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The Editor does not accept responsibility for the views expressed by
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Editorial

Engineers, Scientific Community and Social Responsibility

The younger members of the engineering profession deserve the gratitude of the people in general and scientific community in particular for compelling attention to the deleterious trends in the industrial, economic and planning policies being currently pursued in the country. They have brought into sharp focus a ludicrous situation where the production-oriented section of the country's scientific and technical manpower finds itself workless. There must be something fundamentally wrong some where, when a developing country which should need all the scientific and technical talent it can possibly muster to promote its prosperity, finds itself unable and even unwilling to integrate this talent into the production process. It is no compliment to the Planning Commission that it woke up only after the engineers had resorted to methods of civil disobedience such as processions, slogans, gheraos, disturbances in the Convocation Addresses etc. It is a sad reflection of the type of planning that the situation was not anticipated all these years. Surely the planning for long-range requirements of scientists, technical and engineering personnel to serve the needs of industrial development and economic growth and their optimum utilisation is the concern of a responsible government. We cannot but deplore the negative approach outlined by some eminent persons in positions of authority that the admissions to engineering colleges and technical institutions should be cut down or frozen; new institutions banned and

jobs provided to the existing engineers by giving subsidies to industries. With this approach we are likely to wake up to an acute shortage when the development process gathers speed and momentum at a later date. The other measures suggested of self-employment fail to take cognisance of the optimum engineer-investment ratio for maximum productive returns of the engineering talent. It is heartening to note that the Prime Minister has taken upon herself to shoulder the overall responsibility for remedial measures.

The first question arises whether we have engineers surplus to our needs. It may look like begging the question because there are 20,000 to 40,000 engineers on the street. But this may be due to imbalance in our policies and programmes of development for which the planning process has failed to provide a remedy. It is inconceivable that a correct and dynamic approach to industrial development could ever lead to a situation where these engineers should become a social problem rather than contributing their technical knowledge and experience, energy and enthusiasm to the nation building process. It is argued that the recession in the industry is responsible for the slowing down of the industrial production particularly in the engineering industries. As Shri G.L. Mehta in his recent address at the Annual General Meeting of the Industrial Credit & Investment Corporation of India has said, the so-

called recession in Indian economy cannot rightly be termed so—it is only a normalisation of what has continued so far to be a predominantly sellers' market. This adjustment whereby goods would be less scarce and the buyer has a little better freedom of choice, should be a welcome development in the economy in introducing the competitive process so essential for price rationalisation and quality improvement. Looked at in the proper perspective this so-called recession should have spurred industrial enterprises to take to research and development to make their products more competitive in the domestic and foreign markets. On the contrary, the indigenous industry habituated to selling in a sheltered market reacted by putting pressures on the government to extract further concessions, laying off the staff and adding to the unemployment situation. Fortunately, there has been a natural self-adjustment and the industry itself is coming to realise that it cannot continue with this negative approach since this could not serve its long term interests.

Unfortunately, it is true that the resources available for investment in industrial growth have tended to shrink. More than a thousand crores has to be provided to maintain the defence preparedness of the country. If one-third of the revenue is to be invested in this non-productive sector, it cannot but lead to scarcity of resources for the industrial and other sectors of the economy. Even the military hardware for defence would need engineering talent, were it not predominantly based on massive purchase of sophisticated weaponry from advanced countries. The 1965 hostilities amply demonstrated the value of locally fabricated aircraft and weapons even when faced with more modern imported ones. With the present strained relations with China and Pakistan, it would be hard to justify any relaxation or complacency in the defence of the country. But is it beyond

the wisdom and ingenuity of political leadership to so adjust our foreign policies and relations with our neighbours as to prevent such monumental investments in military hardware on both sides and burden on the people and the economy. It is too soon forgotten that in modern times, economic defence is as if not more important than military operations. The Prime Minister deserves the nation's gratitude in having given the correct and courageous lead in declaring that the country cannot live in permanent enmity and hostility with its neighbours. A far more positive and dynamic approach would however be needed to enable a sizeable reduction in the defence expenditure and achieve an impact on economic policies. It is the social responsibility of the scientists, technologists and engineers in the developing countries to which both India and its neighbours do belong to help in creating a climate in their own countries conducive to reduction in defence expenditure and turn the sights to goals of economic prosperity.

It is now well-known that more than 30% of total imports during the Third Five Year Plan have been in terms of capital equipment and engineering hardware. They have come as industrial equipment or as package deals through foreign collaboration. Although we have an Industrial Policy and the formal administrative machinery responsible for scrutiny and certification about essentiality and non-availability before import of equipment, instruments and spares into the country, yet this machinery has not functioned in a manner nor has it been provided with numbers and quality of technical personnel as to enable it to discharge this function effectively and in depth. The departments and ministries responsible for technical development should be geared for a dynamic and planned approach to promoting industrial and engineering development of industries. For this

data and analysis of the imports in depth should be available. Neither the Directorate of Commercial Intelligence and Statistics nor the Controller of Imports and Exports nor the DGTD and CSIR appear to have the necessary set-up to have with them a detailed break-up of the imports of equipment and engineering hardware. If this data were available—as it ought to be—it could be used for purposes of planning, design and engineering of equipment, instruments etc. It could have been then classified into different categories of engineering goods and services. With this data it should have been possible for engineering institutes and engineering colleges to undertake large scale programme of copying the foreign designs, duplicating and fabricating them in the shortest possible time. Package deals could have yielded to unfolding of the packages and analysis of the package contents. The engineering component of these contents would have been duplicated, improved upon, substituted, copied etc. Unless the Ministries and Government Departments responsible for industrial development have the necessary outlook besides having the competent technical machinery to undertake this task, there cannot be a breakthrough in the direction of self-reliance. With the engineering requirement is also tied the question of fuller employment of the Indian engineering personnel. If a programme of national self-reliance is undertaken in all seriousness, an Institute like the Central Mechanical Engineering Research Institute would need not 3 or 5 but scores and hundreds of centres for actively helping the local industries to become self-dependent in engineering equipment and services which are at present met by imports. With our present policies, we are paying with scarce foreign exchange to provide work to foreign engineers in the advanced countries.

Equally true is the fact that the proper policies in regard to absorption of imported

know-how and technology are yet to find recognition in this country. The only country in the South-East Asian region which can be held as an example to have brought itself in the forefront of competitive markets is Japan. It is well-known that Japan spends at least four times the amount on research and development in areas where it imports technology in order that the imported technology is profitably absorbed in the technological system of the country and can be indigenised for further development and progress. No such policies appear to be followed in India. Of late there has been a frightening shift towards the mistaken notion that an increasing tempo of import of foreign know-how through collaborations is a solution towards the speedy industrial development of the country. Let it be realised that foreign collaborations without corresponding arrangements for assimilation of foreign technology can only lead to a technological colonialism. This deplorable trend is made apparent in that with the Indian technological set up, our best technologists and engineers do not find employment within the country. To get round the problem of unemployment in engineers we are launching upon a policy of tacit acquiescence in the migration of scientists and engineers to other countries. The development phase of Research & Development needs a far greater investment of resources and technical and engineering manpower. A major shift in our scientific and industrial research policies is called for, so that scientists and engineers are deployed in areas where import of technology is taking place. Task of absorption, assimilation and diffusion of imported technology is far more urgent and important in a developing country than the development of newer technology. Taking even the visible cost of imports of technical know-how as approxi-

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Social Evaluation and Status of Scientists in India

AQUEIL AHMAD*

Status of a profession greatly depends upon society's evaluation of the role that a professional is supposed to perform. Without proper understanding of these social roles, placement of a particular profession in the status hierarchy may present analytical problems for a comparative evaluation of statuses.¹ The intention here, however, is not to indulge in a sociological analysis of this sort, but to briefly define the status of scientists in our present social structure with reference to some pertinent historical facts regarding social stratification in India.²

In ancient India religion was considered to be the most important and honourable activity. Religious practices, as means of achieving or maintaining certain desirable states of affairs in this life, as well as in the lives after death, were given top consideration. Naturally the performer and the interpreter of these activities—one who had mastery over them—i.e., the priest, was the most revered citizen. The priests of ancient India combined scholarly pursuits with the per-

formance of religious activities and were quite often entrusted with the task of educating the common man. Next in line were the warriors, since the military which carried with it the romance of valour as well as high rewards, was also a preferred profession. Through battle and conquest of imperial awards for loyalty, the warriors could accumulate riches and become rulers of large territories. Territorial powers coupled with the risk involved in war justified for these warlords extra privileges and higher status than the rest of the people. Priests, although they enjoyed the higher status, did not have many worldly possessions because austerity was considered a solemn virtue and a must for priesthood. This condition, of course, did not hold for warriors.

During British rule in India spiritual values were on the decline and greater importance was attached to material values such as possession of worldly goods and power over their distribution. Possession of such assets gave rise to a more sophisticated style of life which became the symbol of high status. To reach that status one had to be either a landlord (the majority of whom were the descendents of warlords who had earlier shifted their allegiance to the British) or a functionary of the then government of India. Government service required Western education in humanities and liberal arts—an expensive affair, which only the rich could afford. In this climate of changing values, the priest-teacher lost his centuries-old status; the government functionary i.e. the administrator gained prominence and the descendent the warlord stayed in his exal-

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1. Role here is synonymous with occupation. Stratification studies are oft based on occupational groupings because occupation serves as a clue to a number of important characteristics such as income, style of life, education, authority over others, social responsibility, etc. (cf., Richard T. Morris "Social Stratification" in Broom and Selznick's, *Sociology*, Row, Peterson Co., N.Y., 1958. pp. 165-202).

2. A classical treatment of statuses and roles is presented by Ralph Linton in "Status and Role," in Schuler *et al Outside Readings in Sociology*, Cro Co., N.Y., 1952 pp. 118-125. The reader is also referred to Max Weber's analysis of social stratification in ancient India (Max Weber, "India; the Brahman and the Castes," in Gerth and Mill's, *From Max Weber*, Oxford Univ. Press, N.Y., 1959, pp. 396-415).

ted position as manager of the land and collector of land revenues on behalf of the government.

Modern education in India dates back to the establishment of the Universities of Bombay, Calcutta and Madras in 1857. These universities in the beginning primarily aimed at teaching humanities and liberal arts subjects to prepare students for administrative services. Science education entered the curriculum at a much later stage. For instance, Bombay University had its first science department in 1881, i.e. 24 years after the date of establishment; while it took Calcutta University fully 58 years to have one (in 1915). At that time, and for a long while thereafter, the country did not have many centres exclusively for research work in science.³ Science graduates were either absorbed in administrative services or, mainly in the teaching profession in colleges and universities. Because of the absence of research facilities in these teaching institutions, the scientists' entire time and effort was devoted to teaching work. Thus, it appears that the earlier role of scientists in India was generally amalgamated with the role of the teacher and was assigned a lower status than the more popular administrative or public service professions under the civil services. Among the private professions, lawyers were in great demand in a peasant society dominated by the land-tenancy system. Scientific expertise was neither in demand nor were there any constitutionally organized facilities for indulgence in such an expensive pursuit.

3. The Indian Association for the Cultivation of Science, Calcutta, founded in 1876, was the first organization to provide necessary facilities for scientific research. Other centres for advanced research and training, such as the Indian Institute of Science, Bangalore, and the Bose Institute, Calcutta, were established about half a century later (in 1911 and 1917 respectively).

Out of this brief analysis two facts emerge clearly : (1) that scientific research in India until recent years was not recognized as a separate profession; and (2) that the teacher-scientist started out with paltry rewards and meager facilities as compared to the rewards and facilities offered to the government functionary. The civil servant, being the backbone of government administration, not only enjoyed more privileges for himself and his family, but also had power over certain rewards and facilities that others desired. The teacher-scientist neither got enough rewards and facilities in return for his service, nor had power over their distribution. Both facts combined—inability to maintain the preferred style of life and lack of social power—relegated him to an inferior social status. In this context one may wonder why the teacher-scientist started out as an ill-paid, poorly provided professional as compared to the civil servant who had equal or perhaps even less education. One explanation may be this. Teaching and priesthood were usually combined activities in ancient India. With the advent of science education, the scientist came to be basically regarded as a teacher. It is quite possible that the austerity requirement for the teacher-priest automatically became a socially accepted value for the teacher-scientist as well. Another factor which might have played a prominent role in this situation was lack of a definite programme for social and economic welfare of the country for which scientific expertise would have been in demand. In the absence of such a programme, science could not have been considered as important as other activities, such as collection of revenues.

The last decade of development of India has brought many significant changes to the social and economic structure of the country. With emphasis placed on developmental activities, scientific research, as a powerful tool for this development, is receiving consi-

derable national attention for the first time in our history. Many laboratories and institutes have been established by the Government which employ a large number of scientists and technologists wholly for research and development work.⁴ This rapid expansion in research careers open to science and engineering graduates has helped establish scientific research as a profession different and separate from other professions. Attempts have also been made to bring the service conditions in science and teaching professions at par with other Government services since both scientific research and education are primarily Government supported activities. Housing facilities, allowances, medical benefits, etc., are extended to scientists, teachers and civil servants alike. Outside the Government, private research institutes and industrial establishments are also employing many scientists and engineers and providing more or less similar benefits. Although these reforms have enhanced the status of scientists, there are still a large number, especially in state government services, who are poorly paid and face great difficulties in finding alternative employment or promotion to higher jobs in their own organizations. Many respondents giving a negative answer to our Opinion Survey question. "If given a second choice, would you choose science as a profession?" have stated low evaluation of science by society, and consequently, the scientists' low status in terms of low salary, bad service conditions, etc. as one of the most important reasons they wish they had entered some other profession.⁵ It therefore seems essential, both for the Government as well as

society in general, to recognize scientific research as a highly important profession and a useful national activity. Due recognition to scientists, better service conditions and enhancement of their status in our society would surely result in greater personal satisfaction and, thereby, a more dedicated effort.

While these changes are taking place, it is hoped that ultimately there will emerge in India a hard core of productive scientists which meets the highest international standards of professional competence. The modern world of science requires a rigid code of conduct quite different from the one usually attributed to the 18th century scholar. Scientific research has changed from an isolated, individual pursuit to an organized group activity involving heavy expenditure and high expectations. Meeting these expectations does not necessarily require that the scientist be an exceptionally purposive, introspective and inspired human being. The 18th century genius who worked in isolation and had nothing but his innate abilities and self acquired knowledge to fall back upon has been replaced by the professional scientist whose expertise is the direct result of his formal training and is backed by an enormous body of readily available information. The professional scientist of today requires a trained ability to use his expertise, rationally and impersonally, in productive processes and deliver useful goods to society. Higher rewards and greater prestige will tend to follow, for in the final analysis it is the social usefulness of a profession which decides its status.

4. Presently, there are about 4000 science departments in universities and 250 research institutions (both Government and private) employing an estimated 30 to 40 thousand professional scientists, technologists and engineers.

5. This refers to the investigation entitled "Opinion Survey of Scientists and Technologists," by A. Ahmad and S.P. Gupta, Research Survey & Plann-

ing Organisation, CSIR, India. The paucity of monetary rewards to scientists is indicated by their salaries; the median salary for agricultural graduates in the sample comes to Rs. 455 per month which is equal to 60.7 U.S. dollars, for engineers Rs. 540 per month (72.0 U.S. dollars), for doctors Rs. 677 per month (90.3 U.S. dollars) and for graduates in natural sciences Rs. 550 per month (73.3 U.S. dollars).

SCIENCE POLICY IN JAPAN*

Since 1962, OECD has conducted reviews of national policy for research and development in its Member countries. The review of Japan, the seventh in this series, will be completed in June with the publication of a background report, together with an analysis by an international group of experts. The material available as a result of this review makes it possible to put Japanese research and development activity in the perspective of similar activities in other industrial nations.

The following article was written by T.D. Long, rapporteur for the group of experts.

In the two post-war decades, Japan has overcome tremendous obstacles, presented by an almost total lack of natural resources and relative isolation from the foreign markets at which her export-oriented economy is aimed, to become one of the greatest trading nations in the world—first among ship-builders, third among steel-makers, third among motor vehicle manufacturers. Although certain historical factors—among which might be mentioned the continuity of public administration, a long history of universal compulsory education and close co-operation between leaders of government and industry—created conditions favourable to this remarkable achievement, increasing investments in scientific research and development in both the private and public sectors also play an important role. While the Japanese economy grew at a rate of 10 per cent per annum from 1953 to 1963, research and development expenditure of the government alone increased by an average of 18 per cent per annum, and for the nation as a whole by an even greater amount. Research expenditure in 1953 was roughly 47 billion yen (US \$ 129 million) while in 1963 it had reached 321 billion yen (US \$ 982 million). The level of national research and development expenditure with respect to the total national product put Japan on a par with France and FR Germany by 1962 (1).

Japanese research and development expenditure per head of population, at best a rough measure of the research effort of the entire national society, is rather small in comparison with other industrial countries. This is so for several reasons, but principally

Gross Expenditure on Research and Development (†)

	GERD as per cent of GNP	GERD per Capita United States Dollars
United States	3.1	93.7
United Kingdom	2.2	33.5
Netherlands	1.8	20.3
France	1.5	23.6
Japan	1.5	8.2
Germany	1.3	20.1
Belgium	1.0	14.8

(†) The national ranking in this table is confirmed by the preliminary results of OECD's International Statistical Year for Research and Development.

because Japanese national product at conventional exchange rates is relatively small, while population is large. It should be remembered that conventional exchange rates do not reflect real costs of living to which most research expenditures are related, and

* Reprinted from 'THE OECD OBSERVER' No. 28, June 1967.

that the same quality of research may be done much more cheaply in countries where these costs are lower.

The growth of research in Japan has some distinctive features compared with that of other OECD nations. For constitutional and other reasons, the investment of funds in military research and development is very small compared to most other OECD nations. The latter allocate from 16 to 50 per cent of their national budgets to defence while Japan allocates about 8 per cent. While the share of military and space research in defence budgets of other countries runs from 8 to 80 per cent, in Japan it is about 5 per cent. In sum, research and development is overwhelmingly civilian-oriented.

The share of industry in research expenditure has increased more rapidly than that of any other sector—from 54 per cent of the total in 1953 to 64 per cent a decade later. If one includes private research in universities and non-profit institutions, the private sector accounted for about three-quarters of total research expenditure in 1963. These funds are supplied and research is performed exclusively by firms and other private institutions. Similarly the 25 per cent which is supplied by public authorities (principally the central Government) is both produced and consumed within the public sector. There was probably not more than 1 per cent cross-funding of industrial research expenditure to universities in 1963, and somewhat less than 0.5 per cent of government research funds were contracted to industry.

The absence of significant transfer of funds between sectors is perhaps related to another feature of Japanese science—the compartmentalisation of different types of research. Basic investigation tends to be the exclusive sphere of the universities, especially in medical science, while applied research on the whole takes place in government laboratories,

and development work is the province of industry.

In terms of research and development personnel Japan has also attained parity with other major OECD countries. As to qualified scientists and engineers only—the top strata of R and D personnel—Japan is even more richly endowed.

This growth is partly the result of a conscious effort of the Government to increase scientific and technical enrolments in the universities, and to improve scientific and technical education at the secondary level as well as in higher education. From 1957 when the first plan of the Ministry of Education for an increase of scientific and engineering places in higher education went into effect, until 1966 when the most recent of such plans had reached capacity, university places in science and engineering increased for about 20,000 to 110,000—roughly a 50 per cent expansion of scientific and technical enrolments relative to enrolments in the social sciences and humanities.

Due to changes in reporting methods and to the fairly recent demand for such data, information about the utilisation of scientific and technical manpower is not available over a very long period of time. However, it is

	R and D Personnel/ 1,000 Popu- lation (1962)	Qualified Scientists and Engin- eers/ 1,000 Population (1962)
United States	6.2	2.4
United Kingdom	4.0	1.1
Netherlands	2.8	1.1
West Germany	2.6	0.7
Japan	2.5	0.9
France	2.4	0.6
Belgium	2.3	0.9

possible to trace an increase in the total of research and development personnel in Japan from 253,000 in 1960 to 289,000 in 1964. This increase (14 per cent) is less remarkable than that of qualified scientists and engineers, whose number rose by 40 per cent in the same period, from 82 thousand to nearly 115 thousand.

The Role of the Government

Since the rapid and controlled modernisation of the nation began a century ago with the Meiji Restoration, the Japanese Government has taken the leading role in the introduction and promotion of science and technology. Partly because of the sudden fashion in which Japan —after two and a half centuries of isolation—was thrust into the contemporary world, the nation had a recognisable science policy from the beginning of this era, principally with respect to the development of manpower.

The role of Government has, of course, varied with time and circumstances—for example, in the establishment of national industries which were turned over to private enterprise, later nationalised, and after the Second World War again de-nationalised. Yet whatever the particular events at a given time, it remains true that Government has been the principal sponsor of science and often the principal advocate of innovation. For this reason, the arrangements within and around the Government for scientific advice and for the performance of various research and development activities are extremely important. (They are, at the same time, complex to the outside observer since they appear to confuse private with public responsibilities).

Basically, two types of governmental body have been created to deal specifically with science policy—advisory organs on the one hand and administrative bodies on the other. The advisory system, through which the

Japanese scientific community makes available to the Government its advice and recommendations on scientific and technical matters, is in most respects comparable to that of the United States, the United Kingdom, and several European countries. However, there are two distinct bodies in Japan on which the Prime Minister may call for opinions and recommendations and which are empowered to offer advice on their own initiative. The first is the Science Council of Japan established in 1949, which is composed of 210 members elected from among all qualified researchers in the natural and humanistic sciences; the second is the Council for Science and Technology (STC) which was established at Cabinet level in 1959, when similar events were taking place in France, Germany and the United States. This body has 11 members approved by the Diet and drawn from the top levels of Government (five are members of the Cabinet), the scientific community (one member must be the president of the Science Council of Japan) and other groups. Its function is to study and issue reports on such matters as global trends in research expenditure and manpower, the nature and objectives of government research activities and long-term planning. Because of their very different composition and procedures, the two councils often concentrate on quite different matters, but on problems such as funds for basic science and the training of researchers, which are of general national significance, they sometimes find themselves in conflict.

The administration of research carried out under government auspices is widely dispersed among ministries, agencies, and chartered corporations which have a special semi-public status. Since 1956, co-ordination of these diverse bodies has been entrusted to a Science and Technology Agency (STA) which, in addition, has almost exclusive authority to fund research and development

in the field of atomic energy and to finance travel abroad of government researchers. It also has a small but growing emergency allocation to undertake inter-ministerial projects arising out of unforeseen events. Examples are the recent intrusion of a cold water mass into the *Kuroshio* or "gulf stream", which gives Japan its temperate climate and rich fishery resources, and unusually heavy snowfalls in northern Japan.

The Tools of Policy

Creation of the STA coincided with utilisation of one of the principal policy tools available to governments in implementing a science policy—the research budget, which groups together all government research and development expenditures. In Japan, as elsewhere, this sum has been increasing rapidly in recent years, from 22 billion yen in 1955 to 109 billion yen in 1964—or at a rate of about 14 per cent a year. Almost half of these funds are accounted for by the Ministry of Education and are spent mainly for research and development in the national universities. The remaining funds are divided among the various ministries and other agencies, but are co-ordinated by the STA which is empowered to consult with other agencies and ministries about their research budgets. It does so before submission of individual estimates to the Ministry of Finance, and also gives a comprehensive opinion on the Government's entire allocation for research and development afterwards. While the power to "co-ordinate" is less decisive than the power to spend, it is nevertheless a powerful force for rationalisation of the Government's entire research and development budget.

The fact that the STA's co-ordinating role does not extend to the Ministry of Education funds means that research in the national universities is only indirectly co-ordinated with other government research. Most go-

vernment officials are agreed that there should be some better method of monitoring, and when possible utilising, the output of new knowledge. Legislation now being considered by the national Diet and organisational reforms being pondered by the administration would change this situation.

The second principal tool of science policy in OECD nations is research planning. This matter, which in many other industrial Member nations is still at the stage of private discussion, has actually been incorporated into the public administration in Japan, where to a great extent scientific planning is integrated into economic planning.

"Indicative" economic planning in Japan was born shortly after the war, and has been progressively refined in the following two decades. The plan of 1960 which projected a rate of economic growth over the decade 1960-1970 sufficient to double the national income was based on a series of studies of underlying transformations in fields such as energy, agriculture, education, and research for the twenty-year period to 1980. While this plan has been subsequently revised to some extent, it continues to provide the basic structure for thinking about the growth and transformation of the Japanese economy and consequent developments in the society at large.

A ten-year plan for research was published by the advisory STC almost simultaneously with the appearance of the Double Income Plan of 1960. The major goals of the research plan were co-ordinated with those of the economic plan. Both endorsed an increase in total research expenditure from about 1 per cent to 2 per cent of national income by 1970¹ and both proposed increased training of scientific and technical personnel to meet anticipated shortages of 70,000 scientists and engineers and 440,000 technically trained secondary graduates in

1970. The research plan spelled out in considerably greater detail other steps necessary to strengthen research at all levels, such as attention to the problem of scientific and technical information, improvement of the Government's administrative system, and development of tax and other fiscal measures in support of industrial research. Perhaps the most significant points are the co-ordination of basic objectives, and the fact that science and technology gained an important place in a national economic plan.

Government-Sponsored Research

Two of the most comprehensive, well funded and highly organised forms of research are atomic energy and space. Atomic energy research has flourished despite the absence of any form of military nuclear research (the Constitution prohibits the maintenance of military forces other than for self-defence) mainly as a result of a government-led effort to promote the research and applications necessary to keep Japan abreast of developments in peaceful nuclear technology. Space research has also reached an extremely sophisticated level (it is likely that Japan will become the fourth nation to orbit a satellite, sometime in 1968) as a result of the research activities and organisational efforts of a group of scientists and engineers at Tokyo University's Institute of Space and Aeronautical Research.

Other government research activity is distributed widely among twelve ministries (almost all of which perform some research), four agencies (including the STA), and a number of so-called chartered corporations. More than seventy research laboratories perform a broad spectrum of research tasks, much of which is routine but vital scientific work on industrial standards, transportation and communications, health, safety, and other matters within the province of government. In some of these laboratories—notably those

of the Agency for Industrial Science and Technology, the Ministry of Health and Welfare, and the Science and Technology Agency—programmes have been established, especially in electronics and aircraft, to provide direct support for industries which the Government wishes to strengthen to meet international competition. In other areas the Government has acted to meet a serious national need through co-operative programmes of research in several government laboratories, relying on the support, co-ordination, and often participation of the STA. Such programmes include research in marine science and technology, air and water pollution, urban development, ergonomics, and cancer. Some of these activities have been initiated with allocations from the STA's emergency fund and then incorporated into the regular annual appropriations of two or more ministries or agencies.

Joint Research Institutes at Universities

University	Institute
Tokyo	1. Cosmic Ray Laboratory 2. Institute for Nuclear Study 3. Institute for Solid State Physics 4. Ocean Research Institute 5. Institute of Space and Aeronautical Science
Nagoya	Institute of Plasma Physics
Kyoto	1. Research Institute for Fundamental Physics 2. Research Institute for Mathematical Science 3. Institute of Reactor Research
Osaka	Institute for Protein Research

The chartered corporations are organisations which have been set up with govern-

ment funds, but whose legal status is not that of a government agency. They have considerable flexibility in their personnel policies and in private contractual arrangements without the requirement that they balance their books or show a profit on their operations. Three of these corporations are found in the atomic energy field: the Japan Atomic Energy Research Institute (the Government's principal organisation for atomic research); the Nuclear Ship Development Corporation; and the Nuclear Fuel Corporation, which buys, processes, and re-processes the fuel used in private and public nuclear installations.

Chartered corporations have been established in other fields as well and support a diversified national research and development effort. The Japan Information Centre for Science and Technology, for example, is as its name implies, a central clearing house for information, mainly that which originates abroad. It publishes several series of abstracts and provides other types of service to the entire scientific and technical community. A very different organisation—but one which has the same legal form—is the Institute of Physical and Chemical Research. It had a distinguished pre-war history (it was there that Shinichiro Tomonaga did some of the work for which he received the Nobel Prize in 1965), but for various reasons was in decline after the war. It was reconstituted in 1958 with the object of providing, within government, a centre of fundamental research activity; at the same time one section was made responsible for seeking applications for promising research ideas. This work was expanded and given substantial new funds by a chartered corporation having yet another type of function, the Research Development Corporation which was established in 1961 to act as a middleman between individual researchers or laboratories, which have ideas but lack commercial contacts, and firms,

which are seeking development work but lack risk capital.

Research performed by the laboratories of ministries and by chartered corporations is generally project-oriented; research in the national, public, and private universities which grows out of the teaching and research interests of staff members, is predominantly discipline-oriented. Since it was felt that this division of labour allows only with difficulty for the introduction of research on new or inter-disciplinary subjects, the Ministry of Education, in co-operation with the Science Council of Japan, has established research institutes which are physically located at particular national universities but are administratively independent. Many of the recently established institutes are so-called "joint" research institutes designed to answer the need for concentration of personnel, equipment and overhead expenditure above a "threshold" level. Such institutes have been set up for ocean science, for the study of the atomic nucleus, for space and aeronautical science, for protein research and in several other fields. They are open to researchers of all universities, and function as national centres for advanced research in their fields.

Science Policy Issues

Japanese science policy has begun to face, in the last two or three years, a set of policy problems which might be called "second generation" issues. The financing of research and development, while it is not yet as great or as well-defined as government planners would like to see it, has nevertheless increased greatly. The number of research personnel has also grown rapidly, through training or re-training, and now approximates current requirements, and the necessary changes in the training system seem to have been made to assure sufficient additional personnel for the near future. In short, the

quantitative problems which dominated the first two decades of postwar science policy have either been solved or are being systematically attacked and are on the way to solution. Problems of quality emerge as the principal "second generation" preoccupation of science policy advisors.

These quality issues take different forms but to some extent may be seen as problems connected with the institutional roles of industry, higher education and government. The examiners, who prepared the report on Japan for OECD, for the purposes of analysis conceived the research system as a triangle: at the three angles are the institutions among which are distributed the nation's research and development activity: "Because of its general responsibility for the maintenance and promotion of social values", the examiners note. "Government occupies the apex. The base angles are occupied by industry and the universities, which form the foundation of the research structure through production of material goods and cultivation of human talent. The base and sides of this triangle are conceived as channels through which ideas, funds and personnel flow in both directions. This flow is the life-blood of the system: without it, the concept is only geometry".

In concluding their report, the examiners

noted that this concept has still to be fully articulated: "Up to now, Japanese policymakers have been more concerned with effective utilisation of resources within institutions, since a willingness to transfer resources is partly a consequence of higher levels of expenditure. But in the next decade there will be a need and an opportunity for experiment with such transfers, beyond the present limited level.

"Not only funds, but ideas and people must move freely and flexibly, to and from the universities, Government, and industry. This form of movement depends not so much on increased levels of expenditure as on continuous and progressive re-thinking of the research needs of the nation. It requires new arrangements to promote consultation between various parties and the movement of resources of all kinds to the points of greatest need as they shift over time.

"Government has a large, but not exclusive responsibility for the progress of the research system. In the last analysis, industry will probably continue to be the leading spender for research and development and the leading employer of research personnel. Stimulating the kinds of co-ordination and mobility of which the system is inherently capable is, however, the appropriate area for government initiative. We are confident that policy leadership will, as in the past, be forthcoming."

1 A recent report of the Council for Science and Technology has raised this goal to 2.5 per cent.

HOW TO EMPLOY OUR ENGINEERS ?

(Based on a discussion initiated by Shri Hari Bhushan, Senior Industrial Adviser, Ministry of Mines and Metals in the second meeting of the Science Circle, ASWI, held on the 5th March, 1968, in the CSIR Conference Room, Rafi Marg, New Delhi).

The unemployed engineers are in the news these days. Newspapers are daily reporting the authorities' concern over the incidence of growing unemployment among the technically qualified manpower of the country. The estimates about unemployed engineers vary from 20,000 to 40,000. What is more serious is that the students expecting to pass out from engineering colleges and polytechnics, during the year 1968 and onwards face the gloomy prospect of unemployment for an indefinite period. Solutions like giving subsistence doles to qualified engineers or restricting admissions to the engineering colleges have been proposed by various persons. No one seems to have gone into the causes of this unemployment or the effect that the measures like the ones suggested above would have on the country's development.

This growing unemployment of engineers has led to some very obvious and significant conclusions. Firstly the majority of these engineers are from middle class families. These families have undergone severe deprivation in supporting the educational expenditure for these engineers. Their continued unemployment after graduation puts further strain on their dwindling economic assets, and exposes them to further sufferings. Secondly, this adds to the 'Brain Drain'. These engineers try to migrate to other developed countries and become a permanent loss to the home country. The public expenditure on training of these engineers goes waste and the developed countries are able

to recruit technically trained engineering personnel, to meet their own shortage, at no cost. Thirdly the severe economic strain compels these highly trained persons to take up jobs much below the level of their technical competence. This is gross mal-utilization of the country's human resources. It is intended in the discussion today to understand the paradoxical situation, analyse the contributing factors of the malaise and try to suggest remedial measures. Paradoxical, in the sense that is an accepted fact that in a developing country technical manpower is a scarce commodity, but in our country today this commodity seems to be an expendable surplus.

Recession in the economy is stated to be the major cause leading to this unemployment of engineers. A contributing factor is the slowing of the developmental tempo during the last 3 or 4 years. Ever since the end of the third Five Year Plan, the newer investment in industrial and economic development has been declining progressively. Their slowing down has been due to lack of resources—particularly of foreign exchange. A major proportion of scarce foreign exchange even in normal periods had to be diverted to import of foodgrains. The persistent drought conditions further aggravated the food situation resulting in heavier imports. Thus whereas the developmental investment has been gradually and deliberately retarded, the non-developmental expenditure has claimed a major share of scarce resources.

The other very important reason for unemployment of engineers is our infatuation with everything imported including goods, services, equipment, technology, tied credits, and foreign collaboration in package deals. The package usually consists of imported technical services, consultancy, design, and more often than not even the imports of equipment available within the country. Unless the country switches over in a big way to indigenous design engineering, consultancy services and reduces the quantum of imported equipment to the minimum, there is no likelihood of our engineers being enabled to gain confidence and competence in the national endeavour of making this country economically and technologically self-reliant. For example, instead of importing equipment worth more than 100 million dollars as at present if it were fabricated indigenously, it would give employment and experience to a very large number of engineers. In absence of this policy, we keep our engineers idle and unemployed while we provide employment, in foreign countries, to foreign engineers.

The government raised the superannuation age of its employees from 55 to 58, a couple of year ago. Recourse to this action was due to shortage of competent and qualified technical personnel. Administratively this measure has also contributed, though in a limited way, to the scarcity of job opportunities for young engineers at the higher levels of decision making. In a number of advanced countries there is a progressive trend to give opportunities to comparatively younger people to head the higher management positions. Lastly, the capacity of engineering colleges and polytechnics, had undergone a considerable expansion during the last three plan periods to match the needs for national development. This has resulted in greater output in number of engineers. If there were no slowing down of the developmental activities, and the other major industrial prog-

rammes had gone on as planned, this factor would not have so much operated in aggravating this problem.

So far, this discussion was restricted to the diagnosis of the disease, now we must try to discuss the remedial measures. Naturally, the most important basic remedy is to bring back the economy to same developmental tempo as initially planned. The quantum of autonomous investment must increase. If as is declared, it is the scarcity of resources that has held back these programmes, then a bold attempt should be made to mobilise the necessary resources. As an interim measure, for some time the recruitment to engineering colleges, must be stabilized at the present level. Restricting or lowering admissions to these institutes at this stage would be suicidal. This is because a student admitted today, would be available for employment only after a minimum period of 5 years. Restrictions on admission to technical and engineering institutions would create their impact after 5 years—at a time when these technical and engineering personnel may actually be in greater demand. However, we can utilize this slack period in concentrating on improving the quality of engineers turned out. Age of superannuation could be reduced to the original level of 55 instead of 58.

The technical posts or posts that require technical and scientific competence to discharge their duties, are now filled by non-technical administrative staff. These persons have neither the background nor experience or training to enable them to understand the technical problems that they are confronted with. As a consequence, they depend on the administrative approach to have a committee for advisory function. Too much time is wasted in leading to considerable delays and at times wrong decisions. This increases the economic cost of the decision making. It would

be in the interest of the economy and development if these posts are manned by scientists, technologists and engineers. This would cut inordinate delays and the decisions would be technically sound. Alternatively, at least 25% of recruitment in higher administrative cadre, e.g. IAS etc. should be reserved for engineers. This would be building up from the grass root the personnel who would be better suited to handle jobs in economic ministries which handle technical matters.

The preference for imported technology, know-how and equipment should be reduced to a bare minimum. As has been suggested earlier, this has major potentialities of absorbing bulk of our engineers.

Lastly, I wish to emphasize the role of self-employment as a remedy to this problem. The self-employment opportunities have not been fully exploited by our engineers. Maharashtra government has a scheme, where it gives land, supplies equipment on credit to the engineers, who wish to start their own business. So far the response has not been encouraging. If we give up our inhibitions about luxury goods like refrigerators, tape recorders and the like, and start or permit investment in these goods as well, I am sure the self-employment of engineers would increase and shall absorb a sizeable amount of our engineering graduates.

Shri Kamallesh Ray—I am very glad that the guest speaker has identified foreign package deals as one of the basic causes of engineering unemployment. I had also emphasized the same in my recent paper. I think if the ban on recruitment is lifted, by the government, a good quantum of unemployed engineers would straightway find jobs. As to the second point raised by Shri Hari Bhushan i.e. self-employment, I think it is the lack of

capital and the entrepreneurial ability of our engineers.

Shri Hari Bhushan—I would think that it is entrepreneurship rather than capital that is the crux of the problem of selfemployment. For example, HMT gives land, building and machinery to any entrepreneur, and also guarantees off-take of one year's production. But still the response is poor. It is, to my mind, a social problem rather than economic.

Dr. Zaheer—I think to meet the present crisis, the solutions based on slogan mongering would not help us much and may serve to divert attention from the major channel. We are spending far too much on defence and far too little on development. There is a distinct unbalance noticeable in the economy. We should undertake sectoral analysis in depth of industry, from its productive capacity and engineering employment potential. The data could then be used to draw up rational plans and redesign our priorities and programmes of industrial development.

Shri Kamallesh Ray—I think, the foremost question is how to energize the economy.

Shri A. Rahman—To my mind, the basic deficiency in our planning has been that it had no relevance to the development plans of the other developing and under-developed nations. India, has been, by and large, on the receiving end of foreign aid. If we had planned to assist the other under-developed nations, perhaps, we would not have faced this problem. Unlike Japan, while our bill on import of technical know-how and engineering hardware is sizeable, our expenditure on research and development is inadequate.

Shri Baldev Singh—This phenomenon of economic imbalance which has resulted in unemployment of engineers must be checked otherwise it is likely to spill into other sectors of scientific & technical personnel as well.

ASWI Activities

Bureau of C.E.C.

Following are the salient points arising out of several meetings of Bureau of CEC held during January-February 1968.

20TH ANNIVERSARY

A number of topics were suggested for the Special issue of the *Vijnan Karmee* to be brought out at the time of the 20th Anniversary of the ASWI; among them were (i) 20 years of ASWI-historical account, (ii) Reminiscences by past Presidents or members actively associated, (iii) Science in India since Independence, (iv) Science Policy and Scientific Community, (v) Reorganisation of Science in India, (vi) 20 years of World Science. Shri Baldev Singh was authorised to finalize the topics.

SCIENCE WEEK

It was proposed to organize a 'Science Week' to discuss topics of current interest, at the time of Council meeting. A Sub-Committee consisting of Dr. N.P. Gupta, Shri Baldev Singh, Dr. S.K. Roy, and Shri Y.R. Chadha was constituted to work out the details.

SCIENCE CIRCLE

It was proposed to organize a Science Circle to function as a regular forum for discussion on topics such as science and technology, science policies, social utilization of science, organizational problems, etc. Shri Baldev Singh and Shri Y.R. Chadha were asked to work out details.

Ordinance Establishments, Kirkee

The 21st Annual General Body meeting

of the Association was held on Sunday, the 18th February 1968. The following office bearers and the Executive Committee Members were elected for the year 1968:

1. Shri B.V. Manohar	President
2. Shri S.P. Saxena	Vice-President
3. Shri Pandharpur Narayan	Secretary
4. Shri S.V. Kulkarni	Treasurer
5. Shri B.G. Gore	Jt. Secretary
6. Shri S.R. Shaha	Member
7. Shri V.S. Raste	Member
8. Shri V.N. Joshi	Member
9. Shri G.R. Joshi	Member
10. Shri S.V. Kotbagi	Member
11. Shri S.G. Tamboli	Member
12. Miss K.K. Anand	Member

Jammu Branch

A meeting of the General Body of the Jammu Branch of ASWI was held on 9.2.68 which elected unanimously the following office bearers and executive committee members for 1968-69:

1. President	Dr. M.C. Nigam
2. Vice-President	Mr. M.M. Gandotra
3. General Secy.	Mr. B.K. Dutta
4. Jt. Secretary	Mr. R.K. Sahdev
5. Treasurer	Mr. Het Singh
6. Members of the Executive Committee	

Dr. K.S.M. Sastry
Dr. R.N. Bhat
Dr. B.J. Roy Ghatak
Shri V.K. Mehta
Dr. J.S. Chawla
(ex-officio member)

The General Body also approved the progress made by the Executive Committee for 1967-68 during its tenure and also passed the accounts placed by the Treasurer.

Karaikudi Branch

The following persons have been declared elected unanimously for the Executive Committee of ASWI Karaikudi Branch for the year 1968:

President	Shri N.S. Subramanyan
Vice-Presidents	Shri R. Srinivasan Shri K. Venugopal
Secretary	Shri K. Dakshinamurthy
Jt. Secretary	Shri S. Chandrasekaran
Treasurer	Shri T.P. Madhavan

Members of the Central Committee

Shri P.V.S. Subramanian
Shri K.S.A. Gnanasekaran

Members of the Executive Committee

Shri R. Subramanian
Shri G. Dorairaj
Shri S.M. Sukumaran
Miss R. Kausalya
Shri N. Venkatakrisnan
Shri N. Karuppannan
Shri V. Lakshminarasimhan
Shri T.P. Madhavan
Shri R. Kalyanasundaram
Shri P.V.S. Subramanian
Shri S.R. Natarajan
Shri S. Venkatesan
Shri K.R. Subramanian

(Continued from page 3)

mately Rs. 20 crores annually, we should have an investment of Rs. 80-100 crores to absorb it into our technological set-up. This investment should provide for employment of all our engineers and even larger numbers.

The successful implementation of some of the remedies suggested calls for a drastic overhaul of the administrative services particularly in the departments and ministries responsible for industrial development and technology such as the Ministries of Petroleum & Chemicals, Steel, Mines and Metals, Heavy Engineering, Irrigation & Power, Food & Agriculture, Transport, Works & Housing, Technical Education and Science etc. The machinery for decision making and decision taking in these should be manned predominantly if not wholly by scientists, technologists and engineers who have a better appreciation and perspective of the process of industrial development and its needs. Undoubtedly competent adminis-

tration ability is also a basic pre-requisite. For this purpose the other countries give specialised courses to engineers and scientists whom they consider as having necessary aptitude for administration. Whatever may have been the use of the administrative machinery controlled by pure administrative services in the years past, it has proved to be totally inadequate for a country which is passing through the throes of an industrial revolution and aiming to close the economic gap between itself and the advanced countries. May we suggest that this aspect has not received that attention from the highest quarters which it undoubtedly deserves. From the platform of the Association we would like to call upon the engineers and scientists to raise their voice in the forums available for a greater representation in the Parliament, in the Ministries and services so that their voice in shaping the destinies of this country is heard and their service made more effective.

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The Editor does not accept responsibility for the views expressed by
contributors in this Journal

Editorial

The Task Ahead

In April 1968, the Association of Scientific Workers of India celebrated the completion of twenty years of its existence. Sponsored in 1947, during 'eve of Independence' Session of Indian Science Congress Association, the ASWI continued to have its sessions along with the Science Congress for a number of years. There was great enthusiasm in the early years and branches and units sprang up in a number of institutes and organisations. Kindled with youthful hope and energy, the scientific workers looked upto ASWI as panacea for all ills in the field of scientific endeavour. ASWI achieved some modest gains by way of saving an instrument factory from being closed down, successful negotiations for favourable working conditions in an industrial concern, re-instatement of a scientific worker victimised on alleged political activities and recognition of the Union of Defence Science Workers by the ministry concerned. The journal of ASWI continued to make its appearance sometimes regularly and other times erratically. The organisation functioned fairly satisfactorily till middle fifties when there was a slump in its fortunes. Membership fee and activities touched a low ebb. They again caught up in 1958, were revived and touched a new crest in years 1964 to 1967. During the period a number of national and international meetings on problems affecting science in India and the developing countries were discussed and concrete decisions arrived at. Some of these have been carried out in practice. The Council of ASWI has met more regularly and devoted more time to understanding the problems of scientific

workers in various scientific organisations. The journal has been coming out more regularly and contributions from members have shown up. With the goodwill, sympathy and support of large numbers of scientific workers inside and outside its membership, ASWI has come to be recognised as a responsible organisation, which is playing a significant role in mobilising and directing scientific opinion in constructive channels while safeguarding the professional and social interests of the scientific community. However, in the days to come, challenging tasks lie ahead, which if tackled by ASWI with courage and wisdom, would help to put scientific effort and achievement in the forefront as measures of a national economic upsurge.

ASWI is pledged to create a climate and temper among the people favourable to development and growth of science. It has to fight superstition and prejudice and sectarian viewpoints of all types. Of late there has been a revival of medieval ideas, communal passions and regional and linguistic fanaticism. Some scientists have raised the banner of spiritualism, others have started extolling the virtues of Vedanta, Islam and Christian philosophy and theology. Undoubtedly religion has been and is still a great force which arouses deep emotions in vast numbers of human beings. There is a need to discard beliefs however sacred and reject ideas however popular which do not stand the test of scientific scrutiny. Scientific workers must actively campaign against religious and communal separatism and dis-

(Contd. on page 36)

Presidential Address*

by

N. P. GUPTA

Madam Prime Minister, colleagues and friends,

The Association of Scientific Workers of India celebrates its 20th anniversary this week. To mark this occasion the Association has organised a programme of a week's discussions on important topics such as:

- Science Policy and Organisational Problems
- Production and Policies in Indian Agriculture
- Scientific & Technical Manpower Policy
- Language Policy in Science
- Impact of Foreign Collaboration on Indian Research and Development
- Science Education in India

We have invited senior and younger scientists to express themselves on these subjects. Knowing your interest and personal commitment to science and the scientific community, we are indeed very happy that you could find the time to come and inaugurate the Science Week. Allow me, Madam Prime Minister to welcome you on this occasion.

Twenty years of ASWI

Twenty years have gone by. It is only natural for us to look back and survey this period and prepare ourselves to face the future. The Association was formed in 1947 with Jawaharlal Nehru as its first and Founder-President. Till 1964 we had the good fortune to have him at our meetings, to inspire the scientific workers to help build a modern and progressive society and fulfil

their social obligations. Many of us would recall how eagerly we looked forward to his presence amidst us at our annual meetings.

The Association of Scientific Workers of India was formed at a critical time of world history. Soon after the second world war, the scientists all over were shocked into realisation of their responsibilities towards humanity. The nuclear bombs dropped at Hiroshima and Nagasaki had revealed the tremendous destructive and constructive potentialities of science and technology. Powerful revolutions were sweeping across India and other Asian countries affecting nearly one half of humanity. The very foundations of colonial system had been shaken. The problem of development of the then 'backward' nations was on the agenda. The cold war phase of the two power blocs was just beginning.

At home, the era of Independent India was about to begin. India's industrial base was narrow. Vast majority of people were rooted to primitive methods of agriculture. Poverty, hunger and disease were rampant and widespread.

The Association was formed during such times with the following objectives:

- To promote the development of science in all its aspects and to maintain the honour and interests of the scientific professions.
- To ensure that the national resources of the country and also the results of

*On the occasion of the inauguration of the Science Week organised to mark the 20th anniversary of ASWI.

scientific research and development are utilised in the best interest of the community as a whole.

- To work for the most effective use of science and the scientific method for the uplift and welfare of the society as a whole.
- To improve and safeguard economic interests, conditions of life and the professional and social status of all scientific workers in India.
- To secure right to most suitable employment and adequate payment for work in accordance with the individual ability for all technically qualified and skilled men and women.
- To secure to the members full benefits which are allowed by their service rules.

On the occasion of the 20th anniversary of the Association allow me to mention and recall the services of some of its office bearers during this period. Late Dr. B.C. Guha worked as General Secretary, and later as President till 1953. Gen. S.S. Sokhey and Dr. S. Husain Zaheer guided its work as Presidents upto 1959 when Prof. P.C. Mahalanobis took over for a brief period. Later Prof. M.S. Thacker took over as President until 1952. The Association is proud to have received enlightened advice and guidance from such illustrious scientists. Today the ASWI have over 2,000 members spread over 25 branches and units in CSIR, Defence, Agriculture, PWD, and Universities.

The Association has made repeated efforts to bring to the notice of authorities the question of emoluments, pay scales and hierarchy among scientific workers and multiplicity of grades.

The Association has taken up with authorities and secured redress in cases of individual injustice or political or official victimisation. On questions of science policy and planning, social obligations of the scientific community,

scientific and technical manpower policies, research atmosphere and organisational set-up in science institutions, peace and disarmament, the Association has provided a forum for discussion among members and given guidance. The monthly journal of the Association 'Vijnan Karmee' has served to mobilise opinion among and reflect views of the scientific workers on day-to-day scientific and socio-scientific problems.

The recognition of the Defence Science Workers Association was one of our significant achievements. The Association has been asking for recognition by the Govt. of India as the representative of scientific workers. This has not yet been accepted and the matter continues to agitate the minds of scientific workers.

Twenty Years of Indian Science

Twenty years of freedom have transformed the face of India and of Indian science. Economic advance through India's three Five Year Plans has been recorded on all fronts. Indian industry has expanded. The heavy industry in the public sector is laying the foundation of independent economic development. Indian agriculture has faced many problems but this year's crop is an indication that a breakthrough has been achieved even with limited scientific effort. Social services have expanded and national income has grown.

Developments of great significance have also taken place in India in the field of science and technology during the last 20 years. The demands of a modern industrialised socialist society have led to a vast expansion of scientific and technical institutions in the country for education, training and research. We have now over 60 universities, many national laboratories and institutes under CSIR, the Atomic Energy Establishment, Defence Research & Development Organisation and the Indian Council of Agricultural

Research which serve the multifarious needs of the country. More than 20 research institutions under various agencies concern themselves with medical research. Institutions for training scientists in professional subjects like medicine, engineering, technology and agriculture have been set up. Some Ministries have their own research institutions such as railways, irrigation and power, minerals, communications and public health besides institutions dealing with statistics, standardisation, instruments and productivity. A few of the industrial establishments in the public and private sectors have set up their own research departments.

The scientific community which in 1947 consisted of a microscopic minority of scientists and research workers confined to few universities and research institutes has grown into a huge family of vast numbers spread in diverse spheres of the national activity. While in the past we had a few scientists who won repute by their researches, today we have scientific workers spread over universities and research institutions of CSIR, ICAR, ICMR, Defence, Atomic Energy, Railways as also those engaged in steel, chemical, engineering, textile and other industries. The character of the scientific community itself which at one time meant a few scientists has changed radically. Now scientific workers represent a creative and productive section of the people who have their urges, their economic and social problems and their special needs of proper atmosphere and conditions of work to give their best to the country.

Science Policy and Planning

The high water mark of development of science in India was the Scientific Policy Resolution of the Indian Parliament in 1958. Two conferences have been held to discuss the implementation. The resolution sought the key to national prosperity in an

effective combination of three factors; technology, raw materials and capital of which the first was considered most important. Through this resolution the Government of India aimed at offering good conditions of service to scientists and according them an honoured position by associating scientists with formulation of policies.

Allow me to recall that the second conference convened by the Ministry of Scientific Research and Cultural Affairs in 1963, recommended that roughly one per cent of the total national income be earmarked for scientific and industrial research for an impact on national development. The conference suggested the setting up of an Advisory Body consisting of representatives of the major government agencies, the universities and non-official scientific organisations and independent scientists of eminence to survey the entire field, determine priorities and programmes and advise Government on allocation of funds for projects of different bodies. The conference recommended simplification of the structure of scientific services with greater internal democracy for ensuring creative work. It recommended the need for design and engineering and consultancy services to ensure development of Indian know-how. Soon after, the Government announced the abolition of the Committee set up to watch the implementation of the recommendations of the second conference.

Last year, the Prime Minister invited a Round Table of scientists. The recommendations of this Round Table also cover the same ground. There is an inertia and energetic action is lacking. Scientific workers are looking forward to steps for the early implementation of these oft-repeated recommendations. On behalf of the Association we assure the Prime Minister whole hearted support to any action she may take to carry out the recommendations of these conferences.

Indian scientific development needs careful planning because resources are limited and foreign exchange needed for essential research materials even more so. Planning of scientific effort involves determining of priorities. Considerable home work by way of collection of data and facts on different aspects of scientific activity and its relationship to industrial and economic plans is required to achieve results. Some preliminary steps at collection of this data were initiated in CSIR a few years back. These have recently suffered a set-back. Appropriate machinery must be set up to collect scientific data in depth for planning and coordination of scientific effort.

Recent Reorganisation in CSIR, ICAR, etc.

The CSIR laboratories are in the public sector. Most of them are supposed to assist industry in the public and private sectors which has so far largely relied on foreign know-how. The CSIR scientists had little place in industrial development until recently when project work on well identified topics was initiated.

For over a year now, the newspapers have been full of disquieting reports about controversies on reorganisation in CSIR. Some of these proposals are reported to have already been put into effect. The Association has always held the view that all such changes which effect the working of scientists should be preceded by a full and frank discussion. Otherwise misgivings arise in the minds of scientists. Unfortunately the democratic method of discussion and exchange of views has not been followed and changes are sought to be introduced through executive actions. There are apprehensions that some of the gains that scientific workers achieved after years of representation are likely to be withdrawn.

The Association notes that consequent to recent discussions in Rajya Sabha the Prime Minister is to set up a Committee of scientific experts, Members of Parliament and others

to go into the working of CSIR. The Association which has more than a thousand members among CSIR scientists has asked for representation on the Committee. The Association feels that a lot of good can be done if this Committee is able to give a constructive lead on the goals and reorganisation of industrial research for needs of national economic development.

I would also like to refer to the way in which reorganisation process has been carried out in the sphere of agricultural research. Precisely at the time of acute shortages of foodgrains—the premier research organisation in agriculture—the ICAR has been passing from one organisational crisis to another.

It appears that decisions to reconstitute the ICAR were taken by the Union Government at the highest level in 1964. The proposals included making ICAR a fully autonomous body, putting all agricultural research institutes under its unified control giving enhanced powers and autonomy to leading research institutes.

With the changes, the scientists and other employees were asked to resign their posts and opt for service under ICAR resulting in chaos with regard to fixation of pay, issue of appointment letters, payment of arrears and dues and similar other difficulties. Here again the process of change excluded any discussion with the concerned scientific workers. Lots of these problems could have been avoided had agricultural scientific workers been consulted in advance and the issues involved discussed with them.

I must here also mention the situation of medical research in the country. There are over 20 research institutions which are engaged in medical research but they lie scattered—some are under the Ministry of Health and Family Planning ; others under ICMR, CSIR, DRDO, and the AEE. The

ICMR was one of the first research organisations to be set up in this country. The reasons of giving low priority to medical research are not understood. There has been a set-back in disease control programmes. Intensive research can help in these programmes of control and eradication of diseases. It is time that a reorganised and expanded ICMR is set up as an autonomous body with all the medical and health research institutes under its unified control. I may also record here that medical research workers have also their problems in regard to discrimination in pay scales and service conditions which need looking into.

The establishment of the DRDO has been brought about by amalgamating the Defence Science Organisation and some of the technical development establishments of the Army and the Air Force. There is a lack of coordination between various research organisations. Many scientists feel that apart from classified research there is much being done by DRDO which could be handled by civilian research organisations and university research centres.

The universities have meagre resources for science education and research. There is little coordination between poorly equipped university science centres and better equipped laboratories of the CSIR, Atomic Energy and other organisations. The latter only play a marginal role in higher education.

The absence of planning or planning from above without the participation of scientists who are to implement the programmes has been the bane of Indian scientific effort. Scientific activity should not merely be confined to the setting up of institutes and research stations by the government. Learned and professional societies should also be associated in this task. Hundreds of these societies are organised on a voluntary basis. They provide forum for respective scientists, teachers and technologists to meet and dis-

cuss academic and scientific matters of common interest. These societies play very important part in scientific life. They constitute the only sector where scientists work, discuss and argue on a voluntary basis and are generally free from the stifling administrative atmosphere of an institution.

Scientists' Staff Associations and Trade Unions like the ASWI are equally important in the vigorous pursuit of total scientific effort. Such associations lie scattered in different institutions and look after the welfare of their members. In most places such associations are only tolerated and often the authorities treat them with a certain measure of suspicion.

National Science Council

The Association of Scientific Workers of India firmly believes that a national and effective reorganisation and consolidation of the whole structure of Indian science is overdue. It has proposed the establishment of a National Science Council to coordinate all scientific effort in the country. The National Science Council should plan, integrate and evaluate all scientific effort in the country. It should indicate priorities and concern itself with all aspects of implementation of the science policy resolution. Its coordinating functions should embrace all science agencies such as the CSIR, ICAR, AEC, DRDO, ICMR, the science wing of the UGC and the institutions which now work under various ministries. For these functions it should have a competent and adequate organisational set-up and machinery.

The problem is not so much of setting up such a body but of its actual working. The ASWI believes that the National Science Council should have adequate, full and active representation from the three areas where scientists express themselves. The official representatives of various science organisations and concerned ministries would naturally be

included in it. Representatives of professional scientific societies should also be present. These societies should be fully supported by the NSC in their activities and should act as consultants to the NSC in their respective spheres. The third group should represent the staff associations and trade unions. This has yet to find acceptance. Opening up of the three channels of communications would ensure widest participation of scientists and scientific workers in the work of the National Science Council. One may even suggest that all governing bodies and scientific boards of institutions of higher learning should have representatives from these three groups and all the three channels be utilised for effective functioning of the institution itself.

Technology and Self-reliant Economy

The role of science and technology in developing our economy is recognised and accepted by everyone. Numerous conferences, seminars and symposia are held each year on various aspects of this problem. Historically speaking, Indian scientific effort preceded the setting up of industrial plants. But in 1950s Indian scientists were not consulted at any stage of setting up of an industry whether in public or private sector. Emphasis on turnkey plants and package deals based on foreign collaboration and expertise has been the basis of most of the industries. The crisis arose when foreign exchange became scarce and this came at a time of threat to our borders. For a brief period, a cry of import substitution could be heard everywhere. A conference of 'Research & Industry Get-Together' was organised by CSIR which suggested national projects and policy measures. Here again action is lacking. The atmosphere of 'challenge' before our scientists appears to have receded. This must be revived in the true spirit of national self-reliance. It is known that Japanese industries spend four times as much on research and development on techno-

logy in areas where they import technical know-how from other countries. Technology is not only to be imported but has to be assimilated in the technological system for further development and progress. The rate of scientific progress makes technology out of date and obsolescent. Without continuous research, the countries which only import technology face the danger of using obsolete technology sooner than they realise. It seems in India we may be faced with this situation.

Too often one hears from some leading scientists both in India and abroad that Indian research should confine itself to testing of raw materials and adaptive research on processes obtained from advanced countries. After all science is international, they argue. But being international has to be a two way process in which India should also contribute its share.

The Association believes that a massive scientific research and development effort in selective areas of technology is essential to make Indian economy really self-reliant. India cannot afford to base itself on so-called adaptive research alone. It has to link its scientific and technological effort to export promotion, import substitution and to create its own science based industries without permitting any slide back in effort.

Scientific Method and Scientific Temper

The Association of Scientific Workers of India believes in the use of scientific method for uplift of Indian society and the development of scientific attitudes and scientific temper among the people and society. Of late there has been an unfortunate recrudescence of communal, regional and other sectarian tendencies which have vitiated the atmosphere and hampered progress. The Association has on its files an instance where an organisation in Bombay attacked appointments in the well

known Haffkine Institute on the ground that the persons appointed did not belong to a particular State. The Association is aware of the fact that even among scientists, irrational and sectarian interests are making inroads. The recent wave of communal, regional and language riots should make every scientific worker sit up and think the way things are going. The third culture, as the Prime Minister mentioned at the Science Round Table in November 1967, of superstition, tradition and similar forces of inertia has to be fought in this country before it drowns the two cultures of the modern society. Many in our Association are dismayed that even among scientists in this country, one hears of spiritualism and revivalist thinking as against scientific attitudes. At the recent Science Congress the Prime Minister rightly put it when she said :

“Much of what is called tradition in our country is no more than a fossilisation of thought and habit. These layers of superstition and dead habit have no meaning in our time or relevance to our needs.”

The Association is aware of the stupendous task that scientists have to face in modernising Indian society. This task of creating scientific temper is made more difficult by the growing number of adult illiterates. The Association realises its responsibility and that of its members in creating an atmosphere and temper which may make for scientific progress.

Science and the Language Problem

The language controversy has clouded the minds of many even amongst us and has created tense, emotional attitudes in a large number. The Association has taken the attitude that science and knowledge should not remain confined to a few. The widest possible dissemination of scientific knowledge is possible only through the mother tongue or the regional language. But at the same time,

the Association has suggested that international scientific and technical terms be retained as such in all regional languages. The knowledge of English and other foreign languages is absolutely essential for Indian scientists to remain in constant touch with advances in science and technology in other countries. We as scientists are not merely concerned with dissemination of science. We have also to raise standards of science education, training and research. A knowledge of English will also be necessary for this purpose.

Scientists' Conditions of Work

Autonomy of organisations of science and higher education is generally accepted as one of the essential conditions of creative work. The recent political changes in various States should serve to further underline the necessity of zealously guarding the autonomy of research organisations, institutes and universities etc.

The Association of Scientific Workers of India has been in the forefront of the struggle for autonomy to maintain a climate of free enquiry, clash of opinions on all academic and scientific matters and for developing a questioning attitude so essential for any creative work. In scientific work, the new continuously replaces the old, sometimes slowly but sometimes suddenly when a major discovery ends an era or heralds a new one.

Autonomy has been eroded in various ways. Control of the finance department has continuously increased during the last 20 years. Every science organisation and scientist has the experience of its most important and vital demands rejected often in a penny wise pound foolish manner. The second area of autonomy, where heavy erosion has taken place, is through so-called 'planning units' of the Ministry. Every head or director knows that expansion of his department or

unit depends not on merit or needs of the country but on a plan 'hatched' by some one somewhere. Every scientist administrator has to have his own 'public relations' to keep contact with those who make or finalise plans. The no-plan period, through which we are passing, has created new problems because even existing jobs have been held in abeyance for purposes of economy.

The application of government rules and red-tape to all science organisations has done the greatest harm to the cause of rapid development of science and particularly in determining its quality. The annual confidential entries in the service book is considered one of the most important facet of a bureaucratic set-up. A research institute, a university or a science organisation cannot create an atmosphere of freedom if it also introduces the system of confidential reports. All research organisations and many professional institutes even today follow this practice of maintaining C. Rs. The spirit of enquiry is thus sacrificed. It is science itself which is demolished in the process and the whole nation suffers as a consequence. We in the Association over the years have ceaselessly campaigned against this system of C.Rs in academic and science institutions in the hope that some day Indian science will be freed from this stranglehold and allowed to flourish freely.

Lastly autonomy has been destroyed by an internal process of bureaucratisation. We have often asked the question: Autonomy for whom? The Director General, the Director, the Assistant Director or 'the project leader'? In a university does it mean the Vice-Chancellor, the Dean, the Principal or the Head of a department? What is the basic unit in an academic or research organisation which is or should be truly autonomous?

The fact of the matter is that authoritarian

attitudes are prevalent in most places. Only the officers in the hierarchy are allowed to have "autonomy" to enable them to establish their rule over other scientific workers who are treated as no more than employees. The vast majority of scientists and teachers have neither a sense of belonging nor do they participate in planning of programmes or building up the institution.

The autonomy of science and academic institutions must be made real by offering block grants. The application of government office rules and procedures must be done away with in academic and science institutions without any delay. There is an immediate need to formulate new sets of rules and regulations which simplify procedures and help in scientific work. The process of planning must be democratised and devolution of authority at various scientific levels ensured. Scientific workers should participate in preparation of plans for scientific effort at all levels.

Thousands of young intellectuals in service in public sector and other government and semi-government organisations during last 20 years after independence have been denied the right to express themselves on national issues. Scientists and the government have also to evolve new objective methods of assessment for promotion and selection of scientists. The present day method of working through advertisements, experts and selection committees may not be the ideal methods to meet our requirements.

Lastly internal democracy has to be created to unleash the creative abilities of the younger generation of scientific workers. This will require setting up of committees and boards of scientists at all levels in institutions and universities. We, as scientific workers, have to show through our own performance, that democratic functioning avoids delays and

waste and promotes quicker and better work.

Brain Drain, Scientists' Pool and Unemployed Engineers

The Association has always worked for the right of scientists to suitable employment and emoluments equivalent to the very best available in our social set-up. It has caused grave concern to scientists and members of the Association that recent employment policies of scientific and technical manpower appear to indicate a reversal of the Scientific Policy Resolution. Since the last two years the policy of active absorption of scientists, engineers and technologists overseas into the Indian technological set-up has been given up. Scientists abroad are almost made to feel that they are unwanted in the country. Within the country unemployment among engineers has caused anxiety to all sections of the people. This is spreading to other sections of scientific and technical personnel. Some are migrating to advanced countries causing 'brain drain'. It is generally accepted the world over, that scientific personnel are the most precious asset of a nation and a vital factor in its industrial and economic development and growth. It is paradoxical that in India they should be made to feel unwanted and surplus to its development needs. This position points to the need for a drastic re-assessment of our approach to scientific and industrial policies and a fundamental change in our administrative set-up. The Association feels that ministries and departments dealing with industrial and technological subjects such as petroleum and chemicals, steel, mining and metals, transport, shipping, communications etc. should be manned by technocrats—i.e. scientists who have been chosen for administrative aptitude and ability. There is also a need for depth analysis of our imports and exports particularly of capital and engineering goods and set a challenging

task to our engineers and scientists in Research & Development particularly in areas where technology is largely imported. The Association is of the view that a vigorous application of the policy of self-reliance is essential for proper employment of scientific and technical manpower and avoidance of 'brain drain'.

National Role

The Association of Scientific Workers of India is conscious of the role of science and technology in a developing country and has always tried to secure the attention of political parties and leaders to the scientific needs of the country. Political parties in India do not generally seem to concern themselves with the role of science in national development. The absence of any reference to these aspects in their published election programmes provides ample evidence of their indifference. Demonstrations, election majorities or defections do not help in the process.

The ASWI is affiliated to the Indian Parliamentary and Scientific Committee. The Association has suggested the setting up of joint committees of scientists and elected representatives of the people in State legislatures to discuss the use of science and technology in solving problems. The Association has also sponsored the 'Science Circle' in Delhi to organise round table discussions on various topics of interest to scientists, members of Parliament, teachers, economists and political leaders. The Association is convinced that such collective thinking on many national issues is necessary to provide solutions to the complex problems we face. This process could be helped by greater representation of scientists at decision making and decision taking levels as also in forums of public opinion such as the Parliament and the State assemblies.

International Outlook

The ASWI has had an international outlook from its very inception. The Association is affiliated to the World Federation of Scientific Workers which has organisations in over 40 countries and has consultant status with UNESCO. The ASWI is also the convener of the Committee set up by scientists from over 30 countries of Asia and Africa to promote collaboration between Afro-Asian countries for promotion and utilisation of science and technology. The first CAAUST Symposium was organised by ASWI with the assistance of the Ministries of Education and External Affairs of the Government of India. Negotiations are now going on for holding the second CAAUST Symposium in the near future.

The Association has periodically expressed itself on international issues affecting science and scientists. The Association has supported the stand taken by the Government of India on general disarmament and a total ban on nuclear and thermonuclear weapons. At the forthcoming meeting of our council we are discussing the proposed draft of a nuclear non-proliferation treaty and I am sure Indian scientists would fully support the stand taken by our Government on this subject.

The ASWI has demanded a stoppage of bombing in Viet Nam so that the people of Viet Nam can decide their own future without any foreign interference. The Association pays its homage to the indomitable spirit of the brave people of Viet Nam and welcomes the recent moves to open negotiations for ending the war and restoring peace to this great country.

Conclusion

The Association of Scientific Workers of India is an organised trade union. But we are a trade union of a different kind. While

we stand by the social and economic interests of scientific workers, we cannot remain satisfied by making claims. We are conscious of our responsibilities to science, to the government and to our people.

When we ask for democracy in science institutions we know that we have to guard against its misuse. If we scientists ask for a say in planning, we know that we will have to shoulder the responsibility to fulfil the targets. When we ask for a full implementation of science policy resolution and a place of honour for scientists, we are not asking privileged positions away from the needs and moods of the people. We are asking for essential conditions for science progress because no scientific advance can be made by a mass of frustrated and angry young scientists and technical men.

India today faces an economic crisis. What appears as political instability in places seems to frighten many. A new Indian society is yet to be born. It is not easy to organize human societies based on the willing cooperation and happiness of the maximum number. Towards this end, towards the building of a modern progressive and socialist society in India through the instrument of science and technology the ASWI pledges anew future years of hard labour.

I should like to close this address by expressing our gratitude to the Govt. of India through the Ministry of Education for giving a small grant each year. This modest sum has also not been received for the last three years. Some procedural difficulties have held up sanction. But we are not disheartened. We know that we cannot rest whatever the difficulties. We are also grateful to the Government through the Ministries of Education and External Affairs and to UNESCO for grants, help and encourage-

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INAUGURAL ADDRESS*

by SMT. INDIRA GANDHI

Prime Minister of India

Mr. President, Members of the Association and distinguished guests:

I have listened to your very comprehensive address. You have touched upon a large number of subjects on science, politics, economics, and perhaps it is right that you should do so, because I myself have been advising young scientists not to stay aloof from other areas of development and thought. You have, in the course of your address, also referred to a number of problems, certain grievances and very many shortcomings in our functioning. I am in sympathy with a great deal of what you have said and I am very glad that at the end you used a phrase—that you are not disheartened, because until you came to that portion I felt that there is a thread of frustration running through your remarks. But as you yourself said, that there was no country without its problems, least of all a country such as India, which is in the midst of vast changes and also on the threshold of yet more changes and which is passing through an extremely difficult period of development. At this time we cannot afford to have our bright youngmen to be frustrated or to feel that there is either no place for them or that the place is not as it should be.

It is true that science and technology should play a central role in our development. We, in the Government, are fully aware of this role and are sincerely trying to see that science and technology are given their rightful place and are used as instrument for changing the face of our country and raising the standards of living of so

many of our people who have for many hundreds of years been living in abject poverty and in conditions which are hardly human in some places. It is of course equally important that science and technology should be properly organised and that there should be coordination of scientific activity in the whole country. It is equally true that our bureaucratic procedure and red-tape do hamper our growth. This is not merely in the sphere of science but unfortunately in all our activities. Here again it is easy to say that we should certainly change the existing rules and procedures but it is not equally easy to do it. We are trying to see what changes can be made, how, what ways can be found so that our people's creative energies are not stifled. But when one looks around the world, one finds that one method may have many drawbacks but there is hardly any other method which is completely free from drawbacks. So it is a question of balancing all the time, whether it is in the system of Government or system of procedure. No matter, what path you pursue, there will be difficulties and we have to prepare ourselves to face those difficulties and to treat them as a challenge in our work and in our development.

Obviously, there is need to involve scientists and technologists in the process of planning and in the very great necessity of moving towards self-reliance and self-sufficiency in our economy. We have perhaps not done enough in this direction but we are trying to move and to see to what extent this is possible.

* On the occasion of the inauguration of Science Week organised to mark the 20th Anniversary of ASWI.

I shall certainly look forward with interest to the results of your discussion and to the recommendations which you might make.

We have not moved ahead in some desirable directions to the extent we should have done or as quickly as we should have but I personally don't feel that there is room for frustration. When one sees what has to be done still, or what has not been done, it is true that the area is so vast that it is frightening. Yet we get encouraged when we see what has been done in the extremely difficult circumstances of a changing society, changing from one age to another, changing from a feudal system to a democratic system. We are facing not only the problems which other countries faced perhaps a hundred years ago but along with that we are also facing the problems which these countries are facing today and have faced in the last few years. So our difficulties are bound to be far more complex and far greater than those perhaps, of any other country and as we develop, those difficulties are not going to lessen. We have to be fully aware of this fact that for considerable time, to come, the more we advance, the more difficult path will there be. Young people must also face this fact that in all countries the young have had to face enormous difficulties before they have been able to make a break-through. This happens in every generation but certainly it does happen more in a country like India where, as I said, we are fighting battles at the same time and while there are these difficulties and obstacles. It is also true that no nation, no group or even no individual has been able to grow in stature without facing difficulties. Nobody who has an easy path has risen to any great height. It is those who have pioneered and have battled, who have been able to raise not only themselves but their whole country. It is only if you view the obstacles in that shape of challenge which is worth facing and meeting, that you

will be able to overcome them. Life in India is complex and difficult enough for us and we should not make it more so by giving way to frustration.

You have mentioned some of your grievances. I don't think that you expect me at this point to go into all these items or to provide answers. But I can say that the Government is fully alive to the problems of science in our country and if we have not always been able to give these problems the priority which they deserve or the necessary attention, it is because we have been passing, as I said, through extremely difficult phase where problems of the moment have occupied our attention and absorbed much of our energy.

You mentioned in your speech something which I have said earlier, about superstition. I would like to devolve on this point because it is a matter of constant astonishment to me how people expect to live their lives in compartments. We cannot be physicists in our laboratories and escape into meta-physics when we go home. We cannot be devotees of science accepting the rigours of its methodology and yet give ourselves upto superstition. We cannot deal with phenomena of nature and society as objective reality and react to them in a subjective manner. Therefore, when I saw your invitation, the phrase 'Science Week' caught my eye. I knew what you had in mind: a week of scientific discussions and popular lectures, yet the phrase 'Science Week' struck me as strange and perhaps the whole unconscious reflection of the state of our society. Science is a discipline, a method and attitude, a storehouse of knowledge. It is this method or approach which is termed the scientific mind. Is it possible to have a week of science and for the remaining 51 weeks, live in superstition? Science is based on rationality and objective truth. It seeks not merely to observe and describe the funda-

mentals but to understand man and nature. Even in this process of subjective or reflective enquiry by the scientists, philosophers or social scientists, the argument is always rational. In India, as I said, we live in many ages and at many levels.

Later this year our first nuclear power station is going to be commissioned in Tarapore while millions of our people use cowdung in their hearths. Only a few years back when I visited NEFA I went to a place where they had never seen a wheel or they had no conception of any object like wheel. They had bypassed the eras of wheel barrow, bullock cart and the first wheel they saw was the wheel of a Dakota. So the different levels are an attribute of poverty and lack of development. But we have in our country another category of persons who are educated in the sense of being to schools and colleges and are not oppressed by poverty but even amongst those we do find a strange co-existence of science and superstition, of reality and prejudices. As I said that it is most important to create a scientific temper amongst our people and scientific way of looking at life and all that is rational and for this it is necessary that the Government, Universities and Associations such as yours, make the scientific mind, the scientific habit, a part of our life and of our very being. We cannot make do with just a science week. We live in a scientific era and if we do not recognise this fundamental truth and live and act upto it then it will not be well for our country.

This year we have been blessed with a good harvest. Certainly the weather was kind and the rains timely and adequate. Basically the good crop signifies a transformation or technological change in Indian agriculture. The use of high yielding seeds, fertilizers, pesticides with other improved farming practices has brought about a qualitative change. There

is something like a scientific revolution in farming in the same way as the simple villagers know that vaccination can prevent disease and that there are scientific method of family planning and preventing birth. In both cases science can only be applied in a certain social climate when people's minds have been conditioned to change. Recently, as some of you might have read, a distinguished Dr. Myrdal has written an elaborate thesis entitled "Asian drama and enquiry into the poverty of nations". It is not possible to agree with all of his conclusions but there is a great force in his observation that perhaps more than anything else, developing nations of Asia need structural changes in their society which will enable them to move forward on the road of economic and social development. The most important structural change is the acceptance of the scientific method and the creation of a universal social climate in which the rational enquiry and a scientific approach have come to stay. Here I would like to draw attention to a fact which should be clear when I talk of superstition or tradition. I don't mean that all that is old or all that is Indian is necessarily superstition. We have in the realm of medicine, even in the realm of science, something which was done in this country a very long time ago but we have to wait for outside doctors, outside scientists to discover them. I think that the time has come today when we should give a new look to some of our ancient things. It may be that much of it is of no use or no value but it may be that there are things of value which can help us, whether in the realm of medicine or in other spheres and we must make that attempt ourselves and not wait to be rediscovered for us by outsiders. As science is, the Members of this Association and other scientists are the principal carriers of scientific knowledge and attitude. Yours is a wider responsibility than just to work in a laboratory. You have a social responsibility in

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CEC Meeting

A meeting of the CEC was held on April 11, 1968 at 9-30 a.m. in the IARI Auditorium, New Delhi. The following were present with Dr. N.P. Gupta in the Chair :

1. Dr. N.P. Gupta (President)
 2. Dr. Rais Ahmed (Vice-President)
 3. Dr. Y.V. Kathavate (Vice-President)
 4. Shri Baldev Singh (Gen. Secy., Pub.)
 5. Shri Y.R. Chadha (Gen. Secy., Org.)
 6. Dr. S.K. Roy (Treasurer)
 7. Dr. N.M. Khanna
 8. Dr. M. G.R. Menon
 9. Shri Ram Prasad
 10. Shri K. Dakshina-
murthi (Karaikudi)
 11. Shri N.S. K. Murthy (Dehra Dun)
 12. Shri R.C. Tewari (CSIR, New
Delhi)
 13. Shri P.C. Sen (Jamshedpur)
 14. Shri Syed Sirajul
Husain (Hyderabad)
 15. Shri B.K. Dutta (Jammu)
 16. Shri U.W. Datey (Dhanbad)
 17. Shri V.N. Misra (Durgapur)
 18. Shri K.S. Krishnan (IARS, New
Delhi)
 19. Shri Kartar Singh (University, Delhi)
2. Minutes of the last CEC meeting held on March 10, 1967 and published in Feb.-March 1967 issue of Vijnan Karmee, were taken as read and adopted.

2.1 *Matters arising:* On enquiry from Shri Murthy concerning the Building Fund, Dr.

Roy stated that total collection so far was only Rs. 102/- under the head. Dr. Gupta informed the members that the efforts to have a room for the Centre in some central place in New Delhi had not been successful because of the exorbitant rents. Some members suggested that the Bureau might try to secure land for the building from some Government agency free of cost. It was, however, felt that it was not possible to get any land absolutely free of cost.

3. Agenda for the Twenty-first Council was discussed and approved with certain modifications.

4. *Reports*—The reports of the General Secretaries, and Treasurer were approved for presenting to the Council meeting. These reports were discussed in detail in the Council meeting.

5. General Secretary (Publications) reported that for the last two years or so, Vijnan Karmee was being sent to the members of ASWI individually by post. The ASWI members were entitled to VK free of cost. He also mentioned that a number of complimentary copies of each issue of VK were being sent to some members of Parliament, other eminent persons and to the WFSW and its affiliated bodies. The mailing list presented to the CEC was approved.

The meeting ended with a vote of thanks to the chair.

Annual Council Meeting

The Twenty-first Annual Council meeting of the ASWI was held on April 11 and 12, 1968 in the IARI Auditorium, New Delhi. Dr. N.P. Gupta, President of ASWI, was in the Chair. The following were present:

- | | | | |
|----------------------------------|------------------------|----------------------------|------------------------|
| 1. Dr. N.P. Gupta | | 30. Shri A.N. Mukherji | (NML,
Jamshedpur) |
| 2. Dr. Rais Ahmed | | 31. Shri N.S.K. Murthy | (IIP, Dehra Dun) |
| 3. Dr. Y.V. Kathavate | | 32. Shri Gururaja Rao | (CFTRI, Mysore) |
| 4. Shri Y.R. Chadha | | 33. Smt. Indira A.S. | (CFTRI, Mysore) |
| 5. Shri Baldev Singh | | Murthy | |
| 6. Dr. S.K. Roy | | 34. Shri J.R. Iyengar | (CFTRI, Mysore) |
| 7. Dr. Rajat De | | 35. Shri B.N. Shanka Setty | (CFTRI, Mysore) |
| 8. Shri R.C. Tewri | (CSIR) | 36. Shri P. Vasudeva Rao | (CFTRI, Mysore) |
| 9. Shri S.B. Deshaprabhu | (CSIR) | 37. Dr. N.M. Khanna | (CDRI, Lucknow) |
| 10. Dr. K.V. Rao | (NDRI, Karnal) | 38. Dr. K.B. Mathur | (CDRI, Lucknow) |
| 11. Dr. N.K. Roy | (NDRI, Karnal) | 39. Dr. M.M. Bose | (BSIP, Lucknow) |
| 12. Dr. Mudghal | (NDRI, Karnal) | 40. Dr. P.K. Maithey | (BSIP, Lucknow) |
| 13. Dr. M.G. Ramdas
Menon | (IARI, Delhi) | 41. Shri Kartar Singh | (Univ. Delhi) |
| 14. Dr. M.N. Sarin | (IARI, Delhi) | 42. Dr. Yagya Dutt | (Univ. Delhi) |
| 15. Shri N.K. Bhaghia | (IARI, Delhi) | 43. Dr. Y.P. Oberoi | (Univ. Delhi) |
| 16. Dr. S.K. Mukherji | (IARI, Delhi) | 44. Shri T.N. Ranganathan | (CMERI,
Durgapur) |
| 17. Dr. R.K. Bhradwaj | (IARI, Delhi) | 45. Shri V.N. Misra | (CMERI, Durga-
pur) |
| 18. Shri R. Kalayana-
sundram | (CECRI,
Karaikudi) | 46. Shri S. Sirajul Husain | (RRL, Hyderabad) |
| 19. Shri K. Dakshina-
murthi | (CECRI,
Karaikudi) | 47. Shri A. Upendra Rao | (RRL, Hyderabad) |
| 20. Shri Ram Prasad | (NPL) | 48. Shri K.S. Krishnan | (IARS, Delhi) |
| 21. Shri Devender Singh | (NPL) | 49. Shri A.H. Manwani | (IARS, Delhi) |
| 22. Shri B.K. Dutta | (RRL, Jammu) | 50. Shri S.S. Pilai | (IARS, Delhi) |
| 23. Shri P.S. Johar | (RRL, Jammu) | 51. Dr. B.V. Ranga Rao | (CSIR) |
| 24. Shri R.K. Sahdev | (RRL, Jammu) | 52. Dr. B.V. Subbarayappa | (NISI, Delhi) |
| 25. Dr. R.N. Chakravorty | (CMRS, Dhanbad) | | |
| 26. Shri U.W. Datey | (CMRS, Dhanbad) | | |
| 27. Shri D.P. Tarafdar | (CMRS, Dhanbad) | | |
| 28. Shri P.C. Sen | (NML, Jam-
shedpur) | | |
| 29. Shri A. Ghosh | (NML, Jam-
shedpur) | | |

The Secretaries of the ASWI at Khamaria and Kirkee sent their best wishes for the Twentieth Anniversary of ASWI but regretted their inability to send any delegate to the Council meeting because of lack of funds.

After the introduction of the delegates, the Council discussed and approved the following agenda :

1. Condolence Resolutions
2. Minutes of the 20th meeting of the Council

3. Matters arising out of the minutes of the 20th meeting.
4. Reports
 - Reports from the Branches
 - Report of General Secretary (Organisation)
 - Report of Gen. Secretary (Publications)
 - Report of the Treasurer
 - Report on ASW-CSIR
 - Report on CAAUST
 - Report on World Federation of Scientific Workers
5. Recognition of ASWI
6. Discussion on the Reports
7. Amendment to the constitution
8. Resolutions
9. Elections
10. Any other matter

Shri Ram Prasad (Delhi) and Dr. P.K. Maithy (Lucknow) were appointed as recorders for the meeting.

1. Condolences

The following resolutions were passed. The Council members observed two-minute silence in each case:

1.1 "The 21st Council of the ASWI expresses its deep sorrow at the premature and tragic death of one of its members from CFTRI, Mysore, *Shri K.L. Narasimha*, as a result of laboratory accident. The Institute as well as the ASWI has lost a silent but dedicated scientific worker who died in harness. It offers its heartfelt condolence to the bereaved family."

1.2 "The 21st Council of the ASWI places on record its deep sense of sorrow at the death of *Yuri Gagarin*—the first human cosmonaut. By his feat, Gagarin had acquired the status of a citizen of a new world. The members of the ASWI Council offer their sincere condolence to Gagarin's family and the people of the USSR."

1.3 "The 21st Council of the ASWI places on record its deep sense of sorrow and anguish at the death of *Dr. Martin Luther King* who stood for peaceful non-violent methods for his campaign for securing the legitimate rights of people of Negro origin and for an end to the war in Viet Nam. The Council offers its sincere condolence to the members of the King's family."

2. Confirmation of the minutes of the 20th Council meeting:

The minutes of the 20th Council meeting held on March 11-12, 1967 and already published in February-March 1967 issue of *Vijnan Karmee* were taken as read and confirmed.

3. Matters arising out of the minutes

3.1 On the various resolutions passed in the last Council meeting the Branch Secretaries reported the progress of action taken and the progress made by them. It appeared in general not much headway had been made in most of the re-solutions.

3.2 Dr. Gupta informed the Council members that during the last year, General Secretary (organisation) *Shri Subramanya* could not devote sufficient time to ASWI because of his official preoccupations, being out of station on tour most of the time. *Shri Y.R. Chadha* had to be requested to look after the work of this office since December 1967. He also briefly mentioned how the Centre had been busy with the celebration of the 20th anniversary of the Association and threw some light on the 'Science Week' programme. The Council authorised the Bureau of CEC to pass suitable resolutions on the outcome of various discussions held during the 'Science Week'.

3.3 The Council delegates felt concerned that such progressive practice as 5-year assess-

ment rule in the CSIR Laboratories had not been applied to all categories of scientific workers. It was emphasised that the CSIR authorities be urged to expedite the benefit of this rule to all categories of scientific and technical workers in the CSIR.

4. Reports

4.1 The Branch Secretaries reported briefly the activities undertaken during the year.

4.2 The Reports of the General Secretary (Organisation), General Secretary (Publication), the Treasurer along with the Audit Report and audited statement of accounts for 1966-67 and the audited statements of account of CAAUST Symposium and the reports on ASWI-CSIR, CAAUST and WFSW were presented. It was decided that the reports be discussed together. (Text of Reports are given in Appendices).

5. Recognition of ASWI

The necessity for recognition of ASWI was stressed by many of the members. It was decided that two Special Secretaries be appointed, one to look after the problems concerning the branches in the CSIR and the other in ICAR, and they would take steps to approach the appropriate authority for recognition of ASWI-CSIR and ASWI-ICAR.

6. Discussion of Reports

6.1 The Council members were of the view that special efforts be made to raise the Building Fund for the ASWI. Several members made donations towards the Building Fund and Rs. 192/- were collected on the spot. Branches were requested to make further collections.

6.2 The financial position of the ASWI was discussed in detail. In view of the Centre running a big deficit, the Council decided to raise with immediate effect the membership

subscription to Rs. 6/- of which the share of the Centre would be 50%. The Council also requested members to persuade the ASWI members to pay additional Rs. 4/- as special donation to the Association.

6.3 The members expressed satisfaction on the improvements effected in Vijnan Karmee. Some members were doubtful of the advisability of the publication of an article which in their view was a personal attack on an eminent Indian Scientist. The Editor explained that the said article in VK commented only on the views and opinions of this scientist on spiritualism which he has expressed from the platform of a Scientific organization. The article was of very good standard and could in no way be construed as a personal attack on him. Several members felt the need for ASWI generating a movement for eradicating superstition from among the scientific workers.

6.4 All the reports were adopted unanimously, after full discussion. It was also resolved to appoint M/s. K.C. Gupta & Co. Delhi, Chartered Accountants, as Auditors of the Association for the Year 1967-68. The fee to be given to the Auditors was to be negotiated by the Bureau with them.

7. Amendment of the ASWI Constitution

7.1 Since most of the branches had not considered the amendments to the constitution, this item was postponed to the next Council meeting. It was decided that the draft amendments be again circulated to the Branch Secretaries, CEC Members and the Council delegates. It was also felt that in view of the proposed formation of ASWI-CSIR and ASWI-CAR the Constitution may have to be further amended to include a suitable provision.

7.2 The Council decided that annual subscription be raised to Rs. 6/- per annum for ordinary members; the subscription for asso-

ciate members would remain the same. It was decided that the Centre's share, which is 45% at present, be increased to 50% (vide para 6.2)

8. Resolutions

8.1 The following committees were set up by the Council for preliminary screening and giving proper shape to the various resolutions received from different branches:

Resolutions on Service Conditions

Shri K. Dakshinamurthi	Karaikudi (Convener)
Shri N.S.K. Murthy	Dhera Dun
Shri J.R. Iyengar	Mysore
Shri U.W. Datey	Dhanbad
Shri Y.R. Chadha	New Delhi

Resolutions on ICAR

Dr. M.G.R. Menon	IARI, New Delhi (Convener)
Dr. N.K. Ray	Karnal
Shri K.S. Krishnan	New Delhi
Dr. Y.V. Kathavate	New Delhi
Dr. Rajat De	New Delhi

Resolutions on national issues

Shri R.C. Tewari	New Delhi (Convener)
Dr. M.M. Bose	Lucknow
Dr. R.N. Chakravarty	Dhanbad
Shri Baldev Singh	New Delhi

Resolutions on Organisational matters

Dr. S.K. Roy	New Delhi (Convener)
Shri B.K. Dutta	Jammu-Tawi
Shri Syed Sirajul Husain	Hyderabad
Dr. Rajat De	New Delhi
Shri Ram Prasad	New Delhi

Resolutions on International issues

Dr. B.V. Ranga Rao	(Convener)
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Shri V.N. Misra
Dr. N.P. Gupta

Resolutions arising from the Science Week programme

Bureau of the CEC

8.2 The following resolutions were considered and adopted.

SERVICE CONDITIONS

8.2.1. Termination of service

Preamble: In the recent past ASWI, CMRS Branch, Dhanbad received a representation from one of their members informing that his services have been terminated without assigning any reason and without giving him a chance to defend against the unilateral action. It seems that this is in accordance with existing service rules. Since the scientific worker concerned is yet on probation, although he has served a number of years, it is a grave injustice that while the appointment of a scientific worker is made on the recommendations of a properly constituted selection committee, the decision for his dismissal is left to a single individual. ASWI CMRS Branch has taken a very serious view about the whole situation and in an emergency meeting (1.6.1967) of the branch executive the following resolution was adopted un-animously.

Resolution: "The Council of ASWI requests the Government of India that the CSIR service rules in force should be so amended as to give every scientific worker including those under probation, a chance to explain the charge against him prior to taking a punitive action. The charges made against a scientific worker should be specific. A properly constituted Committee should examine the charges and the explanations given by the worker. The final decision should be based on the recommendations of this Committee."

8.2.2. Five Year Rule

Preamble: "We welcome the recent decision of the CSIR to review cases for promotion, independent of vacancy of posts, whenever a scientific worker completes 5 years in one grade. This is a progressive step. However this provision, as at present, does not apply to all scientific workers and is confined to the categories of SSA/STAs and above. The resulting exclusion of other categories (JLAs, SLAs, JSAs and JTAs) from the purview of this rule is neither fair nor logical, and only creates dissatisfaction among the scientific workers concerned. The members are greatly concerned at this discriminating decision and strongly feel that in the interest of the workers and efficiency of their work, all categories of scientific workers should be covered by the five year rule.

Resolution: The Council reiterates the resolution on five year assessment rule adopted last year. It further adds that other cadres of scientific and technical personnel like chief glass blower and senior Foreman be also included in assessment. The Council adopts that this be taken up with the concerned authorities.

8.2.3 Increment restoration in SSA/STA scale

The Council reiterates resolutions passed in 1966 and 1967 that the rate of annual increment of SSA/STA be increased to the original Rs. 25/- as against the present rate of Rs. 15/-

8.2.4. Insurance against injury when on duty

Instances have come to notice when scientific and technical workers have suffered major or minor—sometimes even fatal injuries. The Council reiterates the following resolution adopted in 1966.

Resolution : It is resolved that a scheme of insurance should be worked out in consultation with CSIR and other scientific and tech-

nical organisations to take care of both temporarily and permanently injured personnel when on duty. The details of the scheme may be worked out by a Separate Committee to be formed for this purpose.

8.2.5 State Local taxes payable by Central Govt. Employees

Preamble: The CSIR and other central Govt. employees serving in U.P. are being taxed on the same income more than once now, in addition to the Central Income Tax. Those additional taxes are the UP State Profession Tax and the Circumstance and Property Tax (C&P Tax) the latter being applicable to out of town areas in various districts, IIP situated in Mokhampur being one such out of town areas.

Already a resolution jointly passed by the ASWI and IIP Colony Welfare Association requesting that the CSIR bear the C&P Tax burden, is resting with the Vice-President, CSIR.

The employees of the IIP are paying the Profession Tax since 1965-66. The rate of this tax ranges from 1% to 2% on the annual income range of Rs. 3,500/- to 12,000/- and above. This is a drain on the income of the Central Govt. employees who already pay the Central income tax also. Other CSIR employees in a *majority of the States* of the Indian Union are not required to pay any tax other than the Income Tax. Thus, just for the fault of locating the IIP in U.P. its employees are being depleted of their income by way of local taxes. Staff Council of the office of the CDA (AF), Dehra Dun has also adopted a resolution forwarded to all Central Government offices located at Dehra Dun by the Controller of Defence Accounts.

Resolution: It is resolved that the profession tax levy paid by each employee should be

reimbursed to the employee by the employer (i.e. the CSIR, ICAR, as the case may be) with retrospective effect. Also it is resolved that all future levy of this tax be directly paid by the ICAR, CSIR and the Govt. Departments to the State Govt. thus freeing employees from burden.

8.2.6. Advance Increments to Engineering Graduates

Preamble : At present CSIR grants four advance increments to M.Sc. degree holders on being appointed as Junior Scientific Assistants. But first class engineering and medical graduates who have gone through equal or even more number of years of university education as the M.Sc.'s, are not given any advance increments when appointed as J.S.As. This is gross injustice.

Resolution: Resolved to request CSIR to grant four advance increments to I Class Engineering and Medical Graduates, appointed as Junior Scientific Assistants in CSIR Laboratories, as such grants are offered to I Class Master Degree holders in Science, when appointed as Junior Scientific Assistants.

8.2.7. Study Leave

The Preamble for this is given in Sept. 67 issue of Vijnan Karmee.

It is resolved that facilities must be provided for study leave for scientific personnel.

8.2.8. Abolishing of the Grade of Scientist A/AI—JSO/JTO

The preamble for this is given in Sept. 67 issue of Vijnan Karmee.

It is resolved that the above post/posts should be abolished in order to create a better atmosphere for scientific research.

8.2.9. Special Casual leave to ASWI delegates

Preamble : Delegates of Recognised Unions/Associations are allowed by Govt. of India to attend its all India meetings on special Casual Leave. The associations were utilising the facility upto now. Recently the Ministry of Defence put restriction on the number of delegates attending All India meetings. Accordingly only one delegate of a branch/Affiliated association, irrespective of the membership can attend All India meetings with the permission of availing Special Casual Leave.

Therefore Special Casual Leave should be granted to delegates in proportion of 2% of the membership of a branch/affiliated association or as per the constitution of the Central Association.

Resolution

“Resolves that Ministry of Defence, Govt. of India should not put restriction on the number of delegates of Recognised Unions/Associations from a branch/affiliated association on attending All India meetings. The restrictions will hinder the Trade Union activities—a Democratic right given by the Indian Republic. The delegates, 2% of the membership of the branch/affiliated association or as per the constitution of the central association should be granted Special Casual Leave.”

8.2.10 Filling of vacant posts in CSIR/ICAR by promotion

Preamble : In some organisations under the control of Government of India e.g. NCDC, ONGC; HEC etc. departmental promotions on the basis of service and experience are there. In vacant posts the internal candidates get a chance of promotion and a suitable proportion of the vacant posts are filled up by the internal candidates. In

filling up CSIR/ICAR vacant posts of various cadres, similar arrangements should be made.

Resolution : It is resolved that CSIR/ICAR should be urged to fill up a suitable proportion of the vacant posts by promotion to higher grades from the internal candidates.

B. ORGANISATIONAL MATTERS

8.2.11. Refusal of facilities for ASWI meetings

The ASWI Unit at the Birbal Sahni Institute of Palaeobotany, Lucknow repeatedly requested to their authorities, i.e. the President, Palaeobotanical Society to grant permission to hold meetings of the Unit inside Institute premises, but on all the occasions the permission for holding the meeting inside the Institute premises was not granted. Therefore the Unit requests the CEC and Council of ASWI to pass a resolution requesting the Ministry of Education to issue a directive to the authorities of the Birbal Sahni Institute of Palaeobotany to grant permission to the Unit of ASWI at BSIP to hold its meeting inside the Institute premises.

Resolution : The Council meeting of ASWI records it regret at the non-availability of the facilities for holding the meetings of the ASWI Unit at the Birbal Sahni Institute of Palaeobotany by the authorities of the Birbal Sahni Institute of Palaeobotany. It is therefore, resolved that Minister of Scientific Affairs in the Ministry of Education be approached so that necessary directive be sent to the authorities of the Birbal Sahni Institute of Palaeobotany to grant facilities to the Unit for holding its meeting in the premises of the Institute.

A similar difficulty was reported by the Dhanbad Branch also. The Council resolved

that the Government should be approached to intervene and restore legitimate rights of scientific workers in these institutes.

Resolved : Resolved that Council regrets to note the denial of facilities by various employers to some of the branches of ASWI.

8.2.12 Appointment of Special Secretaries for CSIR / ICAR Affairs

In a meeting of Branch secretaries of ASWI Branches in CSIR laboratories held in the IARI auditorium at 11.15 AM on the 11th April 1968 the following resolution was passed:

“The meeting of the Branch Secretaries of the ASWI branches in CSIR laboratories recommends to the Council that a special Secretary in the ASWI Secretariat be elected who shall look after the affairs and problems of CSIR scientific workers. He will also be responsible for examining and preparing the ground for forming the CSIR Scientific workers association and report in six months time the progress thereof”.

The Council considered the above proposal and agreed to elect special secretaries for CSIR and ICAR affairs.

8.2.13 Agricultural Research in India

Preamble : The Council has given considerable thought to the food problem of the country and the role that agricultural research can play in attaining self-sufficiency. The new strategy in Agriculture, with high-yielding seeds developed through the application of modern genetical technology, better fertilizer and irrigation facilities, improved plant-protection methods, and multiple cropping has made the condition better. Likewise contribution is possible in the related realms of animal husbandry, veterinary sciences, etc. with the application of modern methods of

Science. Persistent and undaunted efforts of the scientific workers on the agricultural front form an indispensable necessity for the realization of the goals.

While it is necessary to free the working scientists from the bondage of administrative constraints to accelerate the tempo of their research activities, the Council notes with great regret that the recent administrative reorganisation of agricultural research has been brought about chaos and confusion on this front.

The Council therefore, urges that :

Resolutions

8.2.13.1

A suitable Bill should be brought before the Parliament without further loss of time declaring the Indian Council of Agricultural Research as a fully autonomous body with well-set and precise rules, regulations and bye-laws formulated in consultation with the agricultural scientific workers and spelling out in unambiguous terms the advantages to be gained by the formation of such an autonomous body and the benefits that would accrue to the scientists presently engaged under the Government if they join such a body.

8.2.13.2

Raise the status of scientists working in Indian Council of Agricultural Research by way of introduction of running pay scales of Rs. 400-2000 for every working scientist to prevent shifts from post to post. All scientists engaged in agricultural research irrespective of disciplines should be given uniform pay scales.

C. NATIONAL ISSUES

8.2.14 Parliamentary Committee on CSIR

Preamble : The ASWI notes that a Committee of members of the Parliament, scientific

experts and others is to be appointed to examine the working of the CSIR, and to make recommendations for improvements. The ASWI shares with other scientists and parliamentarians their concern about the working of the CSIR. The ASWI would however like to caution about the difficulties that a Committee of this type is likely to face in properly understanding the detailed implications of highly specialised scientific and technical work. Their recommendations are bound to have extensive effect not only on working of CSIR but other scientific organisations in the country for years to come.

The ASWI, therefore, suggests that for an objective appraisal of the situation this Committee should be assisted by a number of expert scientific committees consisting of scientists from India and abroad who are not involved in the CSIR controversies. The Parliamentary Committee should arrive at its conclusions only after a thorough discussion based on the findings and recommendations of these specialised Committees.

The Committee may particularly examine the formation and working of selection and review committees, Executive Councils, procurement and distribution of equipment. The Committee may also examine the decision making and policy formulating machinery and role and working of CSIR Headquarters. The Committee may make recommendations as to how collaboration may be promoted between industry, research establishments and universities. The ASWI further suggests that the Committee may make recommendations regarding rationalization of scales of pay, promotion of scientists for their output and reduction of hierarchical restraint for scientists working in the CSIR. They may particularly examine the role and function of CSIR and its industrial research programmes in the overall perspective of the

industrial and economic policies of the country.

8.2.15. Unemployment of Technical Personnel

The ASWI notes with grave concern the rising trend of unemployment and mal-employment among the scientific and technical personnel particularly the engineering personnel. The present situation which the engineering personnel face, is likely to extend to other sections of the scientific workers. The Association believes that scientists and engineers are national asset and instrument for industrial and economic development of a country. The trend to unemployment can only be explained by the unbalance in our economic and development policies. The Association believes that if a policy of self-reliance is energetically pursued by the government, it would employ the present number of engineers and many others. The Association calls on the government to re-examine its economic policies to orient them to achievement of self-reliance.

8.2.16 Language for Science

The ASWI strongly feels that education in science and technology should be through mother tongue or other regional languages at all levels more so at lower levels. However the Association would like to suggest that the international terminology symbols (scientific and technical) should be retained as such in all regional languages. The knowledge of English and other foreign languages is essential for communication with advances in science and technology and for the progress of the country.

8.2.17 Foreign collaboration

The ASWI notes with concern the continuance of extensive foreign collaboration agreements on fields which could reasonably be entrusted to the Indian scientists and technologists. The Association is of the

opinion that such collaboration practices are not conducive to self-reliance.

8.2.18 Medical Research

ASWI is of the opinion that medical research carried out in institutes governed by various organisations should be brought under the unitary control by one central body for effective utilisation of resources available in the country. For this purpose the Indian Medical Council may be reorganised and the various medical research institutes brought under its control.

8.2.19 National Science Council

ASWI reiterates its demand of the formation of a National Science Council to examine and implement the Science Policy Resolution passed by Parliament.

8.2.20 Vietnam

The 21st Council of the ASWI welcomes the recent steps initiated for de-escalating the war in Vietnam. The Council pays its tribute to the heroic people of Vietnam who are fighting for preserving their national sovereignty and supports the suggestion made by the Government of India for complete stoppage to bombing of North Vietnam and withdrawal of all foreign troupes from Viet Nam. This will lay the basis for restoration of peace and for an opportunity for the people to decide their future.

8.2.21 CAAUST Symposium

The 21st Council of the ASWI.

Considers cooperation between scientists of Asian and African countries essential for development of science and technology in their countries.

Records that the first step in this direction was taken by ASWI in organising the CAAUST Symposium in 1966.

Requests the Government of India to initiate steps to implement the recommendations and provide necessary support to ASWI to continue the work of the Executive of the CAAUST Committee.

8.2.22 Draft treaty on non-proliferation of nuclear warfare

The 21st Council of the ASWI

- (i) Reiterates its stand on the need for general disarmament and nuclear disarmament in particular,
- (ii) Records the fact that India agreed to sign the test ban treaty of 1963 which was expected to be the first step in this direction,
- (iii) Notes with deep concern that no progress has been made either at the UNO and at the 18 nation disarmament conference towards the above stated objectives and the armament race among super powers have been further escalated by introducing new weapon systems,
- (iv) Considers the present draft treaty on non-proliferation of nuclear weapons is discriminatory and divides the nations into several groups with varying commitments and responsibilities. The non-aligned, non-nuclear signatory nations will be left in most disadvantageous position and would be subjected to maximum international supervision and control.

8.3 The following resolutions were referred back to branches.

8.3.1 Authorship of Research Papers

Preamble : The ASWI, CMRS Branches, Dhanbad is of the view that there should be a well defined code to assign the authorship of research publications so as to safeguard, in particular, the interests of the Junior staff.

Instances have come to the notice of this Branch where junior staff members of this laboratory inspite of their active participation in the research projects, have not been given the privilege of authorship of papers. In fact, this is a general problem facing the majority of the scientific workers which, unless satisfactorily solved, will lead to a decline in the morale of the junior members of the staff. The executive Committee, CMRS Branch, in its meeting held on 29.1.68 moved the following resolution for consideration at the forthcoming annual meeting of the council of the ASWI.

Resolution : The Council of the ASWI constitute a Committee to establish a code for fixing authorship of research publications including an executive council and a representative of ASWI.

Karaikudi and Dhanbad Branches should send definite proposals within five months.

8.3.2 Rewarding Merited Workers

Preamble : There are many scientific and technical workers who are gifted with above-average intelligence and capacity for hard and sustained effort. Such persons need to be rewarded lest their enthusiasm wane. Resolved that "there must be provision for their being considered for Committee. Also the deserving candidates should be free to put up demand for advance increments for consideration".

Dehradun Branch should work out details and forward definite proposals.

8.3.3 Remodelling of Confidential Report Proforma

The proforma current for Scientific and Technical Personnel in so far as it refers to the "assessment of the reporting officer", needs changes as below to make the assess-

ment scientific in orientation and not administrative as it presently is.

Dehradun Branch should work out details and forward definite proposals.

8.3.4. Permanent Posts in Laboratories

Karaikudi Branch agreed to study this question in detail and bring out definite proposals.

8.3.5. Housing Problem at Jamshedpur

The Council decided that this question should be taken up by the Jamshedpur Branch themselves.

8.3.6 Employment of Diploma Holders

The Council decided that the Jamshedpur Branch should take this question up and bring out definite proposals.

8.4 The following resolutions will be circulated among the various branches of ASWI.

8.4.1. Rotation of Central Council Office-bearers

Central Council Office Bearers By Rotation: It is noticed with concern or at least disappointment by Branches that Delhi is becoming the nerve centre of any and every activity much to the detriment of balanced development of opportunities and activities promised by the constitution and Science Resolution.

Resolved that steps be taken to formulate a directive that office bearers of ASWI are elected from different places every year by a consensus of views and for this some draft procedure is put to CEC by a small sub-committee.

The Council directed the Jammu Branch to circulate the above proposals.

8.4.2 Vijnan Karmee Stabilisation Funds

Of late, serious anxiety has been expressed by the General Secretary (Publications) on the position of funds and mounting debts. An appeal for funds through donations and advertisements has brought no substantial relief.

On the other hand, if any brochure even of a simple nature or elementary importance is brought out, there is an excellent, even though inexplicable, response for advertisements. This goes to prove that taken up with personal interest, Advertisers and Advertisements are always available. Vijnan Karmee goes to Scientists and Laboratories all over India and thus is in a situation where industrialists can give all types of information on stores, equipment, machinery and instruments.

Resolved that the current General Secretary, Publications, after the meeting ends, calls a special session of the Branch Secretaries and explains to them the position of funds of the Vijnan Karmee, makes inquiries of the prospects of Advertisements especially from areas where sophisticated industries are coming up and suggests that in each Branch a unit for this, need be set up.

The Council directed Bureau of CEC to follow up the matter.

8.4.2 Change in Name of Vijnan Karmee

The name of the official journal may be changed from 'Vijnan Karmee' to 'Researcher' or 'Scientific Worker'. The title of the English Journal bearing a non-English title is a misnomer and it is not understood by the general interested public of non-Hindi States.

The Council decided that the matter may be circulated.

8.4.3. Governance of the University

The Council resolves that the recommendations adopted by the Delhi University Teachers

Association on the governance of the Universities and the working conditions of the University teachers be circulated to all Branches of the ASWI for discussions.

9. Elections

9.1 Elections were held and office bearers and members of the Central Executive Committee were elected for the year 1968-69. The list appears on cover page 3.

9.2. *Bureau of the CEC* : In addition to the office bearers and members of the CEC in Delhi, the following were appointed as out-station members of the Bureau :

- | | |
|-----------------------|-----------|
| 1. Shri N.S.K. Murthy | Dehra Dun |
| 2. Dr. N.K. Roy | Karnal |

9.3 In accordance with the clause 85 of the Constitution the Bank accounts of the Association would be operated under the joint signatures of Shri Y.R. Chadha, the General Secretary (Organization) and Dr. S.K. Roy, the Treasurer. The accounts would continue to be in the Punjab National Bank Ltd., Parliament Street, New Delhi. Cheques, drafts, etc. payable in favour of the Association would, however, be endorsed by either of them.

9.5 The Council recorded its appreciation of the services rendered by the out-going office-bearers.

10. Any other matters

10.1 Shri B.K. Dutta (Jammu) gave the following suggestions:

1. Badges should be provided to the delegates to the Council meeting.
2. Notice Board with programme should be provided at the Council meeting.
3. President and the General Secretary should visit various branches.
4. Resolutions should be followed more effectively.
5. Intercommunications among branches should be encouraged.
6. Branches should arrange lectures, discussion, etc. on important topics and inform the other branches about their activities. The Centre should advise the branches on what subjects lectures and discussions should be organised in Science Circle of the branches.

10.2 *Formation of U.P. Region of ASWI* : The Council noted the efforts made by the Lucknow branch for formation of U.P. Region of ASWI

11. The meeting ended with a vote of thanks to the chair.

(Contd. from page 11)

ment in organising two international meets of Afro-Asian scientists. We are also obliged to various scientific institutions for their cooperation in carrying out our functions

and activities.

Madam Prime Minister, I now request you to inaugurate the 20th Anniversary Celebrations of ASWI and the 'Science Week'.

APPENDIX I

Report of the General Secretary (Organisation)

I have the pleasure in presenting the following report on the activities of ASWI during the year 1967-68.

1. Branches/Affiliated Organisations

1.1 The position of the branches and affiliated organisations of ASWI is summarised in Appendix VI. The data for 1966-67 are given for comparison.

1.2 During 1967-68 there has been a steady increase in membership of many of the Branches. The units at National Physical Laboratory and Delhi University have now emerged as full fledged branches. A new branch came into being at the Institute of Agricultural Research Statistics, Delhi. A unit has also been established at Bhandara.

1.3 There has been revival of activity at Central Leather Research Institute, Madras. Contacts have been established in Cuttack and Calcutta. All these efforts are expected to bring results in the current year.

1.4 There has been a decline in membership in a few of the branches. It is to be hoped that it is only a temporary phase, and the new office-bearers will reactivate these branches.

2. Bureau Meetings

2.1 The Bureau of the CEC has held 17 meetings during the year to conduct the day-to-day work of the Association. Proceedings of the Bureau are circulated to the CEC members and the Branch Secretaries, for information and comments.

2.2 It is regretted that no meeting of the CEC could be held during the year for want of financial resources.

3. Resolutions

3.1 *Five-year assessment and promotion rule in the CSIR*

The resolution that all the categories of scientific workers should be included under the rule, was taken up with the CSIR authorities. It is learnt that at the last conference of the Directors of CSIR Laboratories it was recommended that this rule should be made applicable to other categories of scientific and technical personnel also.

3.2 The resolution on study leave, age of retirement, abolition of the post of JSO/JTO, and Science Policy Resolutions, were forwarded to the CSIR and other appropriate authorities but there have been no tangible results.

3.3 *Revision of the Constitution:* The draft amendments to the Constitution, as formulated by the Mysore Branch, were circulated to the CEC members and the Branch Secretaries. The draft amendments and the comments of the Bureau are before the members for consideration.

4. Problems referred by the Branches/Affiliated Organisations

Problems referred to the Central Office by the branches and affiliated organisations were pursued with the concerned authorities in all the cases. For example, ASWOEK has a long standing problem of the Director General, Ordnance Factories, Calcutta, ignoring this Association although it is duly recognised by the Ministry of Defence. At the request of ASWOEK, an interview has been fixed up with the Secretary (Defence Production) for

a just solution of the problem. A few cases of confirmation of the staff of CMRS, Dhanbad, were taken up with the DGSIR.

4.2 The situation arising out of the re-organisation of ICAR, was discussed in a number of meetings of the Bureau to formulate its views which were later also published in *Vijnan Karmee*.

5. *Vijnan Karmee*

5.1 A report on *Vijnan Karmee* is being presented separately by the General Secretary (Publications). I would only like to record here that thanks to the untiring efforts of the General Secretary (Publications), the journal has shown great improvements during the year.

6. CSIR Scientific Workers Association

6.1 A report by the Convener on the formation of CSIR Scientific Workers Association will be discussed separately. It is hoped that the CSIR-SWA will be formally constituted during this Council meeting.

7. Science Circle

7.1 A new activity was undertaken by the Centre during the year, which had had a favourable response. The Science Circle has been started to create a forum for discussions on topics such as science and technology policies in India and neighbouring countries, social utilisation of science, organisational problems, etc. Two meetings have been arranged so far (i) Discussion on 'Patent's Bill' was initiated by Dr. K. Ganapathi, Director, RRL—Jammu, and (ii) Discussion on 'Employment of Engineers' by Shri Hari Bhushan, Senior Industrial Adviser, Ministry of Iron and Steel. The 'Science Circle' will be now a regular activity of the Centre.

8. Twentieth Anniversary

8.1 The ASWI celebrated its twentieth anniversary by holding a 'Science Week' during April 8-14, 1968, during which important aspects of Indian Science and Technology were discussed. The Science Week was inaugurated by Smt. Indira Gandhi, the Prime Minister of India, on April 8. The programme of the 'Science Week' was circulated to the Branches.

9. CAAUST

9.1 A report on the CAAUST Symposium was published during the year and widely distributed. The report of the General Secretary (International Relations) on the CAAUST includes further details.

10. International Relations

10.1 A resolution on West Asia crisis was passed by the Bureau and sent to the scientists of the West Asian countries.

10.2 An initiation was received from the Ceylon Association for the Advancement of Science to send an ASWI delegate to its 1967 Annual Session. The invitation was accepted and the Karaikudi Branch was authorised to depute a delegate who represented ASWI for the first time at the CAAS Session.

11. Affiliations

11.1 The ASWI has continued its affiliation with the World Federation of Scientific Workers (WFSW), the Indian National Commission for UNESCO, and the Indian Parliamentary & Scientific Committee. A report by Dr. N.P. Gupta on the WFSW and its Regional Centre for S.E. Asia will follow.

11.2 It is gratifying to note that our affiliated bodies namely ASW at Kirkee, Khamaria and Kanpur were represented in the Joint consultative Machinery formed by the Ministry of Defence.

12. Finance

The financial position of the Association has become further acute. This has been repeatedly brought to the notice of the CEC Members and the Branch Secretaries. Since the report on the financial affairs is being presented separately, I shall not go here into details. I would however like to emphasize that we must face the realities and take definite decisions in this regard, because the policy of drift would only lead to disaster. I do hope this Council would give positive directions concerning remedial steps, to the CEC.

In the end, I would like to convey my sincere thanks to my colleagues in the Bureau, the CEC members, and the Branch Secretaries for their consistent guidance and cooperation.

Y.R. CHADHA
General Secretary

APPENDIX II

Report of the General Secretary, Publications for the year 1967-68

I have great pleasure in reporting that Vijnan Karmee had been issuing regularly during the year 1967. Nine issues were brought out—February-March, April-May and June-July being combined issues. The April-May issue was a Special Number dealing with the burning problem of 'brain-drain'. The October issue was also a Special Number which covered the papers and discussions of the Round Table of Scientists and Technologists invited by the Prime Minister.

Previously 1700 copies per issue were being printed but with additional membership from IVRI and other agricultural institutes the number of copies being printed has been raised to 1900 per issue. The mailing list consists of members of ASWI, complimentary copies to some Union Ministers and Members of Parliament.

The advertisement position has not been very bright. The following is the list of the 12 parties whose advertisement appeared during the year :

1. M/s. Amar Dye-Chem 2 half pages
2. M/s. Kirloskar 3 half pages
3. M/s. Electronics &
Industrial Instruments
Co. Ltd. 1 quarter page
4. Tata Iron & Steel Co. 3 full pages

5. M/s. Union Carbide 1 full page
6. M/s. Allied Resins &
Chemicals 9 half pages
7. A.C.C. 1 full page
8. Bombay Chemicals
Pvt. Ltd. 8 quarter pages
9. General Radio &
Appliances 4 full pages
10. M/s. U. Foam Pvt. Ltd. 2 half pages
11. M/s. Jeena & Co. 1 half page
12. M/s. Bombay Tools
Supplying Agency 1 full page

The revenue expected from the advertisement is about Rs. 4,000. The October issue had double the usual number of pages and the cost on its publication was more. It was, therefore, decided that it should be priced at Rs. 2.00 per copy; one rupee extra per copy to be charged from the members but the collection has been very poor.

The Journal is being posted to the Members under postal concession which was renewed last year.

The total expenses on bringing out and despatch etc. of Vijnan Karmee during the year were of the order of about Rs. 14,000.

BELDEV SINGH
General Secretary (Publications)

Report on CAAUST

1. The Association of Scientific Workers of India organized a symposium on "Science and the Nation during the Third Five-Year Plan", in New Delhi in July 1964. Its objective was to bring into focus the need for a greater integration of scientific efforts with the nation building activities. On the occasion of this symposium, scientists from several Afro-Asian countries participated by invitation. After the symposium, a meeting of the guest scientists and the representatives of the ASWI was held, when it was unanimously agreed upon to sponsor an international symposium on "Collaboration between the countries of Africa and Asia for the promotion and utilization of science and technology" (CAAUST). To organize this symposium, a Preparatory Committee of scientists from 10 countries was constituted, with Dr. S. Husain Zaheer as the convener. The offer of the ASWI to organize the CAAUST in New Delhi was accepted by the Preparatory Committee.
2. The ASWI organized the CAAUST symposium in mid-1966 with a generous grant from the Ministry of Education. Inaugurated by Dr. Zakir Husain, it was attended by 70 foreign delegates from several Afro-Asian countries, besides a large number of Indian delegates. In the symposium, a number of concrete recommendations concerning practical aspect of collaboration between participating countries was made. The symposium helped India in building up contacts with the scientists in these countries. It initiated a movement for collaboration between the developing countries themselves, in contrast to the policy of simply looking for help from the developed countries. A 16-member Executive Committee was formed for the follow-up of the recommendations and it was recommended that the Second CAAUST Symposium be held in early 1969.
3. A meeting of the CAAUST Executive Committee was scheduled to be held in Cairo last year, but due to various reasons it did not materialize. Efforts are being made to hold a meeting in India. A request was made to the Prime Minister for a suitable grant-in-aid for the purpose, and the matter is at present resting with the Ministry of Education.
4. A report on the CAAUST was brought out in 1967. The copies were distributed to the participating delegates from India as well as the Afro-Asian countries, and also to the Branches.

Report on World Federation of Scientific Workers

1. It may be recalled that the WFSW was formed in 1946 to link together organisations in different countries working for the use of science for human welfare, promotion on world peace, international exchange, and improvement in working conditions of scientists. The WFSW publishes a bi-monthly journal "Scientific World" in 8 languages.

Affiliated organisations of WFSW exist in more than 25 countries, and corresponding members in about 70 countries of the world. The ASWI is affiliated to WFSW. The WFSW has consultant status B with Unesco.

2. The WFSW has its headquarter in Paris. Four regional Centres operate as its sub-offices—for central Europe, for Far Eastern Region, for Arabs countries and for South East Asia. The Centre for Arabs countries was established in Cairo in 1965. This centre brings out the Arabic edition of "Scientific World".

3. The Delhi Regional Centre was established in 1954 but in late fifties the connections between ASWI and World Federation became very tenuous. In 1963, contracts were revived and ASWI has been participating in the activities of the World Federation.

4. The Delhi Regional Centre has started functioning with members of the Bureau of the ASWI as members of the Delhi Regional Centre Committee. At its first meeting it was decided that :

(i) The WFSW be requested to reduce the

price of Scientific World from 3.50 to 2 shillings.

(ii) The sale and enrolment of subscribers to 'Scientific World' be entrusted to a commercial agency on a commission basis.

(iii) A paid advertisement be inserted in Vijnan Karmee for popularising the magazine 'Scientific World'.

(iv) Financial assistance be provided to the 'Science Circle' of ASWI and joint discussions be organized on scientific developments in South East Asian Countries.

5. The meeting of the Bureau of the WFSW at Geneva was attended by Dr. S. Husain Zaheer in Dec. 1967, as he is one of the Vice-Presidents of the World Federation. In a meeting, the Bureau discussed and took the following important decisions :

(i) The Secretary General made a report on the results of the 'Scientists appeal' for contributing one day's salary to purchase books and apparatus for bombed out science laboratories and libraries in North Viet Nam.

(ii) The West Asian crisis was discussed in detail and a statement was adopted and is reproduced at the end of this report.

(iii) The proposed WFSW Symposium (published in V.K.—August, 1967) on

"The relation of Science and Technology" was postponed and is now to be held in Prague in 1969. It was earlier scheduled for Cairo in 1968.

- (iv) The General Assembly of WFSW will meet in September 1968 in Switzerland.
- (v) It was decided to have a thorough discussion of aims, perspectives and mode of working of WFSW at the September 1968, General Assembly. In addition it was decided to discuss at this Assembly.

- Future role of WFSW.
- Trade in conventional armaments by advanced countries.
- International convention of Rights and Duties of Scientists.
- The role of scientific journalism in the spread of scientific knowledge.

The ASWI should send its comments on these subjects.

6. During the middle of April 1968, the Bureau of WFSW is meeting again in Vienna. Dr. S. Husain Zaheer is expected to attend this meeting. The WFSW sponsored Conference on conditions and possibilities of Scientific Cooperation in Europe, is being held in Vienna shortly.

7. The constitution of the WFSW is likely to be revised at its Assembly Session in 1968. Preparations and discussions for this have been going on for some years. The ASWI should study the proposed changes and send its comments.

8. The World Federation has a standing Committee on Developing Countries. This Committee could do some useful work but after some preliminary work for one year it has been decided to select three sectional chairmen to prepare reports on Asia, Africa and Latin America. These Chairmen are to be selected from countries of these regions.

9. The Editorial Committee of the 'Scientific World' meets along with the WFSW Bureau and a report of the Committee is discussed and adopted. At December 1967 meeting it was decided to prepare a ten year index of Scientific World. Two special numbers were decided; one on world population resources and the other on European Cooperation. A detailed discussion took place on procuring high quality articles from different countries.

N.P. GUPTA

(Contd. from page 14)

helping our people to overcome the forces of inertia and that habit which envelopes so many of our people and influences our methods of thinking and functioning. You have a responsibility in bringing about the structural changes which are needed to move

this country forward. Science in India cannot be of the elite, as to some extent it has been in the past, it must be of the people. I know that this is amongst the purposes for which your Association stands. So I wish you well and am happy to inaugurate this 'Science Week'.

APPENDIX V

Statement on the Middle Eastern Situation

adopted by the 27th meeting of the Bureau, Geneva, 2-3 December, 1967

The 27th meeting of the Bureau held in Geneva, on December 2nd and 3rd, 1967, considered the international problems which affected the Middle East.

The modern history of the Middle East has been dominated by the struggle of distant wealthy powers for the right to exploit the oil resources of the area for their own advantage, while the vast majority of the local people live in poverty.

The fullest application of modern science and technology is needed to develop the great natural resources of the Middle East. Water conservation and hydroelectric projects; vast comprehensive geological and geophysical surveys to reveal the extent of mineral resources and the application of the most advanced techniques in their exploitation: the improvement of the quality of crops by selective breeding: these are some of the ways in which modern science and technology can be applied to raise the standard of life of people in the area.

The establishment of peace in the area remains the essential pre-requisite for the fullest application of science and technology for the benefit of the Middle Eastern people.

The W.F.S.W. is opposed to the settlement of international disputes by war. The problems of the area cannot be solved by force or by threats of the use of force and no aggressor can be allowed to enjoy the fruit of his action. Specially it is necessary that Israel must withdraw its forces from all Arab lands to the lines existing prior to the June war. Peaceful solution should be reached between the states concerned which will recognize the legitimate rights of all peoples concerned and lead to permanent solution of the many difficult problems arising out of the partition of Palestine.

The great task of building modern science-based industry and agriculture in the Middle East requires the fullest international scientific cooperation. Such cooperation cannot be built in the existing atmosphere of antagonism and war.

Scientists from many countries will have much to contribute to the solution of the challenging technological problems that will arise. But the greatest and most effective contribution could be made above all through the cooperation of scientists of all Middle Eastern countries.

APPENDIX VI

BRANCHES/AFFILIATED ORGANIZATIONS AND THEIR MEMBERSHIP

<i>Branches</i>	<i>Membership</i>	
	1966-67	1967-68
1. Cent. Food Technological Res. Inst. Mysore	235	235
2. National Metallurg. Lab., Jamshedpur	168	158
3. Cent. Electrochem. Res. Inst. Karaikudi	147	125
4. Cent. Mining Res. Inst. Dhanbad	66	97
5. National Physical Laboratory	11	51
6. CSIR, New Delhi	87	50
7. Reg. Res. Laboratory, Jammu	80	60
8. Reg. Res. Laboratory, Hyderabad	40	46
9. Cent. Mech. Engg. Res. Inst. Durgapur	63	103
10. Lucknow (CDRI, BSPI, etc.)	70	69
11. Cent. Bldg. Res. Inst. Roorkee	40	84
12. Indian Inst. of Petro. Dehra Dun	—	43
13. Cent. Salt & Marine Chem. Res. Inst. Bhavnagar	58	61
14. Cent. Leather Res. Inst. Madras	—	27
15. Indian Agric. Res. Inst. New Delhi	160	220
16. National Dairy Res. Inst. Karnal	116	87
17. Inst. Agric. Res. & Stastics, New Delhi	—	60
18. University of Delhi	10	52
19. Bhandara Unit	—	26
Affiliated Organizations		
1. Ass. Sci. Worker-Ordnance Est. Khamaria	265	248
2. Ass. Sci. Workers-Ordnance Est. Kirkee	160	204
3. U.P., P.W.D. Res. Inst. Sci Workers Ass., Lucknow	35	29

(Contd. from page 1)

crimination based on communal differentiation and side with forces of secularism and democracy. There is need for an objective appraisal of the anti-English and anti-Hindi attitudes which apart from threatening the unity of the country have potential of doing unlimited harm to scientific and technological education. Scientific workers and branches of ASWI must carefully deliberate upon and discuss these national issues along with individuals and organisations. ASWI must give a clear and forthright lead on such issues as cow slaughter, religious bigotry and danger of a linguistic babel. Unless there is, in the country, a climate for rational thinking and acceptance of scientific ideas science will remain confined to the laboratories and class rooms of the universities and fail to make an impact on our social, cultural and economic advancement.

An equally important area deserving attention of the ASWI is the atmosphere in our research and teaching institutions. There is far too much bureaucracy, red tape, rules and procedures and administrative jugglery and too little of science. Scientists and scientific institutions are able to give their best to society and the country and society is not getting its best out of them. Age is mistaken for wisdom and seniority made synonymous with talent. In science—the young and fresh minds have always challenged established concepts and favoured thesis—and they should be encouraged to do so. In the field of applied research, the lack of discrimination and regulation of foreign collaboration agreements have resulted in a wide gap between imported technology and local R&D effort.

A fresh look at Industrial Policy Resolution to promote an intimate contact between industrial research and industrial development is called for. Scientific Policy Resolution is itself 10 years old. Most of its clauses have remained expressions of unfulfilled promise—some of them have dated. The 'honoured place' to the scientist and his association with decisions making at policy level is yet to gain recognition even in the science organisations. In the rest of the set-up, administrators reign supreme even at technical levels.

At an international level, ASWI should be in the forefront to forge links with other developing countries, to evolve policies and programmes for a common fight against poverty and social and economic backwardness. ASWI must devote greater attention and energies to studying the social, economic and working conditions of scientific workers and enunciate positive and constructive steps in cooperation with like-minded organisations to create conditions for higher productivity in scientific effort.

Only when the ASWI boldly faces the problems that confront science and scientific workers in pushing ahead with its mission of creating a scientific attitude and temper and in contributing knowledge, skill and experience of its members to industrial and economic development then only will it be fulfilling its role as the vanguard of the resurgent forces in science. In this task of building a modern secular society based on rational thinking and scientific effort, the ASWI will have the support of all right thinking people and the forward sections of the Indian society.

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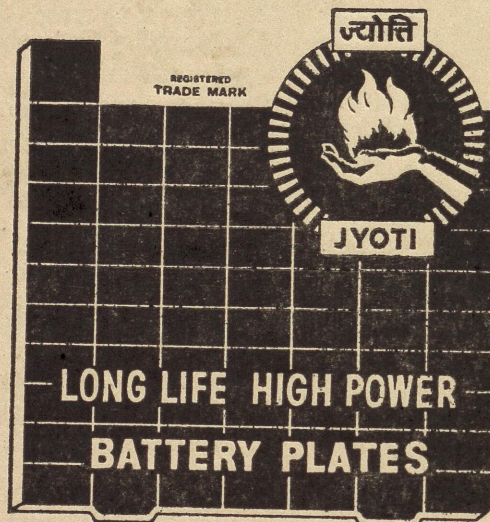
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