CHAPTER VIII

THE RÔLE OF THE NEGRO COLLEGE IN THE PREPARATION OF TECHNICAL PERSONNEL FOR THE WAR EFFORT

HERMAN BRANSON

The academic mind has to a large extent reacted against the opinions impressed on it by the innumerable news releases after "Pearl Harbor." Almost daily one meets instances of college-as-usual or subtle rationalizations which eventuate in inactivity. And yet there seems to be some recognition that World War II poses radical problems for the American college. The New York Times with a weekly cadence announces some change in policy of a few of the two-thousand-odd American colleges and universities to cope with the problems presented by the war. There are new emphases, new curricula, and new ideals. Unfortunately, there has been little discussion of the rôle of the Negro college.

That modern warfare should pose basic problems for our colleges is no marvel. One of the functions of a college is to prepare the technically-trained personnel needed for the world the college serves. Modern warfare has been described as our technical civilization stripped of its superfluities. Hence those who were trained for the problems of our technical civilization will find their talents even more in demand in war. This means that physicists, engineers, chemists, and mathematicians are in great demand. Expressed numerically, the need is appalling. The American Institute of Physics reports that:

Recent estimates indicate that the need (for physicists) is now growing at the rate of 1,500 to 2,000 per year, and that the current annual supply from schools is no more than 500. The need referred to applies to individuals having . . . at least one year of study or experience after the bachelor's degree. It does not include the much larger need for individuals well enough prepared in mathematics and physics for training in technical war operations. This need has been officially estimated at more than 100,000. The War Policy Committee considers this a very conservative estimate.1

In spite of figures like these, there seems to be little activity on the part of the Negro college to supply the educational needs of our 10 per cent.

Whenever the Negro is discussed in positions in industry or government outside of certain categories, realism insists that attention be given to the factor of race prejudice. It is recognized that to date the capabilities of the Negro have not been fully used in the war effort. Data released by the Federal Security Board show that between January and March, 1941, of the 8,769 skilled and semi-skilled jobs filled in the aircraft industry only 13 went to non-white workers.2 But since America's entry into the war, the use of Negro talent has increased sharply. The demands for manpower are such that we can expect the rise will continue. Responsible government officials are making statements which follow the same pattern: to win this war every American must be used at that task he can do best. Paul V. McNutt, chairman of the War Manpower Com-

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1 "This is a war of Science," Cenoo News Chat, p. 3, M 1942.
mission, emphasized this point in relation to the Negro in a recent popular article:
To put every hand to work winning the war, industries will have to recruit . . . skilled men who have been victims of discrimination.
There are 13,000,000 Negroes in the United States. And James Rawlins is one of many of his race whose brains and hands are finding fulfillment in the nation's war effort.  

Many of us can name people who have gone into technical jobs never before open to Negroes. One healthy thing about this incorporation of the Negro into the industrial and research activities of the nation is that it does not result from charity, or from benevolence, or from some artificial attempt to give the Negro his "share," it is a necessity for America's program.  

When our army goes from the present 3,600,000 to 5,000,000 and probably on to 10,000,000, we can expect the crisis in manpower to be critical. From all indications, the ten per cent of the American people we represent will find access to all positions that we have the skill and training to fill.

Although prediction is an essential activity of the scientist, contrary to popular opinion, a discussion of what we shall find after this war will not be undertaken here. Vice-president Wallace assures us that this people's war will have a people's peace. That is gratifying news for the Negro. In all events, well-trained Negroes with laboratory and industrial experience will have a decided advantage in the super-technical world we may have after the war.

The discussion thus far has been to establish two points: there is great need for men and women trained in physics, engineering, and chemistry; and Negro talent must be used in this war and, we think, after this war.  
This placing of the physicist ahead of the engineer is not a chance arrangement. In this war, the physicist seems to be the scientifically-trained person most in demand. President Conant of Harvard University, an organic chemist by training, is credited with the statement that this is a physicist's war. According to Professor A. H. Compton of the University of Chicago, the English are saying that in this war a hundred physicists are worth a million soldiers.  

Many of the major problems of modern warfare hinge on devices:  

1. devices for locating planes or submarines, devices for accurate bombing, or for exploding bombs when and where you want them to explode, or for combating magnetic mines (the famous degaussing belts on British battleships), or for fire control of a battleship. Such devices are the stock in trade of the physicist. A plausible hypothetical instance, which I have used in my classes, illustrates the value of devices and the possible contribution of a young scientific worker to a major victory. It is clearly possible that a young physicist or engineer may suggest some minor improvement in the fire control devices of our battleship North Carolina so that when she meets the German dreadnought von Tirpitz in the North Atlantic, our ship will get in a salvo of

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In spite of this special plea for physicists, I do not wish to leave the idea that they alone are needed. Bulletin No. 26, Higher Education and National Defense, issued by the American Council on Education, April 30, 1942, shows that of 103 professional occupations, shortages existed in 62 of them in January 1942. Of the 62, 30 were listed under engineering and physical sciences.

The present emergency demands that every effort be made to increase the supply of personnel trained in the applications of the physical sciences. . . . Our country has been caught desperately short in the supply of such men because careers in physics have not been brought adequately to the attention of high school students. . . .

All boys and girls showing a natural aptitude for laboratory work and a reasonable skill in mathematics and physics should be given the opportunity to acquire as much physics instruction as possible. . . .

In particular, the need is great for people who are trained in the fundamentals of electricity. We ask you, therefore, to instruct all vocational guidance officers to urge these youngsters to go on to college wherever this is financially possible, majoring in physics, mathematics and engineering fundamentals. . . .

Traditionally the Negro college has prepared teachers and has furnished the training prerequisite for the study of medicine, dentistry, and law. Recently graduate courses have become part of the curricula of more Negro colleges. In the physical sciences, however, there are still too few teachers in the Negro college. Here is a table from Woodson's study of chemistry in 36 Negro colleges—these were probably the best Negro colleges using the

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criteria of faculty preparation, annual budget, and variety of courses: 8

<table>
<thead>
<tr>
<th>Number of colleges</th>
<th>Instructors per college</th>
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<tbody>
<tr>
<td>17</td>
<td>1</td>
</tr>
<tr>
<td>13</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>1</td>
<td>7</td>
</tr>
</tbody>
</table>

His study of physics in the Negro college showed a smaller numerical distribution with no college with more than three instructors in physics. The number of teachers of mathematics probably equals or slightly exceeds the number of chemistry teachers in many of our colleges. But the average per institution is not above two. Finally there is only one university with an engineering school.

This look at our personnel immediately suggests the inquiry, what should the Negro college do. This is not difficult to answer. If the need is for 2,500 physicists each year, the Negro college should supply 250. If the need in technical war operations is 100,000, the Negro should supply 10,000. Whatever the numerical needs in chemistry, or any other field, we should supply 10 per cent of the individuals. Avowedly, however, these are impossible figures to reach. They emphasize the enormity of our task in preparing technical personnel.

Efficient use of the limited facilities of the Negro college requires careful organization and exact budgeting of teaching personnel and equipment. Each college could make a survey of its facilities to determine what it can best do. A superficial examination of some Negro college catalogs with an eye to the training of the teachers in the physical sciences suggests that many more of our colleges could give competent training in physics, chemistry, and mathematics, at least through two years of college. Inasmuch as these subjects are also basic to engineering, these colleges could offer a pre-engineering curriculum for two years. We do not think it naïve to believe that some of our colleges would accept their limitations and function as junior colleges in furnishing physical science students to the larger Negro universities with adequate facilities in staff and laboratories for giving the student a strong undergraduate major in physics, chemistry, or mathematics. These are unusual times, requiring sacrifices and realism. The concern of the Negro college is with supplying well-needed, well-trained, technical personnel. We must evolve a plan which will insure giving this training to a greatly increased number of Negro youth.

The Negro college cannot get teachers and funds because there is a paper need, no matter how well defined. We require concrete proposals and all the help we can get. Fortunately, there is recognition in some government agencies, alert to the technical requirements of the war effort, that Negro scientific ability is not making the contribution it should to that effort. That recognition will help when one of our colleges carries a specific proposal to directors of the Engineering, Science, and Management Defense Training program (ESMDT) or to the National Defense Research Committee (NDRC). Both of these agencies are administering large federal funds for training technical personnel and carry-

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ing on research of advantage to the war effort. The NDRC is interested only in research projects. They have placed contracts running into millions, and the few schools with which they have been placed are unquestionably the leading research institutions.

As an example of a research program, let us examine the record of the Massachusetts Institute of Technology. President Karl T. Compton reported:

Some measure of the Institute’s third and major defense activity, the prosecution of special research, is given by the number of contracts currently in force, the amounts involved, and personnel required. Let me summarize this information in the following table:

<table>
<thead>
<tr>
<th>Sponsor</th>
<th>No. of Contracts</th>
<th>Amount</th>
<th>Scientific Personnel</th>
<th>Other Personnel</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States Government</td>
<td>35</td>
<td>$3,594,375</td>
<td>262</td>
<td>126</td>
</tr>
<tr>
<td>Industries engaged in defense</td>
<td>20</td>
<td>194,120</td>
<td>58</td>
<td>20</td>
</tr>
<tr>
<td>Total</td>
<td>55</td>
<td>$3,788,495</td>
<td>320</td>
<td>146</td>
</tr>
</tbody>
</table>

The requirements to establish eligibility for an ESMDT program are such as to effectively bar most Negro colleges. The ESMDT procedure for establishing eligibility is approval of the school on the four points:

1. Number, training and experience of staff members.
2. Laboratory facilities.
3. Number of degrees conferred in 1939-40 and 1940-41, in each field (engineering, physics, chemistry, and management training), with bachelor and graduate degrees listed separately.
4. Requirements for a major in field of specialization.

A copy of the institution’s catalog should be on file in the ESMDT offices.

In spite of the stringency of the requirements for eligibility for an ESMDT program and for a research project under NDRC, these agencies can be more felt in the Negro college. There seems to be no fundamental objection to those Negro colleges which have ESMDT programs sponsoring programs in other Negro colleges where a need can be shown in the community and a modicum of equipment is available at the college. Supervision could be arranged by the sponsoring institution as an item for travel is included in the ESMDT budget for a course. Some of the white state universities in the South are already sponsoring ESMDT programs in some of the Negro land-grant colleges in their respective states.

A research project is more difficult. It is questionable even if it is desirable in view of the necessity of our using all of our personnel in teaching; yet it may be desirable to seek such a project if a research team could be organized. A team with a problem might be formed at one of our larger colleges to undertake a contract. Such a contract could enable the participating college to draw a few men from smaller schools where the possibilities of any programs are small.

The ESMDT program could be organized around a definite program or it may be a group of short courses. Pennsylvania State College gave, during the summer of 1941, a program of introductory engineering subjects for

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qualified high school graduates not planning to enter college that year. The program ran for 10 weeks, 40 hours per week, in scheduled activities. The student had for the first five weeks:

Chemistry, 5 hr./wk., 2 recitations and 1 3-hr. laboratory period; Drafting, 5 hr./wk., 1 3-hr. period and 1 2-hr. period; Physics, 8 hr./wk., 4 1-hr. recitations and 2 2-hr. laboratory periods; Mathematics, 10 hr./wk., 5 1-hr. periods in algebra and 5 1-hr. periods in trigonometry; Orientation lecture, 1 hr./wk.; Supervised study, 11 hr./wk.

During the last five weeks, 8 hr./wk. of applied mechanics was substituted for mathematics and 13 hr./wk. was devoted to supervised study. This is an example of the program type. The short course type is exemplified by the course in Radio now being given in several of our colleges and the courses given at Howard University in selected engineering, chemistry, and physics subjects. Additional personnel required for such programs at some of our colleges could be supplied from special training programs organized at a few of our larger colleges. The only data available on participation of schools in the government program are those released on the Engineering Defense Training program which preceded the ESMDT program. For the period ending June 30, 1941, 144 institutions had participated or were participating in the program. No more than three of these were Negro schools. They enrolled 675 students with a total budget of $59,365. The total enrollment in all the institutions was 137,656 with a total budget of $8,795,171. In brief, Negro institutions trained 0.5 per cent of the enrollees and spent about 0.7 per cent of the total allocation.

Probably the chief source of hope for the Negro college to train the students needed lies in a bill, now in a committee of the House of Representatives, which would provide federal scholarships and loan funds for students in engineering, physics, and chemistry. This bill is expected to be favorably reported. The important point is that this bill will aid the student—which means that the college will have to interested able students in its science offerings. With a large number of federal scholarship students, a college may be able to induce one of the foundations to assist its program. Of course, the purchase of equipment is another hurdle since priorities have been established for most of the instruments essential for the type of training stipulated. Priorities are fortunately not insuperable.

Throughout this discussion of what the Negro college can do, there runs the tacit assumption that there are sufficient Negro secondary school graduates with the requisite abilities and aptitudes. Howard university has been giving standard tests in selected cities to find able secondary school graduates for regional scholarships. The sample

15 "Booming war industries have already increased child labor. By September 20,000 Oregon boys and girls, 14 to 18, will be drawing industrial pay checks at rates of 65 cents to 87 65 cents an hour." From "Children at Work," Time, 39(24):15, Je 15, 1942.
tested this year shows approximately 300 students with above-average quantitative ability. (These tests were standardized on a sample of some 75,000 college freshmen, predominately if not exclusively white.) There is a young girl in a North Carolina town who scores above the 90th percentile; a young man in Detroit above the 95th percentile writes that he will need lots of financial aid to come to college—these are the students found. The University has discovered that an alarming proportion of these able students would ordinarily not get to college.

Earlier mention was made of the increased opportunities for employment for Negroes. Some of these opportunities are not unsullied blessings, for many of the unskilled and semi-skilled jobs are the greatest competitors of our college. Negro youths whose only opportunities for employment once were as 8 or 10 dollars-a-week bus boys or porters find the 20 or 25 dollar-a-week jobs in industry almost irresistible. Their rationalization is satisfying: after the war many think they will go to college. For our able young people to go into work of that type is a loss not only to the individual but to the country. With a few years of training, these young people would be immeasurably more valuable in developmental and minor research work. The competition is also serious for the white college and is a prime reason why federal scholarships have been sought. The Negro college must plan some offensive, possibly systematic canvassing and recruiting, against this competition.

This rôle of the Negro college in preparing a substantial part of the technical personnel for the war effort is not a question of benevolence or of the Negro college getting its proportion of federal funds but the rôle of an American institution fulfilling its responsibility in the American social scene. Technically-trained Negroes are needed, technically-trained Negroes will be used; and the Negro college must find able Negro youths, convince them to become students, and train them for greater service than as unskilled or semi-skilled workers. It is an opportunity for the Negro college to break through its old cycle of teaching science students who will teach other science students or who will go into medicine or dentistry. We now can send out students who will fill technical positions in government and in industry.  


I am indebted to Mr. J. W. Huguley, Jr., of the Department of Chemistry, Howard University, for this reference and the use of his valuable notes on the Negro in science.

20 The Federal Security Agency appropriation act, H. R. 7181 passed June 30, 1942, carried provisions for loans to students in engineering, physics, chemistry, medicine (including veterinary), dentistry, and pharmacy in accelerated programs in degree granting institutions whose training can be completed in two years. The student can borrow an amount not exceeding tuition and fees plus $25 per month but the total cannot exceed $500 in a 15 month period. Loans will be made through colleges and universities from funds paid to them after they have submitted estimates to the U. S. Office of Education. The interest rate for the loans is 2 1/4 per cent. The student is required to pledge himself to engage for the duration of the war in any such service or employment as the Chairman of the War Manpower Commission may direct. If a student is inducted into the armed forces under the Selective Training and Service Act of 1940 or if he suffers total and permanent disability or death before completing his course, his indebtedness is canceled.

For the majority of Negro colleges this act will aid only a few—physics and chemistry majors in their junior and senior years. It is not certain yet whether students who may be enrolled in special intensive courses will be permitted to make up their years. The regulations governing the administration of the $5,000,000 appropriated—enough for about 10,000 loans—are to be drawn up by the Commissioner of Education with the approval of the Chairman of the War Manpower Commission. At the time of this writing, July 17, 1942, the U. S. Office of Education had not released any regulations.