TABLE 1

U. S. DEATH RATES (Per 10,000)

Year	Area	White male		White female	
		Age 70	Age 80	Age 70	Age 80
1900–02	Original registration states	589	1335	537	1211
1909–11	" " "	621	1358	566	1258
1919–21	Registration states of 1920	546	1197	502	1134
1929–31	Original registration states	609	1336	520	1210
1929–31	Registration states of 1920	585	1298	492	1173
1929–31	Total United States	580	1300	487	1174
1939–41	" " "	545	1247	423	1082
1948	" " "	532	1107	367	905

TABLE 2

LIFE EXPECTANCY (U. S.)

Year	Area	White male			White female		
		Age 20	Age 50	Age 70	Age 20	Age 50	Age 70
1900–02	Original registration states	42.19	20.76	9.03	43.77	21.89	9.59
1909–11	" " "	42.71	20.39	8.83	44.88	21.74	9.38
1919–21	Registration states of 1920	45.69	22.22	9.51	46.46	23.12	9.94
1929–31	Original registration states	45.50	20.84	8.95	47.96	22.69	9.69
1929–31	Registration states of 1920	45.92	21.39	9.17	48.47	23.29	9.93
1929–31	Total United States	46.02	21.51	9.20	48.52	23.41	9.98
1939–41	" " "	47.76	21.96	9.42	51.38	24.72	10.50
1948	" " "	48.97	22.44	9.76	53.80	26.16	11.17

aged during the early part of the century, but rather that the changes shown reflect accidental fluctuations rather than any long-term trend. Moreover, the data presented show that Forsyth's pessimistic 1929 conclusions as to a long-term decline in the average length of life for adults were as much in error as some of the rosy economic predictions also made then.

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Science and Technology in Unesco

THE NRC Committee on Unesco was asked to participate in the program planning and execution for the Third National Conference of the U. S. National Commission for Unesco on Jan. 27–30, 1952. J. S. Nicholas was asked to be chairman of the scientists and engineers panel, and M. B. Visscher was asked to be the discussion leader for Work Group 9, which comprised the scientists and engineers. A document was prepared comprising the conclusions and recommendations of this work group on the topic assigned—namely, "The Opportunity for Scientists and Engineers to Contribute to Peace Through the United Nations System."

There was an attendance of approximately 100 scientists and engineers at the meeting that developed this document, and the precise statements were approved unanimously by the members of the work group before they were accepted for inclusion in the attached statement. This fact is of some importance, because it indicates that it was possible to obtain unanimity of opinion with regard to several very basic questions. The supplementary Work Group 9 report by the Engineers Joint Council was prepared by the engineers subcommittee of the work group and is referred to in Item 7 of the main report.

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Third National Conference

United States National Commission for UNESCO

Work Group 9

The Opportunities for Scientists and Engineers to Contribute to Peace through the United Nations System

The conclusions and recommendations were formulated by representatives of the basic sciences, various fields of applied science, including the engineering sciences:

1. *The Place of Science and Technology in UNESCO.* Science and technology are by custom and historical tradition international cooperative enterprises. The scientific method is universal; accordingly, no group or nation can claim unique interest in it. The results of scientific study are of immediate or potential value to all nations. The promotion of science for its own sake is not the prime objective of UNESCO; however, the chartered objective of UNESCO cannot be achieved without encouraging or

promoting both basic and applied science as a means to the ultimate end.

2. *The Future Program for Science in UNESCO.* The work group is disturbed about the fact that there is so little reference to the scientific and technological program of UNESCO in the report of the program committee of the National Commission for 1953–54. The group trusts that the U. S. National Commission recognizes the past achievements and the important role of UNESCO's work in the basic and applied sciences and requests the U. S. National Commission to urge that there be no reduction in the limited funds now alloted for the key items of the present UNESCO science program; notably:

a. technical assistance and the field sciences cooperation offices.
b. grants in aid.
c. international research laboratories.
d. documentation and scientific abstracting.

We note with interest and approval that the report of the program committee stresses the importance of increased emphasis and the possible change of direction in the areas of the social implications in science.

3. *Barriers to Exchange of Information and Travel.* Unnecessary and undesirable restrictions on exchange of information and travel of scientists exist in certain countries, including the U.S.A. Free exchange of information and facilitation of travel are both essential to scientific progress and human welfare. Any unnecessary restrictions are harmful to the advance of science and to promotion of international understanding and are consequently detrimental to the cause of peace. There is particularly the unfortunate fact that such impediments exist in this country.

4. *Evaluation of UNESCO's Grant-in-Aid Program.* UNESCO's program has consisted of joint support with organizations of scientists and engineers of international cooperative projects which either require international action or are of great importance to many national groups. The grants made have proved effective in facilitating international cooperation of scientists and engineers. The working group recognizes that we face continuing problems of evaluation, and that a balance must be struck between basic and applied science as regards magnitude of support within a limited UNESCO budget. . . . The assistance to medical and engineering sciences must be brought up to the level of support for the more basic sciences. This working group believes that attention should be given to the promotion of international cooperation in the agricultural sciences, if possible in cooperation with FAO. These additional activities should be supported without diminution in subsidy to the basic sciences.

5. *Evaluation of International Research Laboratories.* The group commends the way in which UNESCO is aiding in planning and encouraging the establishment of the first International Research Laboratories. It is believed that the International Computation Center should be put in operation promptly.

6. *The Promotion of Cooperation in Research in Major Area Problems.* The working group commends the effects of UNESCO to engage in research, particularly "to improve the living conditions of mankind." . . . This must include improved food production, better utilization of minerals, metals, and other natural resources, wider use of technical skills, and improvements in public health. In the phase of food production the Arid Zone Research Council appears to be operating effectively. This council may well serve as a model for activities in other fields.

Attention was called to the urgent need for international cooperation in the development of newer methods for the finding and utilization of mineral resources. The known world's reserves of numerous essential metals would be exhausted inside of 25 years if the per capita use of metals in the rest of the world equalled that in the U. S. In the view of the current U. N. program to raise the world living standard, attention is called to the dependence of the American living standard on metals and minerals. We recommend the formation of a research council to consider the mineral resources problem on a world basis.

7. *Better Utilization of the Services of Engineers.* It is the feeling of this body that the services of the engineering profession have not been adequately utilized in the program of UNESCO. It is urgent, therefore, that the EJC be invited to submit proposals with a view to utilization and services in the broadest possible ways in the future activities of UNESCO. There is appended hereto an initial survey of proposals that should be transmitted to the secretary of the National Commission.

8. *Evaluation of UNESCO's Program in Scientific Abstracting and Indexing.* The work of the past four years in this field is generally approved. It is noted with regret that the U. S. National Commission has not followed through the recommendations of the conference on Science Abstracting in its final act, particularly in connection with the setting up of working groups within this country for the abstracting and indexing of scientific literature in the interest of better utilization of discoveries in the promotion of the aims of UNESCO. Further intensive study of the problems involved in effective abstracting and indexing is recommended, including consideration of possible new techniques.

9. *The Trend Toward Increasing Isolation in Science in the U. S.* Studies of literature citations in scientific publications in the U. S. show an increased trend to mention only U. S. research reports. Ignorance of foreign literature leads to wasteful duplication of work, slowing up the progress of science, and failure to utilize discoveries for useful practical purposes. Scientific nationalism, even when due to ignorance, leads to international misunderstanding; hence the correction of this trend is important to the promotion of international amity. Therefore this problem is of concern to UNESCO.

There are two important fields in which this can be specially implemented:

a. through more efficient abstracting and indexing services on an international level, and

b. by calling this question to the attention of college and university teachers.

10. We, as scientists, recognize the need for facilitation of freedom of movement of goods and services in the development of resources in the interests of world tranquillity. We feel that the example of the U. S. government has not been, and is not now, encouraging in this respect. We particularly deplore the imposition of barriers of all kinds other than those which have a sound biological basis for conserving the natural resources of member nations.

11. *Resources and Populations.* The natural sciences working party has emphasized the importance of improved food production, of thorough consideration of the importance of minerals and metals, and of the need for relative freedom of exchange of goods and services in improving the living conditions of mankind.

We recognize also the importance of population in relation to resources and urge that this problem be clearly

recognized and given serious consideration by UNESCO.

12. *Interdisciplinary Conferences.* This group notes with approval the interdisciplinary conferences sponsored by UNESCO and recommends their continuation and expansion. These serve the important end of bridging the gulfs and prejudices between scientific disciplines which have led to overdepartmentalization in academic research bodies and have seriously retarded the advance of scientific knowledge.

Engineers Joint Council

Supplementary Work Group 9 Report

Close cooperation between UNESCO and the world-wide engineering profession and between the engineering societies and other agencies concerned with international relations should encourage practical extension of UNESCO's immediate and long-range activities. In this connection, the Engineers Joint Council's International Relations Committee has a Commission on Technical Assistance for the following primary purposes:

A. To establish and maintain liaison with such organizations as the Economic and Social Council and other U. N. agencies concerned with international technical assistance, the U. S. Department of State (in its administration of Point IV and related operations), the Mutual Security Agency, and the Anglo-American Council of Productivity so that information or requests for advice or aid from these organizations may be promptly channeled to the appropriate group or individuals.

B. To give direction to any other activities that the Engineers Joint Council may decide to undertake in the field of engineering assistance.

Also EJC has close contact with the National Management Council, which is the U. S. Member of the International Committee of Scientific Management and is collaborating with the Mutual Security Agency in advancing scientific management in Europe. Another noteworthy citation is the establishment of cooperative relations with Latin American engineers through the creation of the Pan American Union of Engineering Societies. Furthermore, EJC, through association with the International Relations Committee of the American Society for Engineering Education, maintains an exchange of ideas, information, and personnel in engineering education. In these ways the engineering profession in the United States is being brought into intimate contact and effective relationship with engineers throughout the world.

To be most effective, it is felt that:

A. In the selection of engineering personnel for foreign service, the advice of the major professional organizations should be sought and utilized. These engineering institutes and societies constitute an already existing facility for the primary selection of possible candidates for such employment.

B. For preliminary surveys of industrial projects both government and independent engineers should be used; but for the carrying out of the projects, private engineering firms which specialize in the work involved should be engaged and the projects completed by private enterprise.

It is believed further that initiation, encouragement, and support should be given to:

1. Education in the engineering sciences of selected qualified foreign students to be sent to the United States from underdeveloped and other foreign countries.

2. Programs of assistance in developing engineering education in foreign countries.

In order to be of greatest service in utilizing and sharing their special knowledge, the engineering profession could benefit from UNESCO's aid in determining:

1. Needs to be met.

2. General and technical knowledge and personality traits desirable in engineers who are to participate. For example, the latter attitudes, characteristics, and behavior tendencies may be exhibited by the individual's cultural background, sympathy, humility, and adjustability to the environment.

3. Manpower resources available for participation in projects.

4. Engineering programs planned on a world-wide basis so that future demands for engineering skills can be anticipated. This will reveal the time available for the training of engineering personnel.

To this cooperative effort The Engineers Joint Council, with its Committee on International Relations and its Commission on Technical Assistance, is dedicated in its objective to advance the general welfare of mankind through the available resources and creative ability of the engineering profession.

Perpetual Motion and Perpetual Research

IF I were concerned with sociology, I would agree with Leaver and Brown (SCIENCE, **114**, 379 [1951]) that general laws are not unwanted in the field of social science. I would not, however, prove this point by making reference to the frustrations of those who sought perpetual motion machines before the law of conservation of energy was known, because recognition of this fundamental law would have been much delayed (historically) had not such research occurred. Clearly this was not altogether wasted effort, nor should it be implied that the efforts of social scientists today, who drift around (and sometimes sink) in uncharted waters without a compass, are without reward.

As a youth it was my fate to have encouragement from teachers to follow a not-uncommon inclination where problems are resolved by considering basic postulates without reference to earlier, more classical solutions. I must confess that I spent an enormous amount of time on projects such as the design of perpetual motion machines and the trisection of the angle by rule and compass. Is it to be inferred that there are some who categorically reject this theory of education?

I conclude that Leaver and Brown are among those who wish very much they could be alive a thousand years from now, to marvel at and to enjoy the supposed progress which will mark civilization at that far distant time. However, there seems to be no justification of existence if it is not asserted that today is a better time than tomorrow to live.

It does not seem to be a serious matter how soon the social science law of energy conservation is discovered, as long as thinkers can be delighted and excited by thoughts of social science perpetual motion machines.

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