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THE ROLE OF THE PROFESSIONAL MAN

I consider it a signal honor that you asked me to be present at this celebration of the 90th anniversary of Roosevelt Hospital. I lack the close ties that bind most of you to this splendid hospital but I share your pride in its achievements and your hopes for its future. It gives me great pleasure to speak on this festive occasion.

Whether what I say will also give you pleasure is problematical. I hope you did not expect of me the kind of eulogy which is customary at birthday parties. I am not good at eulogies; my forte is to bring to light unpleasant facts that show we must do better in this or that field; to harangue people who are perfectly content with the status quo, in the hope they will bestir themselves and bring about reforms. Tonight I find myself in the situation--unusual for me--of facing an audience consisting largely of people who support,

manage, or work in an institution which has my wholehearted approval. I can find no unpleasant facts about this particular hospital, about hospitals in general, or about the medical profession. I have only gratitude for the good that medical people and hospitals do.

Moreover, I have long had what I may term a "professional" admiration for physicians. I am grateful that in their hands medical science is put solely to beneficial use--the only science I know from which are removed the harmful potentialities inherent in all knowledge that gives power over man or nature.

I envy the role your profession has won for itself in our society, and its high standards in education and professional conduct. I see a close connection between medical ethics and the physician's professional independence. Without the doctor's assumption of complete responsibility for his cases--without his insistence that he alone must judge how best to serve them--the patients' welfare would cease to be paramount in medical service. Nor would doctors be as successful in putting medical science to practical use if, in performing their work, they had to submit to lay interference. Because a doctor will <u>never</u> submit to <u>orders</u> from a layman on how to diagnose or treat disease, he retains his professional standing, even when he becomes part of an organization--be it a professional institution, such as a hospital, or one not solely devoted to medicine, such as industrial or governmental bureaucracies.

In short, what I envy is the medical profession's understanding of the proper role of the professional man and its success in

winning public recognition of this role for physicians. Most other professions neither understand, nor convince the public, that their role should not be inferior to that of the physician. The theme of my remarks is that in this age of science and technology, we depend on our professional people to an extent unknown in the past. Unless the public comprehends the nature of the professional man's contributions to private comfort and national security, and accords a proper role to <u>all</u> professions, we shall lag in the technological race which the Russians have forced upon us.

I do not claim that the role of the professional in a nation is the <u>sole</u> determinant of its technological progress. Ability and willingness to give adequate financial support to those who advance and utilize science is another important determinant. Readiness to sacrifice personal to national interest is still another. But tonight I shall concentrate on the role of the professional man. Let me start by defining what a professional man is and does:

He is a person who has acquired mastery of a particular branch of systematized knowledge--an academic discipline--as well as a technique for applying this specialized knowledge to the problems of everyday life. Many professionals do no more than this; others, who are creatively endowed, advance their particular branch of science and devise new ways to put it to practical use. The professional man's contribution to society is his use of a

good mind and specialized knowledge for solution of problems that cannot be solved by the common sense of ordinary men.

Life never follows routines. The problems to which professional men apply their special talents are often novel, requiring that they possess judgment and ability to use basic principles in new ways. To be a professional person, a man must therefore not merely have a good mind and specialized knowledge but he must also be able to deal with new situations--otherwise he is merely a technician.

Technicians can perform highly specialized and difficult work, but they do it in a routine way. A technician is not equipped to deal with novel problems; a professional man is. Whoever can do no more than routine work does not deserve to be called a professional man.

Professional men have in common with technicians a fund of specialized knowledge not possessed by ordinary laymen; they differ from technicians in their ability to use this knowledge in nonroutine--in new--ways; they alone move technology forward. This is today poorly understood in our country. In consequence, our professional people cannot give of their best. When we subject them to administrative interference and force them to conform to organizational routines, we turn professional men into technicians; we then obtain from them no more than what technicians are able to give. We badly need to understand the role of all professions, as we now understand the role of the medical profession.

The public recognizes that the physician must independently judge how best to perform his work because it sees the necessity of this independence. It sees the necessity because everyone realizes that the physician, in his field of knowledge is vastly superior to every layman. The public does not fully recognize that other professionals in their own field of knowledge are equally superior to laymen. It is supremely important that the American people comprehend that technicians will not win us the technological race; nor will administrators, public relations men or other non-professional people.

We must understand that the professional is the key man in the advancement and utilization of science. Without him, science would be a closed book; technology would be limited to such techniques as could be discovered by empirical means, aided by the insight of an occasional self-educated genius. Without the professions, man's ability to put nature to work is severely limited and life remains static. But we know from experience that any country can rapidly appropriate the science and technology already achieved by the most advanced nations. All it takes is determination to do so. Levels of technology therefore tend to even out as one country after another adopts modern techniques. The initial advantage possessed by nations who invent science and technology is not retained unless these nations stay ahead of the rest in technological efficiency. Their head start is easily lost, chiefly, because it breeds in people a sense of superiority

which leads to complacency and slackening of effort. England, for example, lost her head start as the first country to introduce industrialization because she proved less efficient in advancing and utilizing science than her Continental competitors. These were willing to put in more effort to be technologically efficient and they understood better what this effort must be.

Modern science and technology were invented by the West and all Western nations have made important contributions. But not all have at all times understood the importance of the professions, nor have they at all times recognized that technological progress depends on public support of education and scientific research. The key role of the professions, in particular, is better understood by some countries than by others. A hundred years ago it was better understood on the European Continent than in England; today it is better understood by other Western peoples than by Americans. It is also better understood in the Soviet Union than in the United States.

Because a profession is intellectual in content (though practical in application), national attitudes toward intelligence and education influence the place of the professions in a nation's scale of values. John Erskine once wrote a piece called "The Moral Obligation to be Intelligent," in which he raised this question: In the "reckoning up of our spiritual goods...", in the "list of our genuine admirations, will intelligence be one of them?" His answer was that in Anglo-Saxon countries it is not; these countries have

long been disposed "to consider intelligence a peril." For different reasons, England and the United States value other human qualities more highly than intellect. In modern life this is dangerous because the science and technology upon which we must count to make life on this crowded planet dignified and comfortable depends upon men of superior intellect and education. Let me go back a hundred years to make my point.

The principal reason why Germany rapidly closed the gap in industrial productivity between herself and England was Germany's better understanding that a country's industrial--and hence political--position in the world depends on ability to increase and utilize scientific knowledge. She drew the correct inference that education must therefore be made widely available; that private initiative is insufficient and schools and universities must be, at least in part, supported out of taxes. She further recognized the key role of the professions. By offering them generous rewards, she insured that men of first-rate ability were drawn into the professions.

In education, England was then many years behind Germany and several other Continental nations. It is instructive to browse through the voluminous literature on the great educational debate which agitated public life in England during most of the 19th century. Although German manufactured products were inching into England's monopolitistic control of world markets, and German military might was growing, the advocates of better education had rough sledding, for England was still the richest land on earth and Englishmen

could not easily be aroused. "Never did people believe anything more firmly," wrote Mathew Arnold, "than nine Englishmen out of ten at the present day believe that our greatness and welfare are proved by our being so very rich." Trevelyan comments that "in a world so comfortable and prosperous, it was difficult for any set of men to feel grievances very acutely."

Educational chauvinism comes naturally to prosperous and powerful nations. They are annoyed when told they can learn from less prosperous or powerful nations. When Prince Albert joined the advocates of educational reform, there was a feeling that, as Trevelyan puts it, the Prince spoke as he did because he was, after all, a German and "popular education was a fad--fit perhaps for industrious foreigners in Central Europe who had not our other advantages of character and world-position."

Germany was as far ahead of England in recognizing the value of the professions as she was in education and in support of science and research. Here too Arnold's voice was raised in warning. On the Continent, and especially in Germany, the professions were "the stronghold of science and systematic knowledge," he wrote, while in England they were not. Only a few of England's leaders saw how dangerous to the nation was this undervaluation of intelligence and education. Their haranguing and warnings eventually prodded England into setting up a state system of education and into giving recognition to her men of superior intellect and knowledge. For their efforts on behalf of reform, these men were often accused of

disloyalty and of being in love with Germany! Their voice brought a discordant note into the Victorian symphony of self-congratulation and complacency. Indeed their criticism was sometimes scathing for they felt deeply that the nation's future was at stake.

Typical of their courage and the despair they must often have felt was an editorial in the magazine Nature, published on the occasion of the Queen's Jubilee in 1887. What seems to have induced the editor to break into the universal atmosphere of self-satisfied rejoicing, with a solemn warning against continued English disrespect of intellect, was his exasperation when only one Fellow of the Royal Institute was invited to the ceremony at Westminister. A theatrical entertainer, he wrote bitterly, might be admitted to the presence of the Queen, but a Darwin, Stokes or Huxley would not. "The brains of the nation is divorced from its head." Abroad, he remarked pointedly, these matters were differently ordered; there men of letters, art, and science were made welcome in the councils of the sovereign.

All this is history but we might ponder whether the resistance of the English people to reform did not delay their technological progress so much that they were never again able to catch up and so in the end lost world supremacy.

The lesson for us is clear. Our situation with respect to Russia resembles that of England to Germany a century ago. Russia's rapid technological progress rests squarely on her excellent free system of education which produces an abundance of well-prepared

professional people, especially in science and engineering. Germany's progress rested squarely on her excellent inexpensive system of education which produced an abundance of educated people as well as specialists in every important area contributing to industrial and scientific power. There are enough similarities to give us cause for worry. And as citizens of a democracy, it behooves us to translate our worries into positive actions.

To live in a democracy is a privilege beyond price. Too often we think of it merely as a privilege or--perhaps it would be more accurate to say--as a right possessed by us simply because we are Americans. Yet this privilege or right cannot exist without corresponding obligations. We cannot preserve it for ourselves and our posterity unless we willingly shoulder the responsibilities of democratic citizenship.

We cannot sit back and expect a paternal and all-wise government to fix things so we will keep ahead of the Russians in the technological race; we must all do our best to strengthen our side. As I have tried to show, our need is for greater technological efficiency. This will require financial sacrifices--giving money we might prefer to spend on gadgets and fun to education and the support of scientific research. But more important, it requires that we give a proper role to our professionals so that we will have enough of them--enough first-rate men--and that better use is made of their special talents.

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There are many physicians in this audience. I trust my praise of your profession did not raise hopes that I would desist from urging you into doing something to bring about reforms. That yours is an eminently successful profession is no reason why you should escape being enrolled as reformers! I earnestly plead with you to take on the job of helping secure a proper role for all our professional people. I urge you to take on this assignment, not because it would make life easier for professional persons, but because it would make it more secure for all of us.

Because of your success in utilizing science for the benefit of man, you are in a favored position to help the average citizen understand that it is the professional person who is the key factor in putting science to practical use. Since you are already assured in your own position, you will not be accused of special pleading. People admire you and have faith in you; also they are used to being lectured by their doctors!

When you asked me, a layman, to speak before this distinguished audience where medical people abound, you laid yourselves open to the usual consequences. Has a layman, invited into the company of physicians, ever refrained from buttonholing them to tell them his troubles? Has he ever resisted the temptation to cadge free professional advice and help? I hope it does not come as too great a shock that I should use the chance to try and inveigle you into doing a little extra work for free.

I realize you are busy people. So are most other professionals. To load additional work on you, thus cutting into your brief leisure hours, may seem unfair. But perhaps you owe a quid pro quo for possessing special qualifications which you have not wholly earned by your own efforts.

You are more intelligent than the average citizen, but you can claim no personal credit for that. Your good minds have received an education of greater length and rigor than that of average men, even of most other professional people--this you owe in part to others. No physician--indeed no professional man--ever pays in full for his education. Part of it is borne by his professors who forego the chance of making a better living elsewhere to pursue this underpaid vocation; part of it comes from charitable donors or from society as a whole--either in direct payments or through waiver of taxes. Your greatest debt, of course, is to past members of your own and allied professions who brought forth the knowledge and know-how; all you had to do was absorb it in order to start doctoring!

I have long believed in noblesse oblige; it is needed as much in democracies as anywhere else. Physicians owe a debt to fortune and to their countrymen which makes it incumbent on them to make a greater return to society than the average man. Not in professional service alone, of which you give far more than most of us, as we know only too well. But in public service--in service as a democratic citizen--where you ought to give that something of

yourselves which most clearly sets you apart from the rest of us--the good and well-trained mind that permits you to think clearly and independently. It will, I feel certain, tell you how best to explain to the American public why it must accord to other professions a role not inferior to the one now accorded your own profession.

I do not underestimate the difficulty, for it goes against the grain of most of our people that any particular vocation be set apart from the rest. Other Western democracies accept this more easily than we because they traditionally admire superior achievement. We have so passionate a belief in human equality that we resist plain evidence that some people are more intelligent or contribute more to society than others. Politicians and celebrities cater to this belief by pretending to be no different than the average man. People whose stock in trade is a superior brain that has been developed through a rigorous course of education have trouble putting on this pretense; this is one reason why they are disliked in this country. Another is the public's lack of opportunities to see for itself just how much benefit it derives from the labor of all professionals.

Physicians are liked and respected even though they do not put on a democratic show. There is enough public understanding of medical science to win approval for the special role of the doctor. But not enough is understood of the other exact sciences upon which modern technology is based. The patient meets his doctor face to face; he does not meet the researcher, scientist,

and engineer who do the basic work that gets him his new automobile--these are hidden from him by a screen of salesmen, public relations men, and businessmen. Our greater respect for businessmen than for the professional people who produce the science utilized by business is that we credit the whole of our delightful modern productivity to the last man in the process, who is the only one we get to know personally.

Periodically, American belief in the equality of man deteriorates into egalitarianism and hostility to all that is excellent. Jacksonian democracy was one such instance of egalitarianism; it all but destroyed the professions by insisting that admission standards must be made so low that any average person could become a professional. The dogmas of modern behaviorists and progressive educationists are another such instance; they have all but destroyed our public school system by demanding that class promotion and academic diplomas and degrees be granted automatically so that any average child might claim to have been "educated!" Both of these egalitarianisms call it undemocratic to deny privileges based on education to anyone solely because he had been unable or unwilling to allow himself to become educated. The logic in this escapes me but the argument has proved persuasive. Whoever advocates that educational standards be set is accused of trying to foist upon this country an aristocratic elite. This is childish reasoning. Parents do not ask their children to earn the gifts they bestow on them. But society is not a parent; it cannot prosper if it

succumbs to a philosophy that regards educational honors as gifts to be handed out without asking that they first be earned.

This is not the place to go into the untold harm which progressive education has done our country. I will speak only of its deleterious effects on the professions. Since twelve years at school do not provide the American child with a liberal education, he must get it at residential colleges which are expensive even when tuition is not charged. When setting their educational requirements, the professions are therefore faced with the unhappy alternative of choosing between quantity and quality. If they wish to keep the length of professional education within the time span normally devoted to such study in other countries, their members will be uneducated specialists; if they demand that they be educated men, the future American professional must first spend four years at college and is by that many years behind his European counterpart. Such a long and expensive education bars many capable youngsters from professional careers and is a major reason why we are plagued with shortages of professionals.

Now that Sputniks and Luniks have begun to arouse the American public to the consequences of mediocre public education, the educationists have been forced into making some concessions in curricula and in separation of talented children for speedier completion of their general education. I suggest doctors band together with other professional men to hasten this reform so that the future American professional be given at least the same chance

his counterpart has in Europe--not to mention Russia, where his whole education and maintenance is paid by the state and poverty is therefore no bar to the professions. Physicians are eminently qualified to bring about educational reforms since in the briefest of time the medical profession itself reformed medical education and raised it to its present admirable condition.

But, important as it is to speed up professional education, it is still more important to win for all professionals the independence in their work that only doctors now enjoy to the fullest extent. This is necessary so that professionals can be fitted into the bureaucracies which are becoming more and more numerous in all spheres of our national life.

Today the work of professional persons in bureaucracies is severely hampered by administrative interference. We have such interference because we do not draw clear lines between the respective role of the professional man and the administrator and because of the two the administrator enjoys the higher prestige and position. He is in fact king. What Mirabeau said has oddly enough come true in democratic America--he who administers governs.

The administrative head of a large bureaucracy is the nearest equivalent we have to an absolute monarch--something of an anachronism in a democratic society! He runs his bureaucracy in an authoritarian manner; he expects unquestioning obedience from his subordinates, even in matters in which they are expert and he is ignorant; he tolerates no criticism of his organization from within or from without.

The inside critic is fired or, if this is not possible, prevented from doing his work efficiently; the outside critic is smothered with a barrage of personal invective and misrepresentations of truth emanating from the organization's public relations department.

This excessive power of administrators is a consequence of our respect for concrete things--buildings, payrolls, records--and our disrespect for things of the intellect, for the highly endowed and rigorously educated professional expert whose only capital is his excellent mind. Good professional people have a high I.Q. that puts them in the top one or two percent of our population; in bureaucracies they are commonly the subordinates of men of substantially lower intellect; even our top business executives average no better in intelligence than typical college graduates--well above the national average but well below the average for professionals.

Overadministration is the chief reason why we are less efficient in translating new ideas into practical items coming off the assembly lines than we were formerly. (Lead time is the technical term for this interval between idea and product.) In but a few years our lead times have grown from five to ten years in important military items. Russia, whose lead times once were many times longer than ours, now has lead times of but $2\frac{1}{2}$ years in some military items. Lead times are an accurate indicator of a nation's technological efficiency. We must take steps at once to reverse the present trend in lead times.

To visualize the problem, consider what a hospital would be like if it were run as our huge bureaucracies are run. Imagine, if you will, a situation where the physician in charge of the X-ray treatment of a cancer patient finds that his orders concerning length of exposure to radiation are being countermanded by a lay superior! This could not happen even if the doctor were an underpaid third assistant resident and the layman the highest paid administrative officer of the hospital. Nuclear reactor safety rules are perhaps comparable to doctor's orders on radiation; I have had the most extraordinary difficulty convincing administrative VIP's that in such a dangerous and complicated matter technical knowledge is essential; that they must therefore accept the rules worked out by experts in reactor technology, even though these be low men on the administrative totem pole.

Picture for yourselves a situation where doctors spend half their time doing battle with administrators who require them to explain and justify their diagnosis and treatment! Imagine administrators trying to prevent use of new medical procedures merely because these run counter to established hospital routines (administrators naturally worship routines and hate innovations!). I wonder how many patients would leave hospitals alive if physicians worked under such conditions. Unfortunately, they do prevail in most bureaucracies where the professional man is not lucky enough to be a doctor!

How fortunate you are that no administrator prevents you from

concentrating all your time and effort on your professional duties! Creativity is impaired when interference goes beyond a certain point. No matter how hard the professional may try to make up by putting in unpaid overtime for hours wasted, he has lost some of his vitality in the battle. In my own group, we have so far won our way, but we have had to waste thousands of hours, patiently explaining the ABC's of reactor technology to administrators who attempt to make technical decisions about nuclear reactors without understanding them.

A superior once asked me to reduce radiation shielding. He said the advantage of getting a lighter-weight reactor was worth risking the health of personnel. It was not easy to make him see that such a concept was not acceptable and that, moreover, where radiation is involved, we are dealing not just with the lives of individuals but with the genetic future of all mankind. His attitude was that we did not know much about evolution and that if we raised radiation exposures we might find that mutations were helpful rather than harmful--that mankind might "learn to live with radiation."

Conscious as we are that this country has no time to lose in pushing such new developments as nuclear power, the needless battle with technically ignorant administrators becomes doubly frustrating. Their motives are inexplicable to us for, as professional men, we cannot understand their worship of routines; nor their determination to force people engaged in novel projects

into time-worn channels. To us, the only thing that counts is whether a task is done, not how it is done. Had we complied and gone about our work in a routine manner, we should have spared ourselves much wear and tear and the enmity of many angry people. But then there would also be no nuclear ships at sea today. This country would have had such ships quicker, had not so much of our time been wasted.

I mention this personal experience because it is symptomatic of all our bureaucracies. It has much to do with our failures in important new developments, our lengthening lead times, the fact that in some areas we have fallen behind the Russians. I see the greatest danger to our nation in the determination of administrators to turn professional men into technicians and obedient "yes men." It may yet cost us our freedom. I believe the only way to untangle our professional people from administrative red tape is to get a clear understanding of the role of the professional man.

This understanding must no longer be delayed, for we are falling behind Russia--not only in lead times--but in the crucial matter of numbers of trained personnel. In 1957, the Soviet Union had 10% more scientific and technical professionals than we; of these 30% more than among our own people were holders of advanced scientific degrees on the Ph.D. level. By 1961 it is estimated that the Soviets will have 25% more such professionals and an even greater numerical advantage in holders of advanced degrees.

The Soviet force of trained professionals increases annually by 6-7%; ours by 3-4%.

Bureaucratization is an inevitable concomitant of population density and advanced levels of technology. We may rail against it but we must accept the disadvantages that come from crowded living; in particular, growth of government. Nor can we expect to deal with the extreme specialization that is part of a high level of technology, without creating bureaucracies where the specialists can be brought together. We cannot in fine do without administrators. But neither can we go on under-using--abusing is perhaps the better term--our professional people. We do not have enough of them to waste their talents. We do not have enough time to let administrators slow down professional work. Something must be worked out between these two categories of essential people so that we may achieve greater efficiency in the advancement and utilization of science. Sputnik, Lunik, and other Russian triumphs in outer space are as much our fault as they are Russia's reward for her technological efficiency.

Ever since we became aware of these triumphs, we have been wasting a lot of time, indulging in an orgy of passionate defense of democracy, when we should have been busy searching for the causes that prevented us from noting the upsurge of Russian education, the large numbers of highly trained professional people graduating from her universities, and the high position accorded these people in Russian life.

We are doing almost nothing to change this situation. Instead of facing the unpleasant truths and taking steps to reverse the dangerous trend they reveal, too many of us have been attacking, not our own inefficiency and complacency, not the smugness which prevents us from keeping close watch on what is going on in other nations, but the few people in this country who were alert enough to recognize our danger and who gave warning. Like primitive chieftains, who chopped off the heads of couriers bringing bad news, we prefer the immediate emotional satisfaction of venting our wrath on the innocent messenger, accusing him of hysteria, of selling his country short, and of disloyal admiration for the totalitarian way of life. It is time we stop this childishness, face up to the menace and do what is necessary to keep us from falling behind.

So far Russia has moved ahead only in selected areas, but, as her pool of trained professional people grows, she is bound to advance in many other areas. She is laying the foundations for rapid advance all along the line. Keeping ahead of her has become the prime necessity for survival--not only our own, but that of all free nations. What is at stake is the Western Way of Life--infinitely precious to us, as it is to all peoples belonging to Western civilization, as well as to others who emulate our way of life.

As you may know, I recently paid a short visit to Russia. It gave me no more than a superficial view of that country; yet everything I saw confirms a long-held conviction that we must

gird for a protracted period of intense rivalry during which we cannot allow ourselves to fall behind in any area which contributes, however remotely, to the strength and welfare of our nation. There is hardly a field where our adversary does not try to make use of every weakness we display. The biggest mistake we can make is to look upon the Russian challenge as purely military. On the contrary, it affects every aspect of our way of life, even those we consider private.

The intensity of Russian rivalry is something one must see and experience to believe. There is no doubt our high standard of living irks them mightily. It shows in their refusal to admit that there is anything we do better than they. We have recently had some experience with this sort of thing. The combative and competitive spirit behind it is formidable. We must not underestimate it. Whatever the formal relationships between Russia and the free world may be at any given time, the technological race will not cease. I do not believe the Russians will ever stop trying to surpass us.

Should Utopia come tomorrow and all the world lay down its arms, this race for technological supremacy would still go on and the one who emerged on top would then have an easy time taking over the world--if he wanted to. We do not want to, as we amply proved during the early years of the cold war when we had atomic supremacy and, despite provocation, did not use it. Let no one doubt that the other side wants to take over the world and, in a similar situation of absolute supremacy, would do so.

One final thought I would leave with you. It came to me as I spoke to ordinary Russians and to some of the people who rule them. I was struck with the fact that in both countries the basic problem is the same and that its solution is practical rather than political. To understand the peril we are in, we need to see this practical problem clearly. Neither political recrimination nor bragging will solve it for us.

The United States and Russia are two enormous land masses with large populations growing at explosive rates, both totally committed to making the fullest use of science. Masses of people living at a technologically advanced level must create a society in which human activities of the most varied kinds are firmly intermeshed, and specialists cooperate closely--hence to utilize science there must be organization. Regardless of political belief, the individual loses out in the mass; he cannot stand entirely by himself in a society depending on intimate cooperation. But conversely, the resultant bureaucratization of life will lead to social stagnation which, in the face of rapid population growth, would bring steady lowering of living standards. Hence science must continuously advance and technology must progress fast enough to offset depletion of natural wealth which comes through greater population density and the insatiable appetite of machine civilizations for raw materials. But group-thinking by organization men does not advance science; for this we must have the individual who thinks independently and creatively.

The practical problem then resolves itself into having enough organization to utilize science and yet enough individual creativity to advance it. Both the United States and Russia are now huge bureaucracies--we reluctantly, they by design. The technological race thus becomes a race between two bureaucracies. In the long run it will be decided in favor of that bureaucracy which remains flexible enough to permit fullest individual initiative, but which skirts the danger of permitting a free-for-all between opposing special interest groups in which the national interest is lost.

To state the problem this way is to show that only our own stupidity and selfishness could lose us the race. It is much easier to bureaucratize life than to find a role for the individual in bureaucracies--here the advantage lies so obviously with us that it needs no special emphasis. If we saw to it that democracy prevailed throughout our private and public life, we should inevitably be more efficient than the Russians. The free individual always out-creates the bound individual, provided, of course, the two are equal as human beings--equally well educated and equally patriotic.

Nothing prevents us from having a better educational system than the Russians; nothing prevents us from working out organizational procedures which give fullest rein to individual talent and creativity. Nothing says it is undemocratic that we accord a proper role to the professions. Will you go out and campaign for this vitally important objective? I hope you will.