Comments and Communications

Allotment of Funds for Research

In the current discussion as to regional *vs.* national distribution of research funds (Clarence A. Mills. *Science,* February 6, pp. 127–130; October 22, p. 438; and Thomas B. Turner. *Science,* April 16, p. 391) there seems to be some confusion as to the purpose of such funds. If funds are raised to aid in the solution of some scientific problem (as *research* implies), then I see no relevance of this to regional distribution. If it happens that the Northeast is now better equipped to produce desired results, that is where the money should go. If some one problem can best be handled elsewhere, then it should be handled there. Research results (the aim in view) are valid, regardless of where or by whom produced.

If, on the other hand, the purpose is an over-all national development, as Dr. Mills implies, then the funds are given the wrong name. They are not *research* funds unless they are to be used for research.

Probably we need two funds, one for each of these worthy objectives, but these objectives should not be confused as they apparently now have become. As an impartial observer from a region not well represented in the present allotment of these funds, I cannot see that Dr. Mills has proved his implication that most funds have gone to the East because eastern scientists on the allotting boards are biased for their own institutions and regions.

ARTHUR N. BRAGG

University of Oklahoma, Norman

A Simple Method of High-Power Tissue Stimulation

For those physiologists faced with the necessity of stimulating nerves or other highly sensitive tissues, Dr. Schmitt's ingenious R.F. circuit outlined in an earlier issue of *Science* (April 23, p. 432) is doubtless a most satisfactory solution. Unfortunately, those who require relatively high-power stimulation are unable to use his device because of the inherent power limitations of the circuit and the associated restriction to relatively high-impedance leads.

A method for high-power stimulation is described here which permits ordinary stimulators to be operated with enough conductive and capacitive isolation from ground to enable relative freedom of sensitive recorders from shock artifact. This method is very simple and does not require the construction of any special electronic circuits.

A high-powered stimulator, of the type usually operated off house current (110 v a-c), is plugged into a 12-v d-c–115-v a-c inverter instead of the normal wall outlet. This inverter is in turn connected to two automobile-type storage batteries arranged in series. The stimulator, inverter, and storage batteries are placed close together on a nonmetallic surface at least several feet from the nearest sizable metal object. Fig. 1 indicates the connections made between these and the charger required for the batteries. Two charger switches are necesary to insure satisfactory electrical isolation of the apparatus.

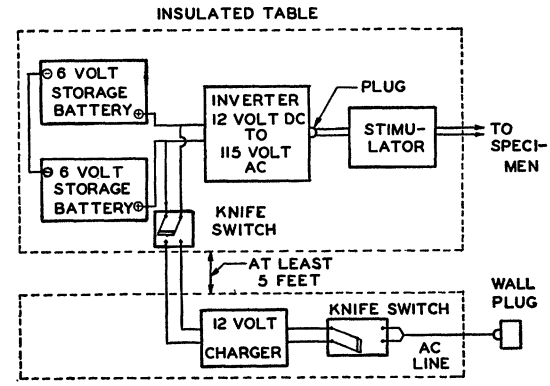

FIG. 1

When the stimulator is to be operated, the charger switches are opened.

It has been found necessary to ground the specimen at one point in order to eliminate a-c interference from the records.

The stimulator, inverter, batteries, and charger are all available commercially.

RICHARD MCFEE

Department of Electrical Engineering, Syracuse University

Cenogonal—A New Crystallographic Term

In a consideration of the various types of zones (A. F. Rogers. *Introduction to the study of minerals,* 3rd ed., 1937, pp. 33–35) encountered in geometrical crystallography, I have felt the need of a word to designate angles that are common to two or more crystal species.[1] The angles to which I refer are angles such as 26°34′ (arc cot 2),[2] 18°26′ (arc cot 3), 14°2′ (arc cot 4), and in general arc cot n, where n is rational; also such angles as $16°6\frac{1}{2}'$ (arc cot $2\sqrt{3}$), $10°53\frac{1}{2}'$ (arc cot $3\sqrt{3}$), and in general arc cot $n\sqrt{3}$, where n is rational.

At first I considered expanding the term "crystallometric," used by Nevil Story-Maskelyne (*Chem. News,* 1875, 31, 101) and elaborated upon in his textbook (*Crystallography, a treatise on the morphology of crystals,* 1895, p. 77). By crystallometric angles, Story-Maskelyne meant the angles that planes of symmetry make with each other, which are 30°, 45°, 60°, and 90°. W. J. Lewis (*A treatise on crystallography,* 1899, p. 21) also used crystallometric in the same sense, but it is a very rare word in crystallographic literature.

[1] "Crystal species" is used to include crystals produced in the laboratory as well as mineral crystals.

[2] The expression arc cot is preferred to the symbol $\cot^{-1}$.