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The Scientist as a Citizen

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SCIENTIFIC meetings in general, and particularly medical meetings, are rightfully dominated by the philosophy of René Descartes, who provided a guiding spirit in the 17th century when he wrote:

> I am sure that there is no one, even among those who make its [medicine's] study a profession who does not confess that all that men know is almost nothing in comparison with what remains to be known. I judge there was no better provision against a short life or lack of experience than faithfully to communicate to the public the little which I should myself have discovered, and to beg all well inclined persons to proceed further and then to communicate to the public all the things which they might discover in order that the last should commence where the preceding had left off, and thus by joining together the lives and labors of many, we should collectively proceed much further than anyone in particular could succeed in doing.

But the present complicated problems of our world —a world in which conflicting ideologies threaten the very existence of what we call Western Civilization, and a world in which scientific specialists are fortunate to be able to meet in an atmosphere free from government restrictions, military censorship, or the security surveillance of secret police—call for more than a dedication of our intellects and our labors to mankind.

In order that we may continue as a free society, every person must know and follow the basic principles of responsible individualism that have made our present achievements possible. The present technologic era began sometime in the 18th century, when wealth and science were united amid the clamor of men and women who since the Renaissance had regained their will to be free from political and spiritual enslavement.

A new man was created and mass production became the order of the day. The artisan became a specialist in labor and virtually became part of a machine. In the process of this metamorphosis he lost much of his imagination and creativeness. Such a man is restless because he has no impelling objectives in life. He fears the future because his talents are limited; he looks to society for his rights, and in so doing, he is in danger of losing his obligations. He avoids "travel along the road, and is attracted to the Inn," as Cervantes puts it, where he can sit with self-satisfaction because he has no goal—no place to go.

Ortega was proud but somewhat alarmed at his Spanish countryman who, instead of merely pointing the way, readily escorted the inquiring foreign visitor to the point of inquiry, and thereby left a favorable impression of extreme courtesy. Ortega wonders if this act was a sign of national pride, or was it in reality a sign that his countryman had no mission in

life, and therefore welcomed the opportunity to have one, to travel on the road, and not sit in the Inn. He suspects the latter has gripped the minds of many of his fellow men in all countries.

That is the brief story of the artisan who became a specialist in labor and some of his relationships with society. How did the scientist fare as the result of the 18th century marriage with wealth? A new type of scientist was eventually created. He too was engulfed in the surge of technicism because his effectiveness in this union with wealth depended upon the degree of his specialization, and hence his interests became "gradually restricted and confined into narrower fields of occupation." By the late 19th century he found that he could not survive on the broad philosophic concepts as Goethe had—biologist, physicist, chemist, botanist, playwright, poet, producer, and for 60 years the chief political adviser to Karl August, Duke of Weimar.

The new scientist is a specialist in science. Physics and chemistry have become a multitude of subspecialties. The scientist's learning continues; his technical skill becomes high; but his liberal education diminishes. He becomes entrenched so deeply in the intricacies of his specialty that the social problems of daily life seem unimportant; but the people hold him in high regard, and therefore he feels compelled to express opinions on subjects beyond his experience. The force of his words upon society is in direct proportion to the name he has made in his specialized field—a power so great that it is frightening. In some countries he has already paid a heavy price for his high position of specialized learning. Of the many examples, I shall recall only a few.

An Associated Press dispatch from Leipzig, Germany, dated 11 Nov. 1933, said

> In picturesque Leipzig, University German Professors, in an Armistice Day meeting, appealed to the intelligentsia of the world today for a better understanding of Germany. It was their way of urging popular support for the Nazi government in tomorrow's elections.

It is impossible to believe that these professors fully understood the objectives of the National Socialist Party of Germany, or if they did, they were already the political victims of demagogery.

Also, in 1933, a brilliant scientist, a young man 25 years of age, who had received his doctorate at the University of Leipzig, "left Germany on the rise of Hitler." He probably made no public statement at that time, and if he had, no one would have been impressed, but any statement he makes today is considered impressive news throughout the world. His name is Edward U. Teller, "the man who, by many, is considered the chief architect of the hydrogen bomb."

These incidents constituted the backdrop for a modern tragedy in which the leading character was a world-renowned scientist, J. Robert Oppenheimer, an important member of an international team whose contribution to the world was the technologic interpretation of Einstein's equation. No human being can accurately evaluate the impact of this technologic interpretation upon the future of mankind, but the best available opinion is probably that of Einstein himself. When he was asked what weapons would be used in World War III, his answer was that he did not know, but that he did know what would be used in World War IV—sticks and stones.

Oppenheimer was judged by a jury of his peers—all men of note and distinction—a chemist, a man of business, and an educator. The majority opinion judged him a loyal citizen of the United States, but unable to measure up to the requirements of the security system. With no intention to judge, but with only the hope to explain, it is my belief that their judgment was correct but their premise was wrong. He should have been found guilty only of a defection, one which he acquired inadvertently as a result of his scientific provincialism. Oppenheimer paid the supreme penalty of dishonor, an awful price to pay, for his subconscious vow of political celibacy.

Who knows how many brilliant and potentially productive minds will be stunted for fear of similar reprisal because they do not understand the true meaning of this indictment? What must be done to prevent another such catastrophe? Is the advice offered by Teller an adequate solution?

Referring to the Oppenheimer judgment, Teller told William L. Laurence of the *New York Times* that "scientists as a group should stay out of politics except in areas touching on science." Today his statement makes impressive news. Has he, too, become a political hermit? should he not have warned his fellow scientists that such a course is fatal to the free life? Our founding fathers who wrote the Constitution of the United States and the Bill of Rights certainly did not sanction political hermitage.

Scientists seem to have forgotten that as Ortega said, "politics is much more of a reality than science, because it is made up of unique situations in which man suddenly finds himself submerged, whether he will or no."

In a republic the politician reflects the will of the people—the majority; but the majority may accept such things as penicillin and television as commonplace, and yet become indifferent to the cause of their existence. It is the minority, and not the majority, who challenge truth and create new concepts. Freedom in a republic exists only as long as the majority recognizes that the minority must be free to pursue thought, wherever it may lead.

Is it not incumbent upon every one of the 750,000 scientists of this country, and those in every other nation, to be able and willing to speak out clearly on the basic concepts of freedom? By virtue of the natural process of the years of rigorous academic selection, those who finally emerge as true scientists admittedly must have superior minds. If they will not speak out, who will?

Medicine was also an outgrowth of this technologic era—a coalition of the physical and biological sciences. Again, we look with gratitude to Europe—to France for the stethoscope and internal medicine, immunology and radium; to Germany for the x-ray, medical microbiology and pathologic anatomy; to Austria for obstetrics; to England for general surgery and the antibiotics, just to mention a few nations. All of Europe surging forward—free to study, to learn, to think, to imagine, to have ideas, and to be rewarded, as, in the words of Bacon, "The ancients assigned divine honors to the authors of inventions."

We in America developed slowly, making most of our contributions after the beginning of the 20th century.

We take particular pride in having harnessed, through clinical pathology, the many uncoordinated outgrowths of laboratory medicine into a cohesive unit that has become invaluable to the sick. During the last 30 years the number of clinical pathologists in this country has increased tenfold, from 200 to 2000. Members of the International Congress of Clinical Pathology represent a total of 14 clinical pathology societies in 12 countries—mute testimony to the growth of this important specialty.

In the United States clinical pathology occupies a position of such magnitude that, although it has not yet attained independent status in all schools of medicine, no hospital in the United States can be accredited by the Joint Commission on Accreditation and no hospital approved for intern or resident training without an adequate clinical pathologic service.

Medicine and its broadest subspecialty, clinical pathology, are truly the products of the free minds of many lands, who "by joining together the lives and labors of many," have made this meeting possible and the world a much better place in which to live.

We are indeed fortunate that whatever may be revealed in the field of medicine will be free for the use of all mankind, regardless of political affiliations, religious convictions, or national boundaries. Medicine does not hoard its achievements. No true physician has ever patented a medical discovery. No one has ever denied its use by friend or enemy; only armed conflict between nations with differing political beliefs has ever imposed restraints upon the results of medical investigation. Even then, the individuals who waged war, who were enemies only by accident, ministered to the sick and wounded, whether they were friend or foe.

But what assurance do we have that medicine will continue to remain outside the domain of security regulations, secret police, political restraints, and the like?

In countries outside the iron curtain, even where varying degrees of government control hover over medical practice, there are few restraints upon the individual physician who seeks truth wherever he may find it, and gives freely of his labors to mankind. The only assurance we can have that this privilege to serve will continue is an enlightened citizenry who understands the principles of individual liberty and creativeness.

Because of the intimate contact with the ills of men, physicians have gained an enviable position of respect and confidence among men. This trust obligates them to become disciples of the philosophy of individual freedom in order that patients do not become apathetic to the cause of the miracles of modern medicine.

Are physicians capable of accepting this responsibility? Or will they become political eunuchs? To what degree has specialization forced the physician to abandon a continuing pursuit of a liberal education and led him into the false security of political and scientific provincialism?

In order to answer these questions it may be well to review the educational background of the average medical man in the United States. A tabulation of the premedical educational requirements for admission to 78 schools of medicine in this country shows an alarming degree of concentrated training in the sciences. Approximately four times as many semester hours are required in science subjects as are required in the humanities. It is of more than passing significance, and I believe planned foresight, that only one school in the United States requires more hours of study in the humanities than in the sciences. That school is Meharry University, whose student body is composed entirely of Negroes.

Add to the premedical schooling 4 more years of medical education, 1 year of internship, and 3 to 4 years of resident training in a medical specialty, and 2 years in the military, also in medicine, and you have a supersaturated, learned young man, 31 to 33 years of age, with almost pure scientific instruction throughout 14 of the most formative years of his intellectual growth. One saving factor is that he is intimately exposed to people and their problems—more closely than any other man, with the possible exception of the clergyman.

Pathologists have a solemn role in medical education, whether it is for nurses, medical technologists, medical students, interns, residents, or the medical staff. In this role lies the opportunity to broaden the educational base of medicine, in order to preserve the right of every physician to continue his scientific pursuits unhampered lest we become so engrossed in our own special field that we forget to look after the common good.

We must reject the philosophy of self-content, expressed by Hegel in 1831, but which is still heard in our day:

> Let us content ourselves with what we have been allowed to achieve under the pressure of the circumstances . . . and with the doubt . . . whether amid the loud clamour of the day, there is left any room for sympathy, with the passionless stillness of the science of pure thought.

We can and must meet the challenge of the janiceps of modern living—the science of the daily life as well as the science of pure thought.