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SCIENCE

More Power to Research

Observation, measurement, and control comprise the cornerstone of experimental science. Without them, even the theoreticians would be operating in a partial vacuum. Instruments and apparatus, the indispensable tools of the research scientist, constitute the means for carrying out these techniques. Without them there could be no laboratory.

The speed with which science has been moving during the past decade is clearly associated with the science of instrumentology and the art of instrumentation. Twenty years ago a physicist or chemist, competent in his science, was expert in experimental methods required not only in his own research but also, broadly, in the whole field of his science. Today he is even more expert, perhaps, in the experimental means and methods of his own restricted area; but the tremendous development of equipment, which has kept pace with—or has, in fact, paced—the advance of science, has left him far in the rear. The research worker in the life sciences, unless he has a flair for experimental procedures, is even less favorably situated.

No argument is needed on the point that continuing progress in all the sciences is profoundly dependent on physical tools, devices, and equipment; on the methods of their use; and on the procedures by which quantitative observations are processed for the testing of theory or hypothesis. Nor can it be doubted that the basic knowledge and skillful use of instruments and apparatus now constitute in themselves an area of specialization.

Some scientists hold the opinion that such activity renders its practitioner a second-class citizen in the science community. In this puristic view such scholarly work is "applied" science, which is at least one step below the level of "pure" science. Against this, the position is tenable that applications of science to the pursuit of truth are as important to the advancement of knowledge as is the purely intellectual effort. Both are indispensable, and, indeed, it has never been otherwise.

A conclusion to be reached in considering the future of science is that specialization has long been the route by which knowledge advances; and that specialization in the field of observation, measurement, and control is an inevitable trail that must be followed toward greater productivity in research. A specialist in the research problem of making science serve science more effectively has an important role as guide if not leader in the expedition.

Under a grant from the National Institutes of Health, the National Research Council is carrying on a study to determine in what manner the theory and application of measurement and control, with all their implications, may best serve research in the biological and medical sciences. The findings should have potential value to all research scientists, especially if the way is pointed for them to conserve their time and effort for their own specializations and to depend for aid and advice in the other specialized problems on experts in observation, measurement, and control.

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