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THE RESPONSIBILITY OF SCIENTISTS

THE serious magazines are filled these days with discussions of the responsibilities of scientists. Most of the articles are by scientists, which may be taken as a good sign, and the attitudes expressed vary all the way from exhortations to high duty to mankind to somewhat aggrieved resistance to the idea that scientists are in any way answerable for the use men and nations make of their discoveries.

Writing in a defensive mood, Joel H. Hildebrand, president of the American Chemical Society, started out in a paper printed in the *American Scientist* for July, 1955, by quoting Lewis Mumford's explanation of the "historic" separation of scientists from what may be termed "moral" questions. Mumford recalls that the Royal Society of London, chartered by Charles II to pursue "the Promotion of Natural Knowledge," resolved "at its very inception to confine its discussion and experiments to the field of the natural sciences, and to omit all concern with matters that traditionally belong to theology and history." Although this decision was made "in the name of scientific freedom in the seventeenth century," it was, Mumford believes, "a fatal choice," since, "in defining scientific truth, in the terms Galileo and Descartes defined it, as a truth detached from al1 considerations of purpose, value, or practical application, science cut itself off from all human concerns except those of science itself."

It is Mumford's view that this habitual outlook on the part of scientists made them unable, in the twentieth century, to meet the crisis which both they and the statesmen of the world precipitated by the development and use of atomic bombs. This is Mumford's reproach to the men of science:

> To have aroused fully to the extent of political invention and moral rehabilitation needed to provide even a minimal security, the actions of the scientists would have had to speak louder than words. They would have had to close their laboratories, give up their researches, renounce their careers, defy their governments, possibly endure martyrdom, if they were to convey to the public the full urgency of their convictions. Here the new sense of social responsibility failed to overcome the neutralist habits of many lifetimes. Even those who were most deeply disturbed by the possible misapplications of science continued to apply themselves to science. And while "science as usual" prevailed, it was fanciful to hope that "business as usual" and "politics as usual" could be shaken out of their rut.

Whether or not Mumford, in his paper read in 1954 before the American Philosophical Society, which Hildebrand quotes, advocates that scientists attempt to anticipate and to control the uses to which their findings will be put, his critic soon shows the impracticability of recognizing the destructive potentialities at the moment of discovery. Otto Hahn, who with Lise Meitner discovered the principle of uranium fission in 1938, was not engaged in military research, and who, asks Hildebrand, "could have had either the prescience or the right to order them to desist?" So with many other discoveries which were later found to have a military use.

But Hahn, it is well to note, was one of the few atomic physicists—the first, in fact—who would not put his talents at the service of the military. He refused to work for the Germans on weapons research and was, according to French scientists, "a staunch 'passive resister' to Nazi pressure."

Thus, while there can be no moratorium on science, pending the development of mechanisms for controlling the use of new inventions, individuals can and doubtless will exercise some control over the direction of research, and they may even suppress discoveries which they regard as precocious to their times. In the *Atlantic* for

January, 1947, Norbert Wiener told how he refused to share with another scientist a paper he had written concerning "controlled missiles," stating his conviction that the development of such weapons "can do nothing but endanger us by encouraging the tragic insolence of the military mind." He added:

> If therefore I do not desire to participate in the bombing or poisoning of defenseless peoples—and I most certainly do not—I must take a serious responsibility as to those to whom I disclose my scientific ideas.

Wiener explained that while his paper could doubtless be obtained from some other source, he welcomed an opportunity to "raise this serious moral issue," and continued:

> I do not expect to publish any future work of mine which may do damage in the hands of irresponsible militarists.
>
> I am taking the liberty of calling this letter to the attention of other people in scientific work. I believe it is only proper that they should know of it in order to make their own independent decisions, if similar situations should confront them.

The New York *Times* called Wiener "the first great scientist to announce publicly his withdrawal from military research," and noted Wiener's recollection that the bombing of Hiroshima "was done against the expressed recommendation of the scientists who built the atomic bomb, and who still believe that a demonstration on an uninhabited Pacific isle might have made unnecessary the death of 200,000 Japanese."

Einstein, shortly before he died, spoke of the possibility that he, in a world like the present one, might choose to be a plumber or a peddler, rather than a physicist who would share in the dreadful responsibilities of thermo-nuclear warfare, and some American physicists announced soon after the bombing of Japan that if they were not permitted some voice in deciding the use to be made of their discoveries, they might renounce atomic research for an elaborate study of butterflies' wings!

While only a few distinguished individuals have spoken out in this way, there is an unmistakable groundswell of anxiety among scientists. And the atomic bomb, while touching off these tendencies into occasional resistance, is not the only cause of deep reflection on the part of workers in research. Norbert Wiener, again, of cybernetics fame, tells in his autobiography (*I Am a Mathematician*) how he pondered the question of what would happen to human beings under widespread automation:

> While cybernetics and the automatic factory were from the strictly scientific point of view not as revolutionary as the bomb, their social possibilities for good and for evil were enormous. I tried to see where my duties led me, and if by any chance I ought to exercise a right of personal secrecy parallel to the right of government secrecy assumed in high quarters, suppressing my ideas and the work I had done.
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> After toying with the notion for some time, I came to the conclusion that this was impossible, for the ideas which I possessed belonged to the times rather than to myself. If I had been able to suppress every word of what I had done, they were bound to reappear in the work of other people, very possibly in a form in which the philosophic significance and the social dangers would be stressed less. I could not get off the back of this broncho, so there was nothing for me to do but ride it.
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> I thus decided that I would have to turn from a position of the greatest secrecy to a position of the greatest publicity, and bring to the attention of the public all the possibilities and dangers of the new developments.

This attitude of responsibility on the part of a scientist is not really new. In the eighteenth century, Denis Diderot—who, if not a scientist, was certainly a contributor to the scientific spirit of modern times—was tortured by a similar moral problem. Carl Becker devotes a chapter of his *Every Man His Own Historian* to Diderot's dilemma, which consisted in a choice between what Diderot regarded as scientific truth, and sound morality. Following the mood of the science of his times, Diderot had constructed a "philosophy" of man which anticipated the

mechanistic notion of human behavior. Becker describes the consequences:

> . . . the speculative thinking of Diderot, of which the principal purpose was to furnish a firm foundation for natural morality, ended by destroying the foundation of morality as he understood it. This was the dilemma, that if the conclusions of Diderot the speculative philosopher were valid, the aspirations of Diderot the moral man, all the vital purposes and sustaining hopes of his life, were but as the substance of a dream. For reason told him that man was after all but a speck of sentient dust, a chance deposit on the surface of the world, the necessary product of the same purposeless forces that build up crystal or dissolve granite. Aspiration, love and hope, sympathy, the belief in virtue itself,—what were these but the refined products of mechanical processes spiritual perfumes, as it were, arising from the alternate waste and repair of brain tissue? Freedom was surely a chimera if the will could be defined as "the last impulse of desire and aversion." And "if there is no such thing as liberty, there is no action which merits praise or blame: there is neither vice or virtue, nothing which can properly be rewarded or punished. What is it then that distinguishes men? Good action and bad action. The bad man is one whom it is necessary to destroy rather than to punish: good action is good fortune but no virtue." . . .

Becker speculates about Diderot's relations with his daughter, a young girl to whom he was devoted. He imagines Diderot spending his mornings "explaining the soul in terms of matter and motion"; then, in the afternoon, "transformed into the doting father, coming forth to teach his child a 'great deal of morality,' as he walks with her in the park." The picture is engaging:

> This very morning, perhaps, he committed to cold paper that desolating doctrine about the will,—"last impulse of desire and aversion." And what is the moral instruction which this philosophy inspires him to convey to his daughter in the afternoon? Something original, surely, something profound, at the very least something unconventional? Not at all. Excellent bourgeois that he is, he tells her to be a good girl! So strangely remote sometimes, as Diderot found, is philosophy from life.
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> What use to preach "a great deal of morality" to a creature whose will is nothing but "the last impulse of desire and aversion"? This was the question which came to stare Diderot in the face about the year 1765; and about the year 1765 he ceased to publish.

Diderot, for all his scientific interests, was still a literary man, with a sense of full personal responsibility. There is a difference between the modern idea of responsibility in relation to scientific knowledge and this individual attitude. Scientific knowledge is essentially impersonal. It is believed to result from the slow accretion of contributions from countless individuals whose identity may even be lost or forgotten. Science is in this sense institutional, and for the individual practitioner already possesses an imposing sovereignty. It is difficult for him to think of any "individual responsibility" for science as a whole. And, as with other forms of sovereignty, science has acquired a kind of magical prestige in which some scientists take considerable pleasure, while others warn against the institutional egotism it provides.

The general public is naturally affected by the prestige of science. The February *Bulletin of the Atomic Scientists* has an article (a portion of a doctoral thesis in political science) by Harry S. Hall which illustrates the ambivalent attitude of ordinary people in the presence of the "wizards" of science. Mr. Hall presents dozens of quotations from the Congressional Record reflecting this view. After Hiroshima, says this writer, politicians, like everyone else, "looked upon scientists with considerable awe and deference." He continues:

> Scientists appeared to them as superior beings who had gone far ahead of the human race in knowledge and power. Indeed, politicians seemed to regard scientists in much the same way that primitive people regard their magician-priests. That is to say, Congressmen perceived scientists as being in touch with a supernatural world of mysterious and awesome forces whose terrible power they alone could control. Their exclusive knowledge set scientists apart and made them tower far above other men.

The quotations presented in this article show that while on the one hand, Washington legislators are awed by the knowledge of scientific

specialists, they are irked by their inability to comprehend many of the scientists' reasons for what they say, and are troubled, also, by the internationalist bent of most research workers. Dr. Compton, for example, testified that not a single Japanese civilian scientist asked to do a war job by the Japanese government was told what he was working on meant—how it would be used in war. Dr. Oppenheimer testified before a committee concerning American scientists:

> Most scientists, because they are scientists, were certainly not happy with the absolute national sovereignty that prevailed ten years ago. They were not happy with the war.

In a statement prepared for the National Science Foundation hearings, Harlow Shapley declared:

> Our American scientists and technologists at the present time have been derived from the adventurous pioneering stock of practically all the nations of the world. We call ourselves American by citizenship, but our blood is cosmopolitan. The scientists should, as rapidly as possible, call themselves citizens of the world and not the citizens of individual countries.

Generalizing his conclusion, Hall says:

> Politicians were not only frustrated by their inability to challenge scientists but also by their dependence on scientists in the new atomic age. Whether Congressmen liked it or not, their survival depended to a large extent upon trusting the scientists and admitting them to the public policymaking process.

Or, as Senator Hickenlooper put it:

> We have got to the point where we have rubbed the lamp and the genie has come out and we cannot get him back into the lamp.

With these attitudes in mind, it is easy to see the force of Dr. J. Bronowski's observations in the January *Bulletin of the Atomic Scientists,* in an article, "The Real Responsibilities of the Scientist." He speaks of the frightening "distance" between the scientist and the public—and even between scientists in different fields—and finds in these divisions a grave threat:

> People hate scientists. There is no use beating the bush here. The scientist is in danger of becoming the scapegoat for the helplessness which the public feels. And if an immense revulsion of public feeling does lead to the destruction of the scientific tradition, then the world may enter a dark age as it did after the Goths destroyed Rome. . . . But even if this danger does not materialize, something as terrible can happen—and is happening. This is that the scientist is forced, by the hatred of public opinion, to side with established authority and government. He becomes a prisoner of the hatred of the lay public and by that becomes the tool of authority.

Dr. Bronowski draws some fine lines in his discussion of the scientist's responsibility in these circumstances. He admits, for one thing, the guilt of scientists in having "contrived weapons and policies with our public conscience, which each of us individually would never have undertaken with his private conscience." On the other hand, science, he says, has no right to attempt to become keeper of the public conscience:

> We must explain to people that they are asking of scientists quite the wrong collective decision when they say, "you should not have invented this" or "you should not have disclosed that." This is asking us all to betray the public in the same way as Dr. Klaus Fuchs did, by asking scientists to make decisions which are for the nation to make. The only man who ever, on his own responsibility, was willing to shoulder public responsibility in this way, was Dr. Fuchs. But so far from being hailed as the only sane scientist, he was treated as quite the opposite—as, of course, he was, since scientists have no right to betray the will of the nation. Yet Fuchs did just what the public asks of every scientist—he decided what to do with a scientific invention.

Here Dr. Bronowski gives powerful illustration of the scientist's ability to think in terms of principle—a faculty seldom within the capacity of the politician!

He lists various duties or responsibilities of the scientist, who must be an educator, informing the public of the crucial issues involved in the use of science and technology, thus helping to create public opinion for right policies. But most important of all is his emphasis on the moral obligation of the scientist to maintain freedom of

conscience. If the scientist may not be the keeper of the public conscience, he must keep his own conscience inviolable:

> His responsibility is not to be seduced as a person. He has the right to act individually as a conscientious objector. Indeed, I believe he has the duty to act as a conscientious objector. I would like to repeat this point. It is in this country an offense to betray the armed forces or to seduce their members from their allegiance. It is not an offense to refuse to be a soldier. And I believe that this is exactly like the position of the scientist. He has no business to act as if he commands the army, but he has a business to settle with his own conscience: the serious business whether he personally will engage in forms of research of which he does not morally approve.

Dr. Bronowski returns to this point in other connections, remarking that "if governments do not allow scientists freedom of conscience, to work at what they like and to refuse to work at what they do not like, then you get the gravest of disasters—the disaster of state intolerance." He continues:

> For there is a moral contract between society and its individuals which allows individuals to be dissident, and if the state breaks this moral contract, then it leaves the individual no alternative but to become a terrorist.

Finally, there is the scientist's duty to be an intellectual heretic—even as Isaac Newton was, in religion as well as science:

> . . . every scientist can teach men to resist all forms of acquiescence, of indifference, and all imposition of secrecy and denial. . . . There is one thing above all others that the scientist has a duty to teach to the public and to governments: it is the duty of heresy.

The only trouble with all this is that it seems to restrict such high responsibilities to *scientists*, when the fact is that scientists will be quite unable to live up to these ideals unless they do it first, as *men*, along with others who feel the same responsibilities. There is value in speaking of the responsibilities of scientists, since the present is their time of trial, but no one has the right to ask of scientists what he does not ask of himself.

Some years ago, a retiring president of the American Association for the Advancement of Science—Edwin Grant Conklin, in 1937—chose the title, "Science and Ethics," for his farewell address, and at the outset he gave evidence which supports Mr. Mumford's charges (quoted above):

> During the dark days of the world war I once spoke to a distinguished scientist of some major event in the course of the war and he looked up from his work and said sharply, "What war?" Concentration upon our various specialties is essential, but it should not cause us to lose our sense of orientation in the world.

But what seems especially pertinent, here, is a passage which lends force to Dr. Bronowski's account of the duties of the scientist. Speaking of the freedom of thought and criticism which are the lifeblood of science, Dr. Conklin said:

> In spite of a few notable exceptions it must be confessed that scientists did not win the freedom they have generally enjoyed, and they have not been conspicious in defending this freedom when it has been threatened. Perhaps they have lacked that confidence in absolute truth and that emotional exaltation that have led martyrs and heroes to welcome persecution and death in defense of their faith. Today as in former times it is the religious leaders who are most courageous in resisting tyranny. It was not science but religion and ethics that led Socrates to say to his accusers, "I will obey the god, rather than you." It was not science but religious conviction that led Milton to utter his noble defense of intellectual liberty, "Whoever knew truth put to the worst in a free and open encounter. . . ." The spirit of science does not cultivate such heroism in the maintenance of freedom. . . .

So, it is a mistake, perhaps, to argue that the scientist has special responsibilities. He has them, but he has them as a man, and they are not special, but belong to us all.

REVIEW
AMERICAN DILEMMAS

FREEDOM AGENDA is a program carried on by the Carrie Chapman Catt Memorial Fund, "a research and educational organization created by the League of Woman Voters of the United States." The program involves the establishment of discussion groups to consider the major issues of our time in relation to freedom. To serve the needs of the participants, a series of Freedom Agenda Pamphlets has been made available, covering such important topics as the role of Congressional investigating committees, the Constitution and loyalty programs, freedom of speech and press, the Bill of Rights, and the problem of seditious activity. The work of Freedom Agenda was made possible by a grant from the Fund for the Republic.

One Freedom Agenda pamphlet, *Constitutional Liberty and Seditious Activity*, gives a brief history of federal measures directed against sedition, starting with the Sedition Act of 1798, and devotes considerable space to the Smith Act, under which the recent prosecution of Communists has proceeded. Since three convictions under the Smith Act are soon to be reviewed by the Supreme Court, and since numerous citizens are demanding amendment of this measure, there should be value in reprinting the Freedom Agenda pamphlet's account of this law:

> In 1940 Congress enacted the so-called Smith Act, the first national peacetime sedition law since 1798. Technically entitled the Alien Registration Act, it has little to do with registration and its major provisions apply to citizens as well as to aliens. The first section of the statute makes the Espionage Act of 1917 applicable in peace as well as in war time. It is Section 2 that marks the major departure in policy. This section makes it unlawful to advocate or teach the doctrine of violent overthrow of any government in the United States. It also makes it unlawful to print, publish or distribute any written material advocating revolutionary violence with intent to destroy any government in the United States. Further, it makes it a punishable offense to organize any group which teaches, advocates or encourages the overthrow of any government of the United States by force and violence. Section 3 makes punishable conspiracy to accomplish any of these ends.
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> The Smith Act is both more and less restrictive than the Sedition Act of 1798. It is more restrictive because it extends to those who knowingly are members of or affiliated with any group which advocates the forbidden doctrine even though the individual does not himself so advocate. It is less drastic because it forbids only the advocacy of force, and not mere political criticism of government officials.

Since the enactment of the Smith Act, some thirty-one states have passed similar laws. Several states have outlawed the Communist Party and some municipalities have adopted anti-sedition ordinances which, the Freedom Agenda pamphlet says, "are so loosely drawn that they are patently unconstitutional." The first convictions under the Smith Act included the leaders of the Socialist Workers Party, a Trotskyite group with headquarters in Minneapolis. While the Trotskyites are determined enemies of the Communist Party and were among the most searching critics of the Stalinist regime of the U.S.S.R., these men were convicted and the Supreme Court refused to hear their appeal. The next series of prosecutions under the Act occurred in 1949, with the trial of eleven leaders of the Communist Party in the United States. The Supreme Court affirmed their conviction, with Justices Black and Douglas dissenting. After this success, the Government instituted proceedings against lesser Communist leaders, and by the middle of 1954 had indicted more than a hundred persons, with more than seventy convictions.

The Smith Act was followed by the Internal Security Act of 1950, popularly known as the McCarran Act (see MANAS for Feb. 8). The McCarran Act, the Freedom Agenda pamphlet says, found it necessary to:

> 1. Establish procedures for the registration of Communist organizations and to impose certain disabilities upon these organizations.
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> 2. Make it a crime to work for the world Communist cause.
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> 3. Establish procedures for the detention of potential subversives in the event of an emergency.
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> 4. Increase the penalties for espionage and extend the statute of limitations to permit convictions for a longer period of time after the criminal acts are committed.

> 5. Make it more difficult for Communist-tainted aliens to enter or stay in the country or to become American citizens.

The McCarran Act was passed over the veto of President Truman, who declared that requiring Communist-front organizations to register was "the greatest danger to freedom of speech, press, and assembly since the Alien and Sedition Laws of 1798."

The Freedom Agenda pamphlet supplies much additional material for discussion in connection with the problems represented by this legislation, including quotations from the powerful dissents to Supreme Court approval of the Smith Act written by Justice Douglas and Justice Black. (This pamphlet may be obtained from the Freedom Agenda Committee, 164 Lexington Ave., New York 16, N.Y.) Black contended that the Smith Act watered down the First Amendment "so that it amounts to little more than an admonition to Congress. The Amendment as so construed is not likely to protect any but those 'safe' or orthodox views which rarely need its protection." Douglas maintained that the Act has the effect of making *intent* a crime, since the four books of communist doctrine held to contain criminal material are not themselves outlawed. Douglas asked:

> But if the books themselves are not outlawed . . . by what reasoning does their use in a classroom become a crime? The Act as construed requires the element of intent,—that those who teach the creed believe in it. The crime then depends [Douglas concluded] not on what is taught but on who the teacher is. That is to make freedom of speech turn not on *what is said,* but on the intent with which it is said. Once we start down that road we enter territory dangerous to the liberties of every citizen.

The problems are apparent. If legislators should outlaw the books, then hundreds of economics professors and students of history would have to burn their libraries. Works which have been immeasurably influential in shaping modern thought would be banned from study. It was necessary, therefore, to isolate as criminal the act of teaching out of those books with revolutionary and violent intent. In practical terms, the subjective attitude of the individual must thus be determined in order to convict him under the Smith Act.

We hardly need warnings of the dissenting Supreme Court justices to press home the dangers to American liberty in laws of this sort. On the other hand, there are the frightening encroachments of communist infiltration and rule, around the world, to drive anxious citizens and law-makers to such desperate measures.

What is to be done? The purpose of the Freedom Agenda pamphlets is to acquaint citizens with the issues involved in such problems, and to help with the slow process of democratic decision. But more important, perhaps, in the long run, is the larger question of how and why modern society has developed in ways that created so terrible a dilemma. The tendency to jettison traditional American safeguards of the liberty of the individual is a characteristic of our time. We are confronted by an apparent necessity to abandon freedom of thought *in order to preserve it,* the argument being that Communists corrupt the minds of the innocent and "coldly calculate what doctrines to advocate in order to create internal dissension and weaken our national morale." They refuse, in short, to play the game of politics according to the rules. Since they will not obey the rules, we must change the rules in order to control them. This is the position of the defenders of the Smith Act and the McCarran Act. Against this position, Justice Frankfurter has urged:

> Suppressing advocates of overthrow inevitably will also silence critics who do not advocate overthrow but fear that their criticism may be so construed. No matter how clear we may be that the defendants now before us are preparing to overthrow the Government at the propitious moment, it is self-delusion to think that we can punish them for their advocacy without adding to the risks run by loyal citizens who honestly believe in some of the reforms these defendants advance. It is a sobering fact that in sustaining the conviction before us we can hardly escape restriction on the interchange of ideas.

But to people who are anxious, frightened, and insecure, this rejoinder fails of its objective. What is wanted is an educational approach which will enable people to consider such matters without fear, and this involves far more than the best chosen words of rational debate.

COMMENTARY

GODS AND DEVILS

WE suspect that one reason why it is so difficult to pin down subjects like the responsibility of scientists is that the customary approach to these problems is haunted by a confusing theological past. If you are going to have omnipotent gods in your pantheon, you are bound to see them turn into devils of a sort, sooner or later. And then you will probably hate them for letting you down.

Something like this seems to have happened in relation to the scientists. The scientists rode to glory in our civilization by performing the miracles which once were supposed to be the exclusive prerogative of religious personages. The scientific idea was that human beings can themselves accomplish great things; that experiment is better than prayer, that discovery is better than revelation.

This was fine as theory, but so many people had acquired the habit of relying on an outside power for their salvation that the scientists were put upon pedestals and made the object of a secular sort of worship. Some scientists allowed and even encouraged this transaction. They composed litanies to the Scientific Method and gave support to the myth that all the mysteries of life would some day be reduced to simplicity through this wonderful formula.

It is true, of course, that an honest impartiality joined with determined search is the only really reliable way of finding the truth that human beings know about. It is also true that the scientific method may be described in some such way. In practical terms, however, its application has been more restricted. And in some measure the practice of science developed the arrogance and petty egotism of a cult. The restricted area which was marked off as capable of scientific observation gradually came to be regarded as containing all the realities of life.

We know better, now. But meanwhile, when we speak of the responsibility of scientists, we ought first to get out into the open what we mean by *science,* what we expect of it, and only then, what we expect of the people who choose to work in this field. Are scientists a sort of priest? What is the scope of their knowledge and power? We may not be able to answer these questions, but we ought not to let our subconscious feelings about scientists give hidden weight to whatever opinions we hold.

Do we hold the scientists morally responsible or politically responsible? If they are politically responsible, what political power have we given them, or would we give them? A man can't be politically responsible without political power. If we hold them morally responsible, who is preaching to whom from what high moral eminence? The scientists have a right to hold *themselves* morally responsible, as Dr. Bronowski suggests. He makes the practice of science into a high vocation or calling—but see what happens to a man when he is moved by moral responsibility: Dr. Oppenheimer found little help from the general public in his hour of trial.

Are the rest of us ready for this kind of ordeal?

CHILDREN
and Ourselves

EDUCATIONAL LEADERSHIP, a publication issued by the Association for Supervision and Curriculum Development (a branch of NEA), devotes its January issue to the problem of teaching-programs for "The Gifted Child."

Talk about the relationship of a public school to the "gifted" or to "genius," raises a number of problems in philosophy and psychology which are otherwise often ignored. Obviously, those who conceive too simple a definition of democracy, expecting the aim and end of education in the democratic state to be the attainment of nearly identical tastes and capacities, will be little concerned with special attention for unusual personalities. But we are now in an interesting period of educational history: in the first place, the advanced technology required for "national defense" demands a process whereby the most gifted intellects can be sifted out and directed into atomic research, guided missile, rocket and aviation development. At the same time, the anti-intellectualism of the past decade seems to be on the wane, with concurrent growing respect for genuine liberal arts courses in the universities—programs designed to awaken youth to the meaning of original thought, as defined by philosophy.

Writing editorially in the January *Educational Leadership*, Wallace Verburg shows that broader educational ideals can be accompanied by a becoming sense of humility. Dr. Verburg introduces the several articles on planning for "the gifted" with these paragraphs:

> In connection with planning for the gifted it is with some misgivings that I view planning *for* rather than planning *with* the gifted. If it is important for anyone to choose the nature of his activity, it would appear that this is appropriate possibly imperative, in the case of the gifted. How early in the gifted individual's life should relative self-determination be encouraged is still the subject of much controversy. I feel safe in speculating, however, that we have not yet begun to burden the gifted, at any age, with the responsibility for self direction. It is as if we fear potential that is greater than and different from our own. We tend to give lip service to the idea that the gifted are capable of generating new ideas, yet we are relatively mistrusting and fearful of new ideas and differences. It would seem to be especially important, however, for a teacher of the gifted to clarify his function as a servant of the gifted rather than primarily as a program director and manipulator of a genius in the making.
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> Further, we agree almost universally that education at its best is provided in terms of meeting individual needs. This leads to speculation that for the gifted, and especially genius, standard procedures are quite inadequate. Where does one find enough Wagners, or Darwins, or Michelangelos, or Einsteins, to justify a standard, group approach in their education?

In the same issue, John Hersey, of *Hiroshima* fame, tells the story of "Connecticut's Committee for the Gifted." The Connecticut Committee combines lay citizens and professional educators who work in unison so that the general public will come to a better understanding of the needs of "above average" children. We also note that the Ford Foundation—apparently with a finger in every good pie—has financed and sponsored a research project designed to provide the latest and best cross-indexing of information on current experience in teaching the gifted.

Also present in *Educational Leadership*, however, is an article dealing with "Career High Schools," indicating that there are and will be many conflicting definitions of "the gifted." In the "Career High Schools" of New York, Chicago and Philadelphia, the principal design seems to be one of planning for technical service. J. W. Wrightstone describes such schools in one city:

> The career high schools in New York City, for example are of many different types. Some schools are designed for students who have exceptional ability in science, most of whom will enter colleges and have major courses in the sciences or mathematics. Other schools are designed for students of superior aptitude for engineering and technical fields, most of whom will become engineers and technicians. Still others are designed for students who are talented in music

> and art or in the performing arts. A number of the specialized high schools are designed for those students who wish to enter the various industries or trades, such as the needle trades, automotive trades, aviation trades, printing trades, or to enter such business occupations as bookkeeping, merchandising, or office machines.

It is a little frightening to contemplate this automatic channeling of the most capable youthful minds into technical or "performing" arts, where whatever synthesizing or integrative powers they possess will never have the leisure or opportunity for exercise beyond the level of technical accomplishment. The root of "genius," after all, is free imagination and, as Gordon Keith Chalmers remarked in *The Republic* and *the Person*, imagination has largely been excluded from the working centers of education. "Two main bodies of opinion are responsible for its virtual elimination," he writes, "one held by an able group within the universities, and the other entertained by those either at its fringes or altogether outside the walls. One body of opinion holds that the working mind gets along pretty well without much use of the imagination; the other, that imagination is something arty and irresponsible."

Dr. Chalmers has also pointed out—and this seems important—that the imagination can be stimulated and trained. No one can bring a great idea to birth without a fair mastery of language or some other medium of expression, and the need for this act of discipline proves that imagination must have clothing to walk among men. Therefore men like Dr. Chalmers feel that the most important contribution to the education of "the gifted" would be that education which is truly philosophical—drawing forth each original insight and consciously relating it to the current world of opinion. Thus does philosophy serve man, by integration of inspiration with the problems, psychological and social, of humanity at large.

In any case, it must be conceded that recognition of the importance of attention to those whose intellectual powers are deeper or surer than most is a favorable sign, especially at a time when over-simplified conceptions of democracy need to be replaced. Our own ideal, in some respects like Plato's, would favor the broadest intelligence as the proper receptacle of responsibility—not the sort of intelligence, necessarily, of the man who can cajole the greatest number of votes.

FRONTIERS

"Let's Talk About Cars"

WHEN you are too tired for politics and too uninspired for philosophy, there's always the automobile as a subject for conversation. In America, moreover, the topic seems to provide a common basis for discussion among the most varied of personalities; even the bitterest of enemies, when nudged by a social situation in which display of animosity would be embarrassing, tend to forget hate as the Magic Topic claims attention. So, it appears, as some psychologists have suspected, the motor car is the twentieth century's leading symbol for the liberated psyche. Whatever you think about cars, you are apt to feel free to express, and if your opinion rests on shaky technical foundation, you will express it all the same. Unlike politics, sex, and religion, you may say most anything about cars at any time, and most people will listen. So let's talk about them now, for a while, remembering that the last time MANAS allowed a motorcade to enter its columns, readers showed enough interest to indicate that they are Red-blooded Americans after all.

Just how many abstractions does an automobile symbolize? Well, there's individual motility. A car means a way to get away in a hurry, change location, discard a smelly city for a country breeze at a moment's notice—or at least one could do this if not tied to an eight-hour job, and the symbol undoubtedly has psychological appeal. An automobile, of course, is unable to return human affection in any recognizable form, but automobiles *do* look more unalike than horses, giving individual taste in appearance greater chance to express itself. Thus a car often becomes for its owner a sort of secondary art object. Then, too, and especially in these days of the "horsepower race," an automobile symbolizes speed, racing competition—and danger. People like the aura of danger, especially danger presumably controllable by skill. Without a taste of risk from time to time, the human spirit seems to grow weak, unless, of course, one is deeply involved in creative activity.

The automobile has also become a symbol of social and economic equality. When a diesel truck-driver and a bank president live side by side—as in the case of one of our acquaintances (the truck-driver)—they may both drive Cadillacs. Sometimes the conservative wealthy are astounded to observe their gardener arriving in an equipage outvaluing their own transportation by a couple of years and a couple of thousand dollars.

So the saga of the motor car is as much a story of human emotion as of metals and design. There is, however, one area in which the two meet—described in the January number of the British magazine *Encounter*. Under the title "We Dream of Motor-Cars," Andrew Forge attempts an essay on Art and Motors. He begins:

> Visually cars are as important as clothes, more telling, on an ordinary level, than houses. They come near to the centre of our daydreams, for in the event of actual possession we gain not only the sign but the power itself: if we promote ourselves to a Jaguar we can do a hundred in third, whatever anyone says. It is easier to be indifferent to the buildings in the narrow streets of the city than to the shining forms that pass us or block our way, that make us run or, having stopped us, keep us speculating about their occupants. It is easier to be indifferent to the man who sits beside us in the bus biting his thumb than to the driver who, a yard or two away, stuck in the same jam, drums his fingers on the wheel of his own car, or stretches and makes the car flex up and down as he moves.

We also make cars the subject of dreams and fancies. Mr. Forge illustrates this point with a General Motors preview of coming attractions. "General Motors present this year's dream car like a traditional movie queen," he writes, "remote, on show, in an unaccountable light, it is and is meant to be no more and no less imaginable as a real car than Joan Crawford in her prime was imaginable as a real woman." Forge continues:

> The Cadillac La Esparda shown at Earls Court in October was the latest such. Immensely long, low, and wide, its general form carried the usual American implications of smooth luxury and power to a refined degree. The air intake at the front was a single recessed grill, the chrome embellishments were gathered together into two enlarged bomb-shaped protuberances from which sprang the gull-wing blades of the fenders. Paired headlamps were sunk deep into chrome-lined recesses. At the tail, fins were moulded up from the flanks of the car and rocket motor nozzles carried the exhausts. The double bed, it seemed, had turned suddenly into a machine, a disturbing and inscrutable new invention. We were far from cars. To look into the interior,

> ribbed, metallic, the seats covered in black leather with a faint and authentic crackle, the instruments grouped in heavy banks, gave us that sudden tremor, that intimation of extreme conditions that we feel when we look into the cockpit of a one-man submarine or a fighter in the Lambeth War Museum—except that it was all an effect and we knew that the car had not been anywhere, done anything, but was brand new. We were, in fact within the ambience of Hollywood. The juxtaposition of the sheen on the skin and the glint of metal designed to go far beyond human limits, a fundamental motif in many films and incidentally in motor racing, was here embodied in the form and texture of the car.

No matter how we look at it, the average man of our time is very much involved with The Automobile. In England the attachment is apt to take the form of "loyalty" to or an "affection" for a particular piece of machinery, tended carefully through the years; in America, involvement is much more abstract, less feeling, more frenetic; a newer and bigger car each year, or whenever the mood strikes, with the buyer excusing the expense by saying, "Well, the old one would have needed a complete overhaul soon, anyway." These varied differentiations indicate how universal is the dedication of the psyche to the Gods of Motion.

Only the few, unfortunately, are able to be "creative" in determining the characteristics of the model they drive; usually, the loyalty to a car manufacturer is very similar to that accorded a totem by the tribesmen. The following from an article by Manés Sperber (Fall, 1955, *Diogenes)* indicates the parallel in such "devotions"—once we grant Mr. Forge that the motor-car is as much an art-form as it is anything else:

> Now in its beginnings art produces the means which a community utilizes to express the communion of the group in its relations with those magical forces that must either be appeased or seduced; the means necessary to evoke unifying enthusiasm and to fortify courage in the face of danger; to attest loyalty to the past; to exalt gerontocracy; to discover the secrets of mysteries; and finally to protect taboos. Art precedes the artist. Of the latter one demands not originality—that would be sacrilegious—but absolute fidelity in the expression of meanings specified in advance. The ceremonial masks, the ritual dance steps, the words of incantation, the war and hunting songs have to be not beautiful but efficacious; they must correspond, without the slightest variation, to the specifications handed down. . . .

The popular symbols of the twentieth century, however, unlike those of primitive societies, are seldom sharply defined. While the modern automobile in its present stage of development involves numerous psychological appeals, the Legend of the Car can be viewed only through a kaleidoscopic lens. What do most people want? Impressive size? Speed? Riding comfort? Economy of operation and upkeep? It's pretty hard to tell, since the dubious magic of high-pressure advertising turns the spotlight first in one direction and then in another. Unlike most popular art of the past, the plan and design of an automobile does not derive from public taste alone, but from a combination of popular taste, advertising insistence, and engineering economics.

It would be gratifying if we could discuss automotive transportation simply in terms of practicality. But here, though two recent trends might conceivably be pointed out with pride—tiny cars for single-person driving in heavy traffic, and station wagons for that ever-greater portion of the public given to hauling quantities of things and people practicality still receives short shrift. Neither the manufacturers nor the public seems much interested in an idea broached once before in MANAS—that each company be propagandized to specialize in producing *a particular sort of* transportation, inviting as customers only those who want and need such specifications. Contrarily, even today's modest six-cylinder car strains upward in horsepower, though everyone should know that the man who buys a "six" does so because simplicity and economy mean more to him than advertised horsepower.

Perhaps the summation is that nearly everybody wants everything—making for confusion among automobiles as in societies—but also illustrating that the human race is in little danger of accepting a completely "rational" blueprint for any area of daily life.