Prospectus, Tougaloo Computer Fund

Background:

(1) Automation is a fact pervading the American economy and society. The college campus, which must service the needs of a modern society, bears responsibility for the impact of automation, along with other institutions in the society:

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(a) On the economy. The economy is rapidly replacing conventional skills with modern computer-related ones.

(b) On the larger society. Decision-making in contemporary society will depend more and more on computers. If the democratic process is to be served, not destroyed, by automation, it is critical that the effect of automation on the society --and its implications--be understood.

(2) There are varying degrees of skill, training, and education required for computer-related occupations, from the high school graduate trained in the simple wiring and use of the Electronic Accounting Machines (EAM) to the Ph.D. with post-graduate training in the electronic engineering and super-programming of new computer systems. Similarly, there are demands for these skills from the very small operation which may utilize a simple accounting machine to the larger firm using more complicated computing equipment to handle its payroll, accounts, and the like, up to the major firm utilizing computer operations on a very large scale. Because the automation of the economy is in a relatively youthful phase, the employment demands are constantly shifting as more large firms convert to computer operations and small firms convert to the EAM. Although the employment situation is not static, we may surmise the following:

(a) That there will be a continuing demand for high school graduates to service the EAM equipment for such operations as banks, insurance companies and firms which have a large payroll, or engage in complex accounting operations. Such tabulating equipment is also used peripherally with computers.

(b) That there will be a continuing demand for college trained computer programmers for the large automated operations, and in research projects.

(3) Federal and state agencies in the South are relying upon electronic data processing skills, as well as many private firms. Among the former are the National Aeronautics and Space Administration Centers in New Orleans and Huntsville, the Army Engineers' Waterways Research Laboratory at Vicksburg, the State Highway Department. (Private firms include large banks and insurance companies. Blue Cross has a large Honeywell 800 computer in Jackson.

(4) Despite the well-known problem of discrimination, especially acute in the South, job opportunities for Negroes seem to be opening up, not only in the federal agencies, but in state agencies as well.

(a) NASA and others have begun staff recruitment on Negro campuses in the South, and are participating in a conference on jobs to be held at Tougaloo College, February 8. Applications for federal positions are to be considered without regard to race; the implementation of this non-discrimination policy has meant many jobs for Negroes in federal facilities in the South.

(b) Even in state agencies the hiring of Negroes for skilled positions is conceivable. The University of Mississippi, for example, recently employed a Negro research chemist. Let us

remember that many state facilities receive heavy federal subsidies. (Nearly two-thirds of the construction costs of the University of Mississippi hospital at Jackson were met by federal funds provided by the Hill-Burton Act.)

With this background in mind, then, the following proposal is submitted:

Objectives:

(1) To provide basic courses in computer programming to a large number of college students, particularly at Tougaloo College.

(2) To place some of them in summer and permanent positions in fields involving work with computers, and in traineeships and fellowships (largely outside of Mississippi.)

(3) To foster a general awareness among college students, and especially those who will become teachers, of the role and impact of automation in the modern world and its implications for society.

 (4) To help to equip Tougaloo College social science majors
for graduate research in their fields, now that data processing is a standard tool of the political scientist, sociologist and economist.

(5) After the first (college-oriented) phase, to spread the opportunities for training in electronic data processing further and on a larger scale, especially to recent high school graduates who cannot go to college, and to high school seniors and juniors.

(6) To place qualified Negroes in jobs opening in the data processing professions in Mississippi.

Work done so far:

(1) Three Tougaloo College students are enrolled in the IBM 1620 computer programming course at Jackson State College. (Others wishing to enroll could not because the hour of the course conflicted with their schedule of classes already begun at Tougaloo.)

Interest in studying computers and EAM has been aroused in a large number of students, and a few have also declared themselves ready to help in various ways to further the overall program as it develops.

(2) Computer manuals have been placed on sale at the college book store - the companies no longer give them out free - and two students maintain small lending libraries of materials relating to electronics, programming, computers, EAM and automation generally. The Tougaloo College library has ordered books along these lines and has placed some on reserve.

(3) A computer programming course for two credits is being offered on an experimental basis for the Spring Semester, 1964, at Tougaloo College. Nine students have registered for the course. It will cover basic principles of digital computing (including some boolean algebra and binary and octal number systems), with demonstrations on the Minivac 6010 model computer if available; IBM 1620 machine language and, principally, FORTRAN programming for the IBM 1620 and other machines. Also visits to several different computer installations. Laboratory sessions will be conducted one evening a month or one every two weeks, depending on available funds - at Jackson State College under the supervision of a Jackson State College instructor with a student assistant. Classes at Tougaloo will be conducted by Peter Nemenyi. Programmed instruction will also be used.

Two Tougaloo College alumni who are computer programmers have been contacted and have expressed enthusiasm for our program and willingness to help in whatever ways they can. One of them will give additional classes and help with problems.

(4) Six students at Tougaloo have expressed a desire to receive instruction in the wiring and operation of IBM tabulating equipment (EAM), and the services of the instructor at Jackson State College obtained.

(b) A number of universities, medical computing facilities, government agencies and companies have been contacted about possible summer jobs, summer fellowships, as well as courses in computer programming (also in biostatistics). As of now we seem to have good concrete prospects of placing three in paying positions for the summer of 1964. Two seniors are also applying for permanent positions in data processing.

Available resources:

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The facilities of Tougaloo College, including classrooms.
instruction and a library.

(2) The use of the IBM 1620 computer at Jackson State College, as well as instruction by the computer programmer and director of the IBM tabulating equipment, and the services of a trained assistant.

(3) The volunteer services of Vincent Tompkins, Tougaloo freshman who has considerable interest in the computer program, and is widely read on electronics and computing, who will assist in the demonstration of the Minivac 6010. In addition the volunteer services of other students interested in the program.

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(4) The volunteer services of at least one Tougaloo alumnus, currently employed as a computer programmer and systems analyst, to offer supplementary classes.

(5) The volunteer services of students from outside the South ready to offer a preparatory math summer course for prospective students.

(6) A free two-year course in business data processing off offered by Memphis Technical School.

(7) The efforts and cooperation of several teachers and civic groups in Jackson and northern Mississippi to interest and recruit high school students.

Plan of action:

(1) Proceed with the <u>computer course</u> at Tougaloo, for 2 units of credit, with one three-hour laboratory session weekly or bi-weekly at Jackson State College.

Cost: rental of the machine and the services of the laboratory instructor and an assistant. In addition the cost of the Minivac demonstrator for classroom use.

(2) Acquire calculating equipment for classroom use.

(a) Minivac 6010 small demonstrator model as an aid for learning about the logic and circuitry of computers.

(b) Second-hand desk calculator for (1) use in the computer programming course, checking solutions of small problems worked out initially, (11) instruction in the use of desk calculator for all mathematics classes, (111) to aid in research.

Cost: for the two machines.

(3) The use of <u>Electronic Accounting Machines</u> at Jackson State College for instruction for 5 or 6 Tougaloo students, once

a week or bi-weekly.

Cost: rental of machines and services of instructor.

(4) <u>Symposium</u>. The Postgraduate School of Medicine at the University of Texas sponsors annually in late March a symposium on biomathematics and computers in the life sciences. It is proposed that five students attend this symposium, which is without charge to undergraduates. The value of this symposium is to expand the horizons of our students, stimulate interest, and involve them with other students and with the experts in this area. Because of the relatively new application of computer science to medicine, it is felt that participation in this symposium will be particularly valuable.

Cost: transportation and hotel expenses for 3 days.

(5) Placement for summer. Because there are many corporations and research institutions that hire summer trainees for eventual placement in their statistical and computer operations, it is proposed that a coordinator maintain relationships with these organizations and place qualified students in such summer training programs. Among these are universities, medical computing facilities, government agencies. These students will not only receive valuable experience in a work situation, but also learn data processing techniques.

No cost.

(6) It is proposed to send at least two and if possible many more students from Tougaloo to various <u>summer computer courses</u> offered by universities throughout the country. Many universities will provide a concentrated packet of two computer courses and a mathematics or science course which may be lacking in the student's Tougaloo background. It is anticipated that out of this will come

a student competent to help significantly in planning for a computer at Tougaloo, and in its initial use.

Cost: tuition and living expenses

(7) <u>Summer remedial mathematics</u>. Many present and future Tougaloo students, otherwise qualified and enthusiastic, have inadequate backgrounds to learn computer programming. Particularly they lack mathematics. It is proposed to initiate a summer session of remedial subjects for 20 high school students or graduates to supplement their background. Many northern students have indicated a willingness to spend their summer teaching such subjects on a volunteer basis, with only subsistence. Such a remedial program will supplement a summer program of special classes for outstanding high school students being offered by the National Science Foundation at Tougaloo College.

(8) The program must find a qualified <u>administrator</u> possessing competence in the field of computers who can develop and expand the project and explore its ramifications. Especially he must emphasize the recruitment of high school students for training in computer related fields. In addition he will maintain a relationship with the various foundations, corporations, government agencies who are involved in computer related activities; the coordination of the Tougaloo effort with resources available through interested groups such as the National Science Foundation, National Science Teacher's Association. "Job placement" in summer work with computers ought to be high on the priority list.

Cost: subsistence wages

Budget:			
()) \$21 per term per student for tuition for two students attending the computer programming course at Jackson State College for two terms, and half of the tuition for a third student*:		
	21 students at \$42 per student plus transportation, \$4.50 per week for 20 weeks	\$105 90	
*(One stu	dent can afford to pay half his tuition.)		\$195
(2) For the spring semester computer course at Tougaloo, seven three-hour laboratory sessions (one every two weeks) at Jackson State College, each session will cost:		
	For computer time, 3 hours at \$15 For instructor For lab assistant Transportation	\$ 15 15 10 5 75	ATOT
- 25	Seven sessions at \$75 each		\$525
(3) One Minivac 6010 small model computer for classroom demonstration, plus One second-hand Friden desk calculator	\$ 235 300	\$535
(4) Seven sessions of laboratory instruction for a small group studying the wiring and operation of IBM tabulating equipment at Jackson State College, each session will cost.		
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	For use of tabulating equipment Instructor's fee Transportation	\$ 30 15 2 47	

Seven sessions at \$47 each

(5) Transportation and expenses for five students to attend the Second Annual Symposium on Biomathematics and Computers in the Life Sciences at Houston, Texas:

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Car expenses	\$ 30
Hotel: 2 times 2 sharing and 1 sin	gle
room - 2 times \$12, plus \$8, per	ay
for 3 days	96
Meals: \$5 per day, per student	75

\$ 329

\$201

The director of the conference has indicated that the conference fee of \$15 will probably be waived for undergraduate students.

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(6) Tuition and living expenses for two students to get concentrated summer courses in computer programming and some supplementary mathematics.

Cost per student	
8 weeks living expenses at \$35 per week	\$280
tuition, 9 credits at \$30 per credit	270
a set and a set of a	\$550

Two students at \$550 per student

Note: students will be expected to pay their own travel expenses. In a case where tuition fees are under \$30, it will be permitted to apply the balance towards fares. (Columbia and New York University charge over \$30 per credit hour.)

- (7) Programmed textbocks for summer remedial mathematics instruction for 20 students
- (8) Living expenses for one Negro high school graduate from Mississippi to attend free two-year course in data processing (IBM tabulating equipment and computers) offered at Memphis Technical High School. \$1000 per year
- (9) Addition of 6 more students to the program indicated in item (6) above: concentrated study of computers during summer 1964:

6 students at \$550 each

(10) Maintenance cost for one graduate with concentration in physics or mathematics to investigate and compile information on further training and employment opportunities connected with electronic computing equipment, and to expedite arrangements and help in planning future grant applications to the National Science Foundation and other agencies.

> For subsistence, three mos., at \$20 per week \$260 Travel

- \$560
- (11) One graduate assistant (Tougaloo College graduate) with training in computers, full time. To complete plans and application to National Science Foundation for a small computer, and to take an active part in initiating the use of the computer.

For one year plus one summer

\$5000

\$3300

\$2000

\$1100

\$ 800