heat. The process was developed at Rensselaer Polytechnic Institute, Troy, N. Y., by Dr. Joseph L. Rosenholtz and Prof. Dudley T. Smith.

Apparatus for carrying out the determinations has also been developed by the two scientists. It makes possible the completion in 10 hours or less of a testing job which has been requiring three months or longer

on costly machines under expert supervision, they state.

The discovery is important to many industries because of the constant search for materials to meet new and demanding standards. Thousands of tests are made annually to determine if a new material will permit faster and cheaper production satisfactorily. This new method makes possible the rapid and inexpensive testing of materials for tank engines and jet motors, as well as for propellers, turbine blades, revolving shafts and many other machine parts.

These Rensselaer scientists discovered that identical samples of rods of steel or other material, when heated under exact controls to the same temperature, possess rates of expansion in length which vary with the amount of stress to which each test piece has been previously subjected. They have devised an apparatus which measures such expansion to an extremely sensitive degree.

The process uses eight small test pieces two inches long and two-tenths of an inch in diameter. These bars are subjected to stresses in a definite range. They are then put through an equal number of cycles of vibration so that they will be on an equal level of fatigue.

The samples are then put in the special apparatus and subjected to controlled tem-

peratures from room temperature up to that of boiling water. The apparatus automatically magnifies and records the linear expansion of each specimen 3,500 times. The endurance limit of each specimen is determined by plotting the linear expansion against the stresses previously applied.

Science News Letter, December 1, 1951

## INVENTION

## Phone Bills to Be Figured Automatically by Machine

► YOUR TELEPHONE bill will come to you practically untouched by human hand as the result of complicated automatic and electronic accounting devices which received patents recently.

One of the patents is for a transcribing and summarizing system for gathering together all the items on a subscriber's bill and summarizing them. The patent is pictured in 74 separate drawings of the various electrical circuits and their relation.

Another patent describes equipment which will automatically figure out the amount of tax on your phone bill as well as the charge. Information is fed into the equipment from a keyboard and the equipment does the rest.

The third patent is for an automatic accounting machine which collects the data on bills from various and scattered sources in the records, calculates the charges to be made and translates the records into the form required for printing.

Patents 2,572,132, 2,572,699 and 2,572,804 were awarded scientists and engineers of the Bell Telephone Laboratories New York, and assigned by them to Bell. They are: Henry A. Giroud, New York, Gordon C. Irwin, Fair Haven, N. J., Lindley A. Kille, Morristown, N. J., John B. Retallack, New York, George Riggs, Port Washington, N. Y., Walter B. Strickler, East Orange, N. J.; Warren W. Carpenter, Forest Hills, N. Y.; Edward Vroom, Ossining, N. Y.; Erlon W. Flint, Mountain View, N. J., and Amos E. Joel, Jr., New York.

Science News Letter, December 1, 1951

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