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## A Time to Take Stock

Scientists include a few inspired and dedicated individuals, some self-deluded charlatans who overestimate what they know and can do, and a very large number of intelligent, well-taught, skilled, and talented men and women who are capable of contributing substantially to man's knowledge, capabilities, and welfare.

Scientists have friends in government who want to see them well nourished and well employed. Scientists also face serious hazards and temptations. Scientists are assailed by people who believe that ignorant and intense talk, concern, love, hate, and social and political action bring human betterment rather than stultifying and unprofitable conformity. Scientists are tempted by others who want to give them huge sums of money toward ends that scientists have neither the knowledge to reach nor highly promising avenues of approach.

Mammon worship holds that money can buy anything. Organization worship holds that organization can accomplish anything. Money can buy many scientists, but it cannot always buy results. Organizations can consume scientists, but they do not necessarily produce results.

With money and organization, the atom bomb was made quickly, because scientists already knew how to go about making it. Money and organization put men on the moon, because scientists knew how to get there. Money and organization have not produced fusion power or a cure for cancer because scientists do not yet know how to attain these goals. Scientists do know that the achievement of these goals will require basic understanding that they do not yet possess. They do have fruitful ideas for research. They cannot predict when research will give them the knowledge necessary to attain the goals, but they will know when research has produced adequate basic knowledge to make the goals attainable.

In the end, most scientists will do whatever there is money for doing. Scientists know, or should know, which socially and economically useful goals are within reach and which have a good chance of accomplishment through promising research. Yet, in their personal and collective actions, scientists often seem more concerned with the total number of dollars, with the public image of science, and with the cry for certain specific results than with the sensible selection and vigorous pursuit of fruitful areas of research and application. It will be a sad thing for scientists if they fail to choose wisely and act energetically toward valuable and attainable goals—for, if they do not choose what they shall do, others will choose for them.—J. R. PIERCE, *Bell Telephone Laboratories, Murray Hill, New Jersey*