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VIJNAN KARMEE

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## Situation in Agricultural Research

Elsewhere in this Issue we are publishing the resolution adopted by the Bureau of the CEC of the Association of Scientific Workers of India in regard to the reorganisation of the ICAR. It is an irony that when the entire country is passing through an acute economic crisis and when science and technology should find maximum encouragement, the major scientific organisations in the country such as ICAR and the CSIR are passing through series of troubles and from one organisational crisis to another. We have already dealt with the situation in the CSIR in our August 1967 issue. The affairs in the ICAR appear to be no better if not worse. It appears that the Union Government at the highest level, decided as early as 1964 that the ICAR may be reorganised as follows:

1. Reconstitution of the ICAR as a fully autonomous organisation, without changing the present name of the Society.
2. Bring under the reorganised Council all the research institutes, then under the control of the Department of Food & Agriculture, including those under the Central Commodity Committees.
3. Reconstitution of the Governing Body of the Council with a view to making it pre-eminently a body of scientists and those with interest or knowledge in agriculture.
4. Financial assistance for research to State research institutes and other research institutes (such as Agricul-

tural Universities) in the form of block grants on the model of the Atomic Energy Commission.

5. Designating the leading Research Institutes, viz. IARI, IVRI and NDRI as National Institutes and delegating to these and other Institutes enhanced administrative and financial powers.
6. Arrangements for making recruitments to scientific posts through selection committees consisting of outstanding scientists in the particular discipline.
7. Appointment of an outstanding scientist as the Chief Executive of the Council with the designation of Director General.

It is almost three years that the above decisions were taken. Some steps such as indicated under item 7 above, viz. appointment of a Director General of the status of Additional Secretary to the Govt. of India, were taken in May 1965. The organisational steps to bring under the ICAR all the research institutes and those under the Central Commodity Committees were also taken from 1st April, 1966. While these empire building steps have been completed, the most vital steps from the point of view of promoting research itself as envisaged in giving full autonomy to the ICAR and the institutes under it and declare them institutions of national importance have not been taken. The ICAR continues to remain as an attached office of the Department of Agriculture and consequently the

institutions of major national importance such as IARI which were previously classified as subordinate office, have become subordinate offices, thus further lowering their status and adding to their functional difficulties. In this process of so-called reorganisation, the powers of the Directors of the institutes, which should have been comparable at least with those of the major national laboratories, in accordance with the Cabinet's directive, have suffered a further curtailment to an extent that day to day functioning of the institutes has been rendered much more difficult. While on the one hand, the leaders and Ministers, day in and day out, make proclamations of herculean efforts to make the country self-sufficient in food and allot priority to agriculture and agricultural research, it is an irony that the institutions under the ICAR should be reduced to a position where they may not be even enjoying the powers which they formerly had when they were directly under the Ministry.

Not only has the autonomous status of the institutes put in serious jeopardy, but the scientists and research workers have been faced with a directive to resign from government service and opt for the Council's service without any consideration for their conditions of service or work. This has resul-

ted in a complete chaos in regard to fixation of pay, issue of appointment letters, payment of arrears and dues and various other difficulties. While the present situation has brought with it all the disadvantages, it has conferred none of the advantages normally associated with autonomous functioning either to the staff or to the institutes. Such a major reorganisation should have been effected gradually and in consultation with the scientific workers themselves. Further, no Act in regard to the granting of the autonomous status to the ICAR and the major institutes has so far been brought before Parliament in spite of repeated promises.

We all believe that agricultural research occupies a primary and pivotal role in our economic development and that unless the country is made self-sufficient in food even the industrial development will suffer. The nation can ill-afford to have a situation in the agricultural front where neither the scientists nor their institutes function purposefully. May we expect that the powers that be, wake up to the extremely serious situation in the ICAR and take remedial measures in cooperation with the agricultural scientists ?

N.P. Gupta  
*President, ASWI*

# The Indian Patent Bill, 1967

K. GANAPATHI\*

## Historical—Quarter of a Century of Labour

The Bill No. 120 of 1967 introduced in the Lok Sabha is a malodramatic culmination of Herculean efforts, extending over a quarter of a century, to amend the existing Indian Patent and Design Act of 1911, from being abused by the foreign patentees and also for making the drugs and medicines nonpatentable. The story in short is as follows:

The research work on the sulpha drugs at the Haffkine Institute, Bombay, in the beginning of the forties resulted in the discovery, independent of teams abroad, of sulphathiazole as a remarkable therapeutic agent against some bacterial infections, with particularly striking curative properties against the dreaded plague. Efforts were therefore made to manufacture the drug on a large scale to make it available to the people and in this venture a patent held by a foreign firm came as a hurdle. An application for a compulsory licence under Section 22 of the Patent Act was made in 1944 to the Central Government but this was passed on to the High Court, Calcutta, for disposal. The

proceedings in the Court taught the ivory-tower plaintiff enthusiasts the hard lesson, that getting the compulsory licence was not as straight forward as was naively taken to be, the Section 22 as it stood had many subtle mazes and that 'proving' even scientific facts in the Court is indeed a complicated business. The problem of manufacture of sulphathiazole was solved by the discovery of an alternative process.

Maj. General S.S. Sokhey, the then Director of the Haffkine Institute, appraised the Health Ministry, Government of India, in 1947—after our achieving Independence—of the unsatisfactory state of the Indian Patent Act and urged for appropriate revisions of the Act. In response to this, the Government appointed in October 1948 the Patent Enquiry Committee which submitted an interim report in August 1949, suggesting immediate amendment of the Sections 22 and 23 of the Act. The Government, by the Act 32 of 1950, amended accordingly these Sections as they stand today as an interim measure. The Committee submitted the final report in April 1950. This re-

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In this article *the Bill* means the Bill No. 120 of 1967 now introduced in the Lok Sabha. *The Act* means the existing Indian Patents and Designs Act, 1911, as variously amended.

*The Date of a patent* is the date on which the patent application of the inventor(s) reaches the Patent Office alongwith the prescribed fees.

*The Date of sealing* of a patent is the date on which the Controller of Patents affixes his seal of grant of the patent after scrutiny of the application by his office and disposing off the objection or opposition proceedings if any. It may take from six months to two years or even more for a patent to be sealed from the date of application.

The grant of a patent only means that the patent appears *prima facie* to claim a new invention but *does not* guarantee the validity of a patent which may be tested in a court of law.

\*Director, Regional Research Laboratory, Jammu.

port established that the Patent Act has not worked to the advantage of India and that the patents right are being abused by foreign patentees in many ways (vide infra). In accordance with the recommendations of this Committee, a Bill No. 59 of 1953 was introduced in the Lok Sabha in December 1953. This Bill lapsed on the dissolution of the *First* Lok Sabha.

An Officer on Special Duty was appointed to scrutinize this lapsed Bill. In April 1957, the Government appointed the one man Committee consisting of Shri Justice N. Rajagopala Ayyangar to study the whole issue and report. After very thorough investigations, Justice Ayyangar submitted his very valuable Report in September 1959. After half a decade of deliberations, discussions, debates, drafting, etc., the Bill No. 62 of 1965 was introduced in the third Lok Sabha in September 1965, and was referred to a Joint Committee in November 1965. The Report of this Joint Select Committee with the amended Bill was presented to the Lok Sabha in November, 1966. This also lapsed with the dissolution of the *third* Lok Sabha "for want of time"—there were evidently more important matters to be disposed of in the interests of the country.

And so, the present Bill No. 120 of 1967 is there before the *Fourth* Lok Sabha. It is hoped that this Bill has better luck in the third attempt. During these procrastinations those who benefited are foreign patentees. What appears in the dailies, the technical journals (local and foreign), various memoranda submitted, as well as official discussions, "inside information" and gossips, indicate that there is considerable pressure on the Government from the foreign patentees and their local patrons, against some of the vital provisions in the Bill. To appreciate the issues involved, it is essential to know the background, the theory and object of

the patent grant, the ways they are abused, and the working of the patent system in a developing country and in our own.

#### The Patent Law—Why and What for ?

A law is enacted in a politically independent country, to protect and safeguard its *own* economic and social interests. There are no reasons to treat the Patent Law as an exception to this.

The Patent grant is a barter agreement between the true and first inventor of a new process for the manufacture of a product, or of a new art, on the one hand, and the public or society on the other. Under this deal, the inventor pledges to disclose to the public in good faith the method of performing the invention, in return for a monopoly right to work his invention and sell the resulting product for a specified period. The return, the public (society) gets, is not merely the availability of the new patented product for use but the right that any one can work the invention after the expiry of the patent. The patent grant is therefore not a onesided inalienable right of one who has invented something new. According to an authority, "the patent system was not created in the interests of the inventor but in the interests of national economy."

The advantages claimed to accrue to the public by the patent system are: "first it encourages research and invention; second, it induces an inventor to disclose his discoveries instead of keeping them as a trade secret; third, it offers a reward for the expenses of developing invention to a stage where they are commercially practicable and fourth, it provides an inducement to invest capital in new lines of production which might not appear profitable if many competing producers embarked on them simultaneously." These arguments have lost their force and relevance today because of: the revo-

lutionary changes that have taken place in the personal status of the inventor; the structure, organisation and management of industries; the methods of promotion as well as the speed and pace, of scientific and technological research; the nature of the political organisation of the country; the role of profit motive in scientific research, and innovation; etc.

The most crucial aspect of the patent grant is not so much what it enables the inventor to do, as what it *disables* others from doing—i.e. prevent others from manufacturing or selling the patented product. This is the reason why an inventor very often takes out numerous patents, or makes numerous claims in a patent, covering all possible processes of preparing a compound and its imaginable variations, even though only one process may be actually employed in manufacture or only one product used. The extension of this is the abuse of the patent grant by carving out a monopoly in market by stifling competition, and putting up the prices of the patented product to bag maximum profit.

It is almost a truism that the mere planting of the patent system in any country will not lead automatically to its economic and a technological progress. The soil of the country should be favourable; there should be a certain level of scientific development comparable to that prevailing in the developed countries; the technological and industrial base should be sufficiently advanced to maintain a certain rate and volume of the flow of inventions; the level of economic development and availability of investment capital should be such that working of all the inventions is possible. In an under-developed country, the patent system works mostly to the detriment of the country.

Ours is a developing country, making

strenuous efforts in the industrial field to catch up with the developed countries. For some time to come, our efforts will have to be to utilize the scientific and technical knowledge already available and also adopt the technologies of, and the technical know-how from the advanced countries. We are not yet adequately advanced in the scientific, technological, and economic fields to go in for any large scale innovations on our own by way of developing new techniques, products, or processes as in the developed countries. Therefore, the oft repeated arguments in favour of the patent system which might hold good in the developed countries, are irrelevant to us.

#### **A Century of Patent Law in India—to our disadvantages**

The Indian Patent Law has been with us for over a century—like an ivy to the detriment of the country. Over ninety per cent of the patents granted are held by foreign patentees and of even the ten per cent taken out by Indian nationals, only an extremely small percentage is really of any value. The Patent Enquiry Committee concluded that “the Indian Patent System has failed in its main purpose, namely to stimulate invention among Indians and to encourage the development and exploitation of new inventions for industrial purposes in the country, so as to secure the benefits thereof to the largest section of the public.” Justice Ayyangar fully agrees with this.

The Patent Enquiry Committee has added: “The Indian Patent system has been misused and in some cases abused to the detriment of Indian interests, particularly for blocking free use of industrial processes for the growth and development of industries in the country.

“Foreign concerns working patent rights

in India impose unreasonable term for authorising the use of these patents.

“Such foreign concerns, particularly those who have secured patent right in industries concerned with food and medicine, do not, at all, undertake manufacture of these products in India. They merely use the monopoly rights to guarantee to themselves a market in this country free from competition; and in this way they keep up the prices artificially at a very high level.”

The above is, by and large, true today.

#### **The Remedy—Safeguards against Abuses**

There are three theoretically possible remedies for this state of affairs: (i) to have no patent system at all; (ii) to have a patent system only for own inventions, forbidding foreigners to take out patents here; and (iii) to suitably amend our Patent Act so that the abuses may not be possible and the Act may work in our interests.

The first alternative, which appears reasonable to some who have actually suffered, is considered to be too radical or an extreme measure by those who talk or think about it. Justice Ayyangar who is fully aware of the defects of our Patent Act and also the abuses, has concluded that “there is sufficient justification for the retention of the patent systems”, and has suggested changes in the Act to remedy the defects and safeguard against abuses. Even the suggestion endorsed by a vast majority of Scientists that the drugs and medicines should not be patentable, has not been accepted. As regards the second possibility, the number of patents being filed in India will not justify the retention of the machinery essential to work the system; moreover, it would be difficult to keep the foreign patentees out in view of our position in the world. We have therefore to fall back on the third

possibility and that is what the Bill introduced purports to achieve.

#### **The present Patent Bill No. 120 of 1967**

The existing Indian Patents and Design Act, 1911, as variously amended at different times, consists of 78 sections. The lapsed Bill No. 59 of 1953 consisted of 115 sections in twenty chapters. The present Bill extends to 163 sections in 23 chapters and is a piece of good draftsmanship. It defines and specifies clearly many terms which used to be argued about before as: food (section 2 g) medicine ( 2 i ), invention ( 2 j ), Government Undertaking ( 2 h ), the true and first inventor ( 2 y ); what are not inventions (section 3), what are not patentable (section 4, 3), inventions where only process-patents are allowed (section 5), etc. It is intended not to present here a critique of the Bill but to deal with only the vital aspects viz., the remedies laid down to safeguard against abuses; the special provisions in the case of foods, drugs and medicines; the grant of compulsory licences; and the term of the patent.

If the safeguards provided in the present Bill are not there or watered down, the Indian industries and the public would be at the mercy of foreign patentees and will definitely suffer. Since it is established beyond doubt that patent rights are being abused by foreign patentees, it is imperative that corrective steps are taken in the interests of the country and the society.

Section 83 of the new Bill does well by laying down the general principles of patent grant as follows:

“(a) that patents are granted to encourage inventions and to secure that inventions are worked in India on a commercial scale and to the fullest extent that is reasonably practicable without undue delay; and (b) that they

are not granted merely to enable patentee to enjoy a monopoly for the importation of the patented article"; it could have been added

"and profiteer to an unreasonable extent."

We have not yet evolved words to replace "reasonably practicable". "unreasonable" and "undue", which parade frequently in some Sections in the Act and the Bill. They are handy pegs for the clever lawyers to hang about and argue. When the writer in a talk, long ago, was eloquently condemning these words as unprecise, a very eminent lawyer, who presided, turned the tables with "if all adopt reasonable attitudes, there would be no need to use the word 'reasonable' or 'unreasonable' in the Act."

In the Bill, the term of the patent is reduced from sixteen years to fourteen years in respect of all inventions and to ten years in case of patents relating to food, drugs and medicines (vide infra).

### Foods, Drugs and Medicines

The special importance of the products used as foods, drugs and medicines, lies in their "crucial relationship to health and indeed life itself". These are very vital for the well being of all, and needed by all sections of the people including the poorest, at the lowest possible prices. In addition, those who prescribe drugs, do not buy them and those who buy, have no choice. A large section of knowledgeable persons are convinced that profiteering in patented drugs is alarmingly excessive because of patent monopoly and the distressing fact that even the poorest purchase drugs in emergencies, at whatever price, to get well or save lives. The well known report of Kefauver, numerous publications, and the prices of patented drugs in the country, confirm this. Eminent Scientists in a meeting convened specially to discuss the patent legislation, ex-

pressed the opinion almost unanimously (with two exceptions) that patents should not be granted for drug because the alleviation of human suffering is a noble aim of scientific research; this was emphatically endorsed by the Health Ministry and also repeatedly by the late Prime Minister, Shri Jawahar Lal Nehru. Still the present Bill allows grant of patents to processes relating to food, drugs and medicines. It attempts to combat abuses by foreign patentees by many special provisions as described in the following:

Section 5 of the Bill lays down that for inventions "(a) claiming substances intended for use as food or as medicine or drug, or (b) relating to substances produced by chemical process (including alloys, optical-glass, semiconductors and intermetallic compounds," the patents can be granted for *only the processes* ('process patent') and *not for the products* ('products patent'). The difference between a 'process patent' and the 'product patent' is that in the case of the former, the claim can be only for a product produced by the specific process disclosed and claimed, whereas in the latter, the claim is for the product produced by whatever process. In the case of drugs, Patent Law in most countries allows the grant of only "process patent".

The inclusion of alloys, optical glass, semiconductors, and intermetallic compounds in 'chemical patents' emphasises the importance of these products in the economic development of our country.

Section 53 of the Bill lays down that the term of a patent granted in respect of inventions relating to substances used as food, medicine or drug be *ten* years from the date of the patent, and in respect of other inventions, *fourteen years*. The term of all patents according to the prevailing Act (section 14) is *sixteen years*; it was in fact fourteen years

originally, increased to sixteen years. In the Bill of 1967, the provision of retrospective effect with regard to the patents granted before the commencement of the new Act as found in the original Bill 62 of 1965 before it went to the Select Committee, has been withdrawn.

The Sections 23 CC of the prevailing Patent Act treats "insecticides, germicides or fungicides" in the same category as "food or medicine". In the new Bill, insecticides, germicides or fungicides part company with food and medicines. This is a retrograde step not in the interests of the country; these products are very essential for increased production of food by safeguarding the high yielding strains of crops being introduced in agriculture and horticulture against pests, and should be available at the lowest possible price to agriculturists.

Section 87 of the Bill provides that every patent in force at the commencement of this Act in respect of the invention relating to the production of food or medicines or drugs or chemical substances shall be deemed endorsed "Licence of rights". In the case of new patents after the commencement of the new Act it will be after *date of sealing* of the patent. Any one interested can obtain a licence for such patents endorsed "Licence of rights," on application to the Controller of Patents (Section 88). Section 88(5) lays down that the "royalty and other remuneration" to the patentee being decided by the Controller "shall in no case exceed four per cent of the net ex-factory sale price in bulk of the patented article."

Section 48 of the Bill empowers the Government to import any patented machine, apparatus or other article (Section 48 a), any patented medicine or drug for its own use or use in hospitals, dispensaries etc. (Section 48 b), without this being deemed

an infringement of the rights conferred on the patentee. This new, but very essential, provision enables the Government, by *importing* the material from countries where it is available at the cheapest price, to check profiteering by foreign patentees. When the British Government did this, it involved itself in a legal proceedings with an American patentee. The position here is now safeguarded. The prevailing Act enables the Government only to make use and sell the patented article, *not importing it*.

According to Section 95 (3), the Central Government may, if found necessary to do so in public interest, direct the Controller at any time to authorise any licensee in respect of a patentee to import the patented article from abroad. In this case, the conditions, royalty, sale price of imported article, etc. shall be decided by the Government. This is a new provision authorising the licensee to import the patented article, in public interest, to check foreign patentees who sell the patented products at exorbitant prices.

According to Section 89 (i), a patent can be revoked two years after the grant of a compulsory licence or endorsement "licence of rights" on an application by any person interested or the Central Government, to the Controller of Patents, on the ground that the patent article is not available to a reasonable extent or at reasonable price. Similar provision exists in the prevailing Act.

Sections 99, 100, 101, 102, of the Bill authorise the use of inventions for the purpose of Government and acquisition of inventions by Central Government. These are the provisions of the Section 21 of the existing Act amplified and made explicit. Section 99 of the Bill defines that "use by Government" includes use by "a State Government, a State Government Under-

taking or any other Undertaking in a class or classes of industries which the Central Government may notify". There was a contention that the public sector projects may not be deemed as actual Government undertakings.

It is now the hope that with all these provisions, the patent grant may not be misused by foreign patentee to maintain a monopoly, only import the products, or keep the price of the patented products at exorbitant levels.

#### **Other Patents—Compulsory Licensing, License of Rights.**

As regards patents other than those relating to food, drugs, medicines, provisions have been made in Sections 84, 85 of the Bill for the grant of compulsory licenses to persons interested, endorsing "License of Rights", or revocation of patents, if the patents are not worked in the country, the demand for the patented article is not met to a reasonable extent and on reasonable term. These provisions exist in the prevailing Act also (Sections 22 and 23).

According to Section 84 of the Bill, application for compulsory licence can be made *after the expiry of three years* from the *date of sealing* of the patent. According to Section 86 (i) at any time after the expiry of *three years* from the *date of sealing* of a patent, the Central Government may make an application to the Controller for an order that the patent may be endorsed with the words of "Licenses of rights" on the same grounds laid down in Sections 84 and 85. These provisions exist in the existing Act.

As provided in these Sections, a compulsory licence can be had, or a patent endorsed "Patent of Right", only *three years after the sealing* of a patent. There was a demand that

it should be "after the *date* of the patent". This period of three years is supposed to be the reasonable period required for a patentee to take steps to manufacture the patented product. This will vary from invention to invention. There may be special occasions where a compulsory licence may be required immediately after the sealing of the patent, and in such cases, Section 97 of the Bill provides for the grant of a compulsory licence by the Controller of Patents on notification by the Central Government after the sealing of the patent.

It appears to be a fact that when foreign patentees grant licenses, many restrictive conditions (relating to the quantum of production, fixing of sale prices of patented articles, restricting areas of sale, purchase of raw materials, etc.) are imposed other than the payment of royalties as stipulated in the license. To safeguard against this malpractice, Section 140 lays down as unlawful the imposition of such restrictive conditions.

The licenses are granted by the Controller of Patents; the Central Government also takes some action in some circumstances in public interest. So that the patentee may not feel aggrieved that the terms are not fair to them, an appeal to the High Court against the decisions of orders of the Controller and the Government is provided in Section 116. Those who have burnt their hands in proceeding in a High Court (with the legal luminaries engaged in battles of subtle wit and argument, and all the while money flowing like water) feel that the more appropriate agency for such appeals should be a Special Tribunal, rather than a High Court. Many of the issues coming up are of a complicated technical nature and the proceedings before the High Court are also very costly and time consuming. There is a specific provision in Section 115

that in proceedings before the Court, an independent Scientific Advisor may be appointed by the Court "to assist the Court or to inquire and report upon such question of fact or opinion (not involving a question of interpretation of law) as it may formulate for the purpose".

### Conclusions

The Indian Patent Act has failed in its objective and has been misused by foreign patentees. The mere existence of a Patent Act will not stimulate invention and help technological progress in a country. The conditions and proper environment for the flow of inventions, creation of capital and a base for starting new industries, should also be there. Without these, most of the patents would be held by foreign patentees who import the products and sell them with maximum profit, as is happening now.

An inventor for the sole reason that he

has invented something new is not entitled to a monopoly right as a matter of fundamental right. He is granted a monopoly right by Society on a barter arrangement in the interest of both. The inventor is a member and the product of society and as such in any conflict of interests between the inventor and society, the interest of the society should prevail. This is also in accord with the professed socialistic pattern of society of our country.

The Bill, 1967, is a vast improvement on the prevailing Act of 1911 or the Bill introduced in 1953. Without resorting to "extreme measures", it *prima facie* provides all safeguards against the abuse of patent rights by the foreign patentees. There is a reduction in the term of the patent. These are the barest minima we should have to forge ahead in building up the industries in our country and in the interests of society at large.

# Allocation for Scientific Research in the Fourth Five Year Plan

VIKRAM A. SARABHAI\*

1. As a background to a discussion on the allocation for scientific research in the Fourth Five Year Plan, we could consider the following figures:—

these essays and statistical information pertaining to some aspects of expenditure on basic research, applied research and developmental research, as well as on total research

(in crores)				
	<i>1st Plan</i>	<i>2nd Plan</i>	<i>3rd Plan</i>	<i>4th Plan</i>
(i) <b>Total</b>				
(a) Allocation (outlay) in all public sectors.	1960.00*	4600.00*	8200.00	15,620.00
(b) Total Investment.	3360.00*	6750.00*	11600.00	22,600.00
(c) Gross National Product.	@	@	91000.00	125,600.00
(ii) Allocation for scientific research.	5.00	21.30	200.00†	325.00†
(iii) (ii) as % of				
(i) (a)	0.25	0.46	2.40	1.80
(b)	0.14	0.31	1.75	1.45
(c)	—	—	0.22	0.25

Notes \*These figures are not directly comparable amongst themselves or with the Third or Fourth Plan figures.

@ Figures readily not available.

† Includes current outlay.

2. At the request of the Committee on Science and Astronautics of the U.S. House of Representatives, the U.S. National Academy of Sciences has published a Report in March 1965 entitled "Basic Research and National Goals". This Report contains 15 essays by important scientists and persons connected with the determination of policy for support to science and technology. It also contains a summary of

in the U.S. and some comparisons with corresponding figures in other countries including India. Some of these figures are reproduced in enclosures.

3. Some noteworthy features emerging from an analysis of the data are:—

(i) **Total allocation for Scientific Research**

(a) In India, expenditure on all research

\* Chairman, Atomic Energy Commission.

as a per cent of the total Plan outlay will be less according to the Fourth Five Year Plan proposals than what was available in the Third Plan. If we are to maintain the same per cent (1.75) outlay, the outlay on scientific research during the Fourth Plan should be of the order of Rs. 400 crores (based on a total Plan outlay of Rs. 22,600 crores) in place of Rs. 325 crores which appears in the draft Fourth Five Year Plan. Recently it has been announced that the total size of the Plan would be reduced to Rs. 21,500 crores in place of Rs. 22,600 crores in the draft. Even on the reduced outlay, the allocation should be Rs. 380 crores in place of Rs. 325 crores currently provided.

- (b) If India wishes to take off with a sound base of science and technology applied not only to Industry, but to all other fields of production which have a vital bearing on the economy of the country (such as agriculture, animal husbandry), it would require, within a period of perhaps ten years, to come up to R & D expenditure as per cent of Gross National Product from the present level of about 0.2% to a level of about 1.0%. In order to achieve this, one might suggest that the expenditure as per cent of Gross National Product should increase as follows:—

(Figures in crores)

	III	IV	V
Gross National Product (Average)	91,000	125,600	182,500
Per cent of Gross National Product	0.20	0.40	0.80
Outlay on Scientific Research	189.00	502.00	1460.00

- (c) During the Third Plan, the ratio of Plan expenditure (Rs. 130 crores) to committed expenditure (Rs. 70 crores) was 2 to 1, implying that the effort on new schemes undertaken for the first time was going to be double the expenditure on all schemes at the end of the Second Plan. However, during the Fourth Plan, on existing proposals, the ratio of developmental to committed expenditure is only about 1.2 to 1, which means that the fresh effort going to be undertaken during the Fourth Five Year Plan relative to Third Five Year Plan is on a much reduced scale. If the ratio is 2 to 1 during the Fourth Plan, as it was during the Third Plan, the total expenditure for research should be Rs. 450 crores, made up of Rs. 300 crores (as against Rs. 175 crores recommended by the Planning Commission) on Plan expenditure and Rs. 150 crores on Committed expenditure. This figure is less than the investment of 520 crores suggested as a per cent of the Gross National Product. The inevitable conclusion therefore is that the allocation for scientific research (both Plan and Committed) should be Rs. 450 crores.

#### (ii) Expenditure on research through Government Institutions

In India, bulk of expenditure on Research and Development (about 80 per cent or more) is incurred by the Central Government in institutions owned by it. This is in sharp contrast to the situation obtaining in the West and in Japan, where about 50 per cent of State spending is undertaken in private sector and another 15 to 20 per cent in nonprofit sectors, including higher education.

**(iii) Basic, Applied and Developmental Research**

We do not have a clear-cut allocation of expenditure on research incurred in this country classified into Basic Research, Applied Research and Developmental Research. The dominant pattern in advanced countries seems to be to spend somewhere between 60 to 70 per cent on Developmental Research, 15 to 25 per cent on Applied Research and 10 to 15 per cent on Basic Research. Applied Research and Developmental Research are not clearly defined. For instance, a large amount of research work done in the Atomic Energy Establishment, Trombay is directly related to developing techniques and producing equipment which would feed to the atomic energy programme, which has well defined objectives, viz., production of nuclear power and promoting use of radio isotopes in the field of agriculture, biology, medicine and industry. On the other hand, there are many schemes financed by Government which have potential application, but have no identified end users for whom work is being done and no time limit by which they have to be accomplished.

**(iv) Allocations to different fields**

It is to be observed that in the United States support is divided 60% to physical sciences, about 30% to life sciences and 10% to all

other sciences. Defence accounts for about 50% of all expenditure. Next comes nuclear energy and space research. In India the allocation for research related to agriculture, animal husbandry and earth sciences has been low in the past. When we are seeking during the Fourth Plan an increased total allocation on research, emphasis on developmental expenditure in these fields might have a more significant effect on the Gross National Product than if we were to adopt the general pattern of relative expenditure in more industrialised countries.

4. If a proposition is put up to Government that expenditure in various fields of research within the allocation of the Plan requires to be stepped up rather than stepped down, it should be necessary to also indicate by what measures, administrative and otherwise, is it proposed to make the expenditure more effective than hitherto, with an impact on the practical problems which the nation is faced with. Consideration may be given to policy concerning the emoluments of scientists, particularly in fields such as agriculture and allied sciences, and to means by which developmental research can be identified and given special attention and Indian scientific personnel abroad may be provided conditions which would attract them to return to this country.

## BASIC RESEARCH AND NATIONAL GOALS

*Funds for research and development by source and by performer in various countries*  
(In percentages of total)

Country	Year	General Government sector	Business enterprise sector (manufacturing industry shown in parentheses)	Nonprofit sector including higher education	Total
<b>A. Performers of R. &amp; D.</b>					
Japan .....	1959	14	63 (56)	22	100
United States .....	1961	15	75 <sup>5</sup> (73)	10	100
Netherlands .....	1959	<sup>1</sup> 20	64 (62)	15	100
United Kingdom .....	1961	28	63 (59)	9	100
France .....	1961	<sup>2</sup> 32	57 (51)	11	100
Canada.....	1959	48	39 (35)	13	100
Philippines .....	1959	65	35 (27)	nil	100
Australia .....	1960	68	20 (..)	12	100
<b>B. Sources of finance for R. &amp; D.:</b>					
France .....	1961	<sup>3</sup> 78	22	nil	100
United States .....	1961	66	32	2	100
Finland.....	1956	62	38	nil	100
United Kingdom.....	1961	61	37	2	100
Canada.....	1959	61	31	8	100
Norway .....	1960	<sup>4</sup> 51	42	7	100
Japan .....	1959	36	64	nil	100
Netherlands .....	1959	30	63	7	100

1. Assuming that "other research institutes" are 70 percent in the Government sector and 30 percent in the nonprofit sector.

2. Assuming that 40 percent of C.N.R.S. grants are to higher education.

3. Excluding small contributions from the nonprofit sector.

4. This includes 41 percent direct Government grants, and 10 percent collected through the Norwegian system of using part of the profits from football pools to finance research.

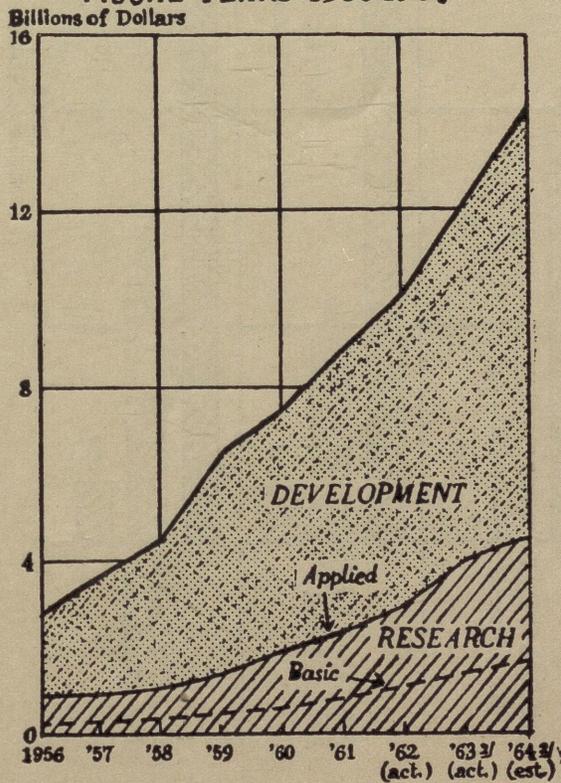
5. A part of communications research is included in that of manufacturing.

Source: *Science, Economic Growth and Government Policy*, OECD, Paris, 1963.

NOTE.—The sector definitions are based on standard national income definitions, that is, publicly owned enterprises or industries are included in the business enterprise sector.

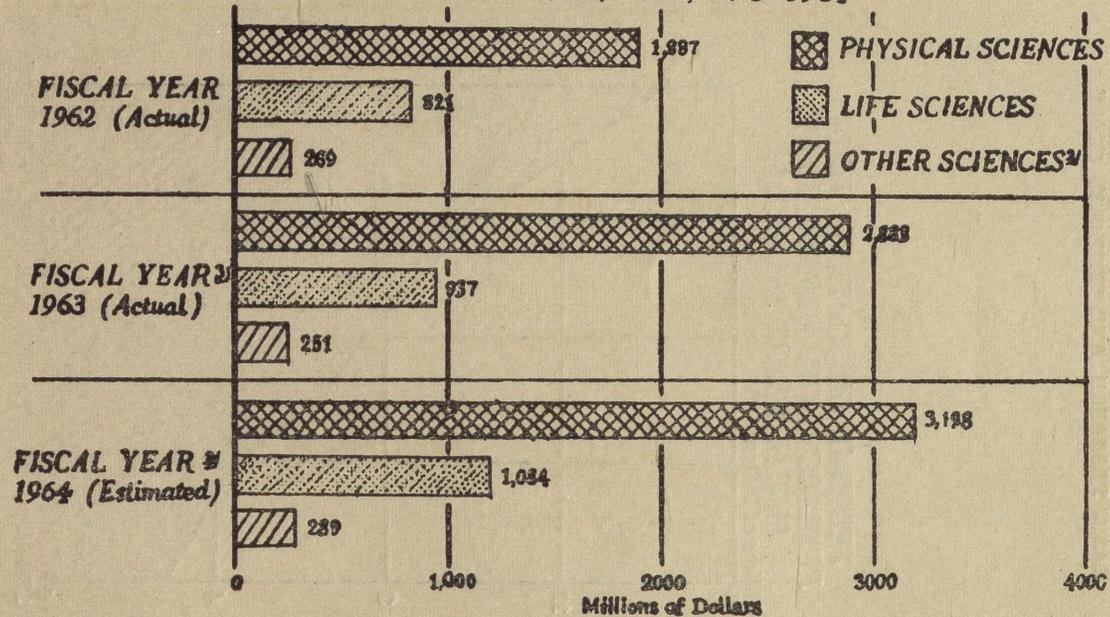
**BASIC RESEARCH AND NATIONAL GOALS**

**FEDERAL OBLIGATIONS FOR  
RESEARCH AND DEVELOPMENT,  
FISCAL YEARS 1956-1964<sup>1/2</sup>**



1. Excludes pay and allowances of military personnel in research and development.
  2. Figures for fiscal years 1962 and 1963 taken from unpublished data for Federal Funds for Research, Development, and other Scientific Activities, Vol. XIII.
- Source : National Science Foundation.

FEDERAL OBLIGATIONS FOR TOTAL RESEARCH  
BY MAJOR FIELDS OF SCIENCE<sup>1</sup>  
FISCAL YEARS 1962, 1963, AND 1964

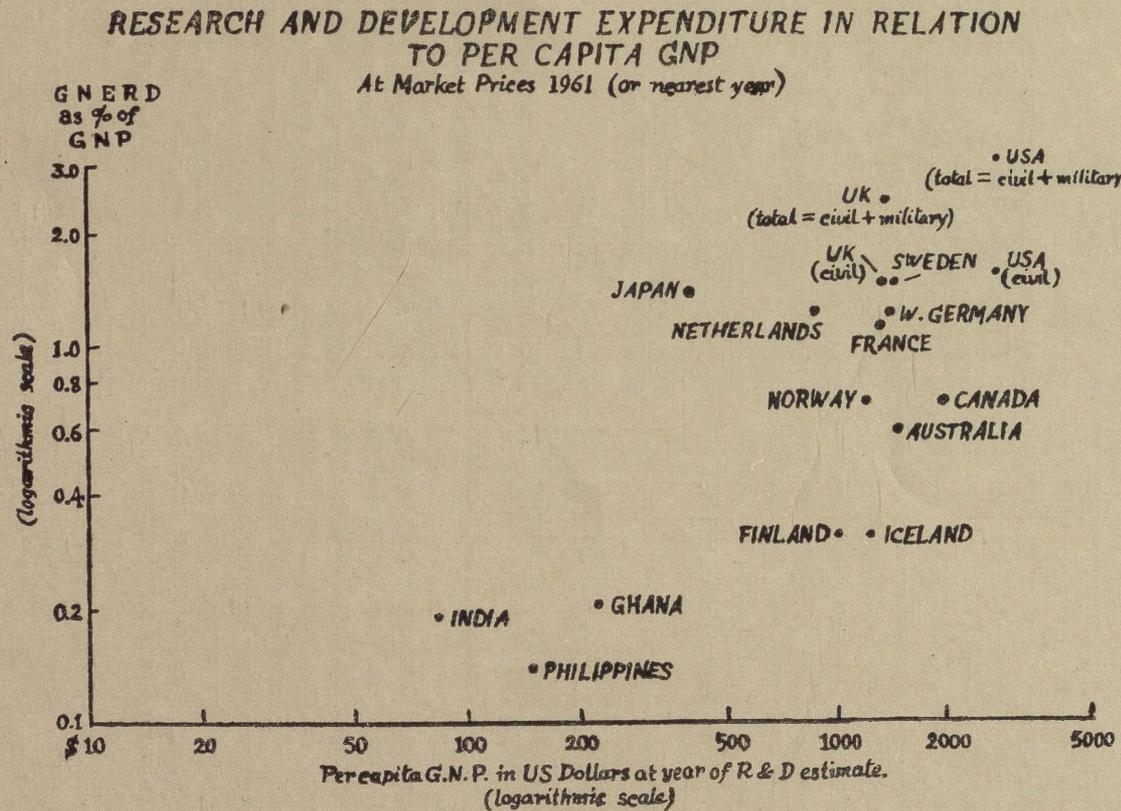


1. Excludes pay and allowances of military personnel in research and development for fiscal 1962 but not 1963, 1964.

2. Includes psychological, social, and all other sciences.

3. Figures for fiscal years 1963 and 1964 taken from unpublished data for Federal Funds for Research, Development, and other Scientific Activities, Vol. XIII.

Source : National Science Foundation.



Source : Science, Economic Growth and Government Policy, OECD, Paris, 1963.

# Hardships of Scheme personnel and their Remedy

*(A study contributed by the Mysore Branch of ASWI)*

Various temporary research programmes sponsored by outside agencies, generally designated as Schemes, function in different laboratories and university departments. Personnel employed under these Schemes have often to face certain serious hardships and inconveniences in their service conditions. It is conceded that the service conditions of the Schemes cannot be made as attractive as those applicable to regular posts of the host laboratories. However, it is only fair that reasonable grievances should be looked into and redressed wherever practicable.

## **Nature of inconveniences**

The main inconvenience to which Scheme personnel are put may be summed up in one sentence as loss of future benefits legitimately accruing from their service (pensionary or equivalent benefits) and denial of certain other service benefits.

It often happens that in agreements governing the Schemes, provision for collecting contributions towards leave salary and pension does not exist. Consequently, if and when a Scheme personnel joins a regular job in the host Institute, his scheme service does not count towards his pension etc. Under existing regulations, these personnel are also not entitled to receive provident fund contributions from sponsoring agencies if they happen to leave the Scheme and join the host Institute after less than 5 years of service. Cases are also known where even after 5 years of service in a Scheme, provident fund contribution was not paid when the incumbent left the Scheme and joined the host Institute

without formally resigning because the administrative authority for both happened to be the same. If it is remembered that pension or P F contributions are nothing but deferred payments for future needs for service rendered, it will be agreed that this loss of pension or P F benefits is indeed a matter of serious concern. The question of other reasonable service benefits, equivalent to those prevalent in the host Institute, are also of some importance, if for nothing else, for maintaining a healthy morale.

Certain reasonable safeguards that can and should be provided to redress these legitimate grievances are enumerated below:

## **Remedial measures**

1. **Block grant**—The ideal solution to the above difficulty is for the sponsoring agency to pay block grants to the host Institute towards the Scheme, so that regular posts within the Institute itself can be created for the purpose. In this case the employees will be in no way different from the other employees of the Institute and will not have to suffer the inconveniences discussed earlier. This procedure should therefore be adopted in entering into agreements for Schemes whenever feasible. This will particularly apply to longstanding Schemes of a continuing nature.

2. **Recovery of contribution towards pension and leave salary**—In the event of the sponsoring agency not agreeing to pay block grant, all efforts should be made to provide in the agreement for recovery towards pension and

leave salary of the employees. With this provision, the employees will not be exposed to any loss of service if they later happen to join the host Institute, particularly if the host Institute happens to be governed by pensionary rules.

**3. Contributory Provident Fund**—Alternatively, compulsory recovery of C P F contributions and a slight liberalisation of the provident fund rules should be made. C P F contribution can itself be considered to be a reasonable substitute for pension. Moreover, a recent Government rule enables a scheme employee to get the benefit of his Scheme service counted for pension, even if contribution towards leave salary and pension is not recovered (as in 2 above), provided he gets the C P F contribution. (According to this rule, effective from March 1966, a person directly engaged in research and serving under a Government or semi-Government organisation governed by C P F rules and later on joining another Government or semi-Government organization governed by pensionary rules, would have the benefit of his entire service counted towards pension if he surrenders his earlier C P F contribution on joining the new organisation.) Adequate steps for prompt and compulsory recovery of C P F contributions are therefore essential.

Additionally, considering that Schemes are generally of short duration, and considering further that the people are often obliged to leave Scheme posts rather early because of obvious reasons, the five year limit for payment of C P F contributions would appear to work hard on Scheme personnel. It is therefore strongly suggested that, considering the peculiarity of the circumstances, the lower limit of earning CPF contributions for Scheme posts should be reduced to three years. It may be pointed out that in most of the erstwhile Commodity Committees under ICAR (e.g. Indian Central Coconut Com-

mittee), employer's contribution to CPF was paid after 3 years of service. This must become the general practice for all Scheme posts.

**4. Applicability of general service rules**—It is only reasonable to expect that general service rules as applicable to the regular employees of the host Institute should, wherever possible, also apply to Scheme personnel. Special mention, for instance, may be made of the recently introduced Five-Year assessment for promotion rule in the CSIR. Since the nature and type of work involved and the rules of recruitment for the Schemes are in no way different from those in the parent CSIR Laboratory, it is only fair that this assessment rule should also apply to the Scheme personnel for promotion within the Schemes. Similar is the case of merit promotion and merit increment rules recently introduced in ICAR. This is particularly relevant in the case of long-standing giant Schemes like the NIH Scheme in CFTRI, Mysore. Provision for such equivalent treatment should therefore be entered into the agreement governing the Schemes.

**5. Proforma promotion**—Regular employees of the host Institute often go up to Scheme posts (in an allied field) as a way of promotion. This is legitimate considering the paucity of avenues for promotion particularly when a giant Scheme commands a large fraction of the total number of posts in an Institute (like the NIH Scheme in CFTRI, Mysore). In such cases, in fairness to the situation, the minimum legitimate interest of such incumbents should be safeguarded by providing them with proforma promotions and proforma increments in the regular side according to prevailing rules. This will protect the incumbents from the grievous loss that they would otherwise suffer if they were governed by pensionary rules, but had to retire while serving in the Scheme.

# ASWI Activities

## BUREAU OF C.E.C.

### Agricultural Research

The Bureau of the CEC of the Association of Scientific Workers of India at its meeting held on Sunday, the 3rd December 1967, considered the situation arising out of the reorganisation of the ICAR and the taking over of the various research institutes. The Bureau adopted the following resolution:

"The Association of Scientific Workers of India notes with regret that the manner in which reorganisation of the Indian Council of Agricultural Research has been carried out is not in keeping with the decisions taken by the Union Government at the highest level as far back as 1964. The present reorganisation is not conducive to the progress and growth of agricultural research or its utilisation. The limited autonomy enjoyed by these institutes even under the previous dispensation has been further curtailed after reorganisation which has made the functioning of these institutes more difficult. This reorganisation has also adversely affected the interests of the scientific workers of the research institutes coming under the purview of the ICAR.

ASWI demands that immediate steps be taken to implement fully the government decisions in regard to the reorganisation of the ICAR and the various institutes under the ICAR should be given the fullest autonomy. The views of the Scientists working in these institutes should be taken into consideration to safeguard the service and working conditions of the scientists."

### I.I.P. DEHRADUN BRANCH

#### Restoration of old S.S.A. Scale

A deputation of A.S.W.I. (I.I.P. Branch)

met Dr. Atma Ram D.G., S.I.R. on 15.9.1967 and impressed upon him the need for restoration of the old S.S.A. pay scale. A memorandum along with advertisement cuttings of the following Public Undertakings, where still the rate of increment is better than that of C.S.I.R., was submitted:

1. Indian Drugs & Pharmaceuticals Ltd.
2. Atomic Energy Commission
3. Oil & Natural Gas Commission

The D.G., S.I.R. gave patient and sympathetic hearing and promised to look into the matter.

### R.R.L. HYDERABAD BRANCH

(a) At the second meeting of the Branch Executive which was held on September 27, 1967, Shri S. Sirajul Hussain presented his report on the organisation of 'First Aid Training Course' for the benefit of house wives of RRL Colony, to be held in October 1967. It was decided to present a small First Aid Box to each successful participant of the course.

(b) Efforts were afoot to secure advertisements for Vijnan Karmee.

(c) The following talks and lectures were arranged:

- (i) Role of ASWI by Shri Baldev Singh, Editor Vijnan Karmee on Oct. 21, 1967,
- (ii) Romance of Bee keeping by Shri S.R. Narayan Ayyar, Advocate, Coonoor on Nov. 21, 1967,
- (iii) Technological Development & Co-operation by G.P. Bhave, Asstt. Chief Officer, Agri. Credit Dept., Reserve Bank of India.

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## Editorial

### Professor Blackett and Indian Science

The recent visit of Prof. P.M.S. Blackett, President of the Royal Society of Great Britain has occurred at a time when there is a great degree of confusion and controversy in regard to the affairs of science and the role of science and technology in this country. Prof. Blackett has had a long and sympathetic association with the Indian scientific and political leadership and it is not surprising that one comes across shades of his views and opinions reflected in the utterances of prominent Indian scientists, some among these charged with the direction of science organisations in this country. Even otherwise, we Indians are prone to easy acceptance of opinions expressed about our affairs by eminent persons from overseas. It is not an uncommon experience to see well educated persons in audiences asking questions and looking for solutions of problems in India from the visitors overseas. There is a mental inertia and reluctance from investing the necessary amount of intellectual effort by the Indian scientists and their organisations to undertake studies on the state of science and its relation to development in our country. In the absence of a scientific treatment of the problems of economic development and the place of science and technology in developing countries, we look for wisdom elsewhere. Since the last four or five years, Prof. Blackett has been advocating a wholesale acceptance of foreign technology by the developing countries and has held categorical opinions in regard to the extent and role of research and development efforts by the countries themselves. While the Professor

says, "I will be the last person to deny the dangers in certain circumstances of a technological colonialism coming about!", he at the same time argues that "the risk of limited franchise must be balanced against great importance of the gain for a time of foreign technological and managerial personnel which may come with a licence". About the import of technology the Professor is of the view that "the less the technological strength of a country, the more it should be dependent on imported know-how by licensing etc. Thus the smaller the indigenous technological base of a country, the greater should be the adverse balance of royalty payments. Far from such an adverse balance being a sign of inefficiency, it may well be an indication that the country's technological resources are being wisely used in the latter stages of the innovation chain and not frittered away, perhaps by sub-viable research groups engaged on unnecessary and unsuccessful redevelopment." The Professor appears to be little aware how near India is to the stage of technological colonialism growing into a sort of economic colonialism. Nor can one agree that large scale import of technological know-how necessarily means investment of limited technological resources in the latter stages of the innovation chain defined by the Professor as consisting of research, development, design, production, marketing and sales and post sales service. The experience in India is that in spite of massive import of technical know-how, the available technological resources are definitely not being invested in design, engineering and develop

ment. The Professor holds out Japan as an outstanding case for brilliant exploitation of imported know-how without relating it to the fact that historical development of Japan and its internal structure for industrial development is very different from that of most of the developing countries. If there is one country to which Japan can hold a lesson; it would be Great Britain whose research, development and industrial structure have some similarity to that of Japan.

The Professor has dealt at length with the similarities in the situation between India and Great Britain typified by lack of economic resources and scarce number of qualified scientists and engineers. Even in regard to these two aspects, the similarity is but superficial. Whereas Britain with a much smaller population and much higher industrial growth rate invests about Rs. 2,000 crores per annum in research and development, the investment by India for a much larger country and much larger population does not exceed Rs. 85 crores which is not even the minimum threshold investment for productive return. While in U.K. the professor talks of an optimum and most productive use of qualified scientists and engineers, in India there is a trend to increasing unemployment amongst the engineers and scientifically qualified personnel. On other counts the situations in Great Britain and India are qualitatively different. In Britain the State investment in research and development is 30-40% with industrial firms accounting for nearly 60-70% while in India as the Professor admits the industrial firms hardly carry out any research of their own leaving the entire responsibility to the State. In Britain, there is a keen competition between the manufacturing firms, while India is a sellers' market. India's large scale dependence on imported technology (sometimes inappropriate technology) has created a situation where most industrial firms are neither conscious nor feel the need for research and development effort either their own or carried out in the State laboratories.

The reality of the Indian situation in respect of the responsibility of the State-sponsored research organisations to ensure application of the results of their research has been emphasised by Prof. Blackett. Some scientists in India have recently been advocating that there is no need for the national laboratories to undertake pilot plant, design and engineering studies. The Professor has warned of the danger of such a position since he feels "It is quite vital that some means should be found to take care of the later industrial stages of the whole innovation chain. In any case whenever a major project of research, development or design is embarked on in a Government establishment, then the later stages of production, marketing and sales should be planned in outline at the same time. It is just not sufficient to embark on a R & D project and then to hawk it round to an unsympathetic industry, which had never been properly consulted about the inception of the project." In India and the other developing countries, for a long time to come the major responsibility for research and development will have to rest with the State and research institutes may be called upon even to complete the entire innovation chain outlined by the Professor. The role and functions of the research institutes in the developing countries have been defined by several Conferences under the United Nations. They have emphasised that the situation in the developing countries demands research institutes to cover the entire spectrum from research to marketing. In Pakistan each research project is run on a prototype plant for at least six months before it is passed on to Industry.

Another aspect which the Professor rightly points out is the demarcation of areas where research effort should be concentrated. He advocates an examination of the imports during the Third Five Year Plan wherein import of machinery and equipment for plan projects amounted to Rs. 300 crores a year. In developing countries research and development should and can be planned on basis of well defined projects with specified time schedules. Unfortunately in India the leaders of science have contented themselves with expressing pious hopes and rolling about well sounding phrases instead of getting down to a study in depth of the research and development requirements of the country.

# Non-proliferation Treaty—a decade too late

B. V. RANGA RAO\*

The draft of treaty on non-proliferation of nuclear weapons is submitted jointly by the U.S.A. and USSR to the disarmament conference at Geneva. The talks on disarmament are as old as the U.N.O. with periodic expansion of the body. These two powers possess nuclear fuels sufficient to provide 10 ton T.N.T. equivalent explosive to each human being in the world. In fact, whether each has one-tenth of a T.N.T. equivalent or 10 tons or 100 tons is immaterial as the former is sufficient to destroy a vast majority of the existing life on the globe and to subject any biological species un-killed immediately, to miserable slow death. The victims cannot bother about the 'over-kill' doses of explosives or radiations.

Nuclear weapons have an extremely wide range—from a fraction of a ton TNT equivalent to one hundred megatons — in fact the upper limit is only due to the carrying capacity of the bombers and missiles. If a ship or a submarine is used to carry the fuels close to an enemy coast and exploded there, the so-called Doom day explosions are possible. The damage could be caused by blast, thermal radiation and nuclear radiations, produced by the fissible or fusion processes by 'clean' or 'dirty' processes, the cheap fuels like U-238 or radiation causing cobalt can be widely used along with the fusion process to enhance the dangers of the damage without much additional cost. Fusion reaction involving 2,500 tons of heavy water is estimated to be sufficient to produce 50 tons of neutrons which can give

10,000 rontgens radiations to every human being on the earth. 500 rontgens radiations per head in a given population can cause 50 per cent deaths immediately and those who survive would prefer death to the suffering they have to undergo. What damage 10,000 rontgens per head could cause, needs no further elaboration.

There are several biological and chemical agents which can be manufactured at negligible cost, yet can cause devastation to a similar degree. Even when several biological and chemical war agents, now available, were not known, there was an agreement banning such weapons. Some countries, particularly U.S.A. did not sign that agreement either. There is a strange contrast between the magnificent achievements of science and melancholy failures of modern statesmanship. Along with the advance in killing and incapacitating technology of war the delivery systems of unprecedented magnitude are developed. In the use of such weapons, excluding non-military personnel and property from destruction is impossible. The dangers of biological and nuclear weapons cannot be confined to the territory of any particular country however big it is. Yet the statesmen have failed to come to an understanding on excluding such weapons as instruments to settle political issues.

It is not only the weapons of war that have undergone tremendous changes but also the causes and nature of wars. Wars of international significance are no more fought to

\* Scientist, Research, Survey & Planning Organisation, C.S.I.R., New Delhi.

alter territorial rights or other such economic interests. Ideological wars are now more common than any other type. The areas of conflict are now Asia, Africa and Latin America unlike the pre-World War II years when the major conflicts were taking place in Europe. In the regions where nations achieved freedom from colonial powers, the need and urge to attain reasonable standards of living are obvious and the social systems to attain those goals are not identical to those in the already advanced countries.

Moreover there is immense diversity in the underdeveloped world either in living conditions or the political and social outlooks to attain the aimed goals. This invariably leads to conflicts. Due to the advances in communications the populations in these countries are exposed to the ways of living in different countries, advanced and backward, their social thoughts and political philosophies. The diversities in the developing societies themselves are sufficient to cause conflicts and until these countries settle down to a reasonable level of living standard and appropriate growth rates are assured by the respective social systems or followed, conflicts in the form of civil wars or local wars are bound to occur. Big powers and other advanced nations are brought into these conflicts either due to the aid taken from them or ideologies professed by the groups in these diversity ridden societies.

Flow of arms is more common than genuine development of technology and the priorities in the developing societies have shifted to defence of social orders instead of the defence of the human values, to improve the standard of living, thus increasing the dangers of more serious confrontations. Unless the big powers are prepared to allow the developing societies to evolve their own systems and any aid given to them is confined only to genuine economic development and parti-

cularly avoid supplying military equipment, even obsolete for themselves, which imposes immense strain in the neighbouring countries, the chances of preserving peace or making economic progress in the emerging nations, are remote. It may be only an academic exercise to aspire such a code of behaviour in the present day world as happened to Pancha Sheel. Unless the statesmanship necessary to the modern needs, in coherence with the technological growth arises, the future of mankind remains uncertain.

This draft is proposed after the bipolar nature of the conflicting interests, has completely disappeared and multipolar or rather depolarised nations have to decide the issue. Yet there is no sign of arriving at an agreement on banning nuclear weapons, with necessary safeguards of inspection on development and deployment of delivery systems. The scenes of this play are similar, if not identical, to those in the early fifties when one power had a marked superiority over the other in these weapons. There is only some change in the roles, to the degree that the erstwhile contestants have arrived at parity and are assuming similar part while new contestants, yet to achieve nuclear respectability, are fast growing. As in the early fifties, the powers with advantages in nuclear weapons are not showing any sign of denouncing the weapons but decry only more powers possessing such weapons. The recent decision in the U.S.A. to build up a thin ABM system is an example. No body has any doubts regarding further escalation in the equipment of arsenals. Though this 'thin' ABM system is supposed to shield the U.S. from a Chinese threat it is bound to grow thicker and thicker as the Chinese improve their own weapon systems. Moreover how could anybody believe that such a defensive system is only against an attack from a particular country but not from its

neighbour. The fallacy of such thinking is obvious for the people throughout the world and particularly to those in India; the military equipment supplied to Pakistan, a partner of SEATO and CENTO agreements, was never used against USSR or China but was used in Indo-Pakistan conflict. USSR cannot afford to remain resting on the ABM build up in USA. Nuclear weapon programme started with \$ 400 million dollars a year, mounted to \$ 3,000 million a year and this in turn has given rise to missile systems costing about \$ 5,000 million a year. The ABM programme starts with \$ 5,000 million and it is anybody's guess what the expenditure would be within 4 or 5 years and what other expensive systems this programme will lead to.

Till a few years back, deterrence was the strategy against nuclear invasion. Against China, the US has sufficient nuclear fuel and delivery systems to counter any attack with dire consequences. But the philosophy of deterrence itself has been denounced by the People's China and a more complex war machinery is devised. But this device destroys the 'balance of terror' with the USSR and that country is bound to develop a similar system if not a more advanced one. So far as the national defence is concerned there are 'hawks' in every country. Development of ABM system is thus only a renewal of the escalation process in armament. The threat that the USA will develop ABM piercing missile systems or anti ABM (AABM) devices if USSR takes any step to arm itself with ABM, reveals the inherent fallacy in these arguments. USSR and Peoples' China are no more inseparable ideological allies as appeared in early fifties. Peoples' China has already clubbed the revisionist Russia with imperialist America for all political purposes. If USA requires ABM system to protect itself against China the need is no less urgent for USSR. Modern

defensive system against each particular offensive system is far more expensive than the offensive system itself. China which is making a rapid progress in such weapons and missiles can itself develop more and more sophisticated missile systems which can only lead to another armament race with colossal expenditure, at the same time increasing the uncertainty of the possibility of human survival reaching a precarious level.

USSR and People's China when each exploded their first nuclear devices, fission and fusion types, declared that they would not be the first to use these weapons in any war. Whether it is propaganda or due to the then known superiority of the USA, the advantage should have been utilised to get a ban agreed instead of hoping to retain the superiority for ever and thus the political and military advantages. It is proved beyond doubt that no nation, however prosperous, can retain its political and military superiority indefinitely. The nuclear disarmament and general disarmament are not in sight. Even nuclear freeze could not be acceptable to the super powers. Hundreds of heavy bombers each with several thermonuclear weapons, and submarines each with 16 thermonuclear war headed missiles are prowling around the continents. The right to share nuclear weapons by military allies continues. At least one super nuclear power has not so far denied itself the right to be the first user of nuclear weapons in any conflict. Besides there is no clause in the draft treaty dealing with a situation in which one or more nuclear powers blackmail or threaten any non-nuclear nation with the use of such weapons. Under such circumstances nations which are not allied with power blocks or nuclear powers are left under a constant inferior military strength as compared to the nuclear powers or their allies. Besides the non-nuclear countries pursuing efforts to develop nuclear energy even for peaceful

purposes are subjected to control by international agencies. Erstwhile only donor—recipient agreements governed such dealings. Test Ban Treaty was expected to lead to thaw in nuclear diplomacy; at least an agreement that first use of nuclear weapons is an offence, has been expected. Instead, the step after prolonged negotiations publicly among the 18 members at the disarmament conference at Geneva and privately among the 'big two' leads to division of the nations into castes, nuclear and non-nuclear—with the associated political overtones.

In view of "the devastation that would be visited upon all mankind by nuclear war" it is necessary to reduce the military conflicts and the involvement of super powers in the local conflicts and specially in internal conflicts. The rich nations can afford to spend foolishly money, goods resources, time and brains on meaningless armament races. Wastes are indulged in as badge of superiority. But the developing societies cannot afford it, yet they are the scenes of conflicts, unless there is an agreement and appropriate check and controlling machinery to stop shipment of arms to the developing countries, even those declared obsolete in the advanced countries, the future remains bleak not only for the poorer nations but also to the affluent, as the conflicts can escalate into major wars and to nuclear holocaust.

In absence of some understanding to ban the nuclear weapons and to accept the ban on biological and chemical weapons, and initiation of steps to nuclear disarmament by destroying the mass destructive weapons and their delivery systems, the mankind has to live under Democle's Sword. The useful nuclear fuels themselves need not be destroyed as there are many peaceful uses and the fuels themselves are ineffective in absence of massive missiles systems.

It is no surprise that the draft of the non-

proliferation treaty is denounced by Communist China and France and even by countries which have been always showing anxiety to reduce the armament race. Even the Test Ban Treaty has failed in spirit. The objection for not including underground tests in the treaty was that it would be difficult to check without sufficient number of inspection posts. But this lacuna is utilized to carry on the tests of sufficiently highyielding weapons with sophisticated auxiliaries to further their weapon technology. It might be for such reasons that proposals by some non-aligned nations that underground explosions beyond certain yield whose detection was agreed to be easy, should be included in the ban, was not acceptable. In fact the Test Ban Treaty is a hindrance only to the signatory countries with limited economic and technological resources. The non-proliferation treaty appears a step further in this process of limiting the nuclear club membership. There is no indication how the political advantages that might arise out of the exclusive membership, would be prevented.

As indicated in the latest events, both the USA and USSR are getting into another phase of armament race and the joint draft on non-proliferation is only a half hearted bid to restrain more countries becoming nuclear thus limiting the complexity of their global policies.

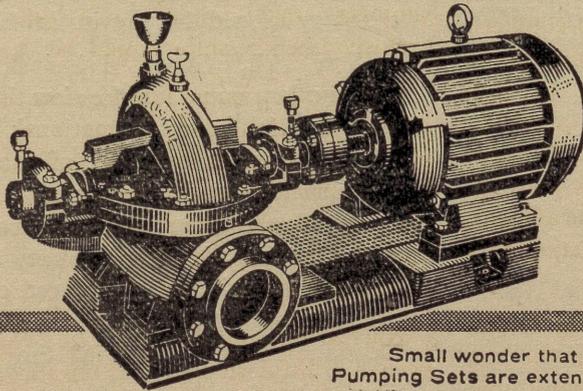
Nuclear non-proliferation treaty could have been a fruitful step to ease tensions, had it been agreed to in early fifties. In the then bipolar world with the keenness of the non-aligned to reduce the tensions and armament races, such a step would have led to the other necessary agreements on nuclear free zones, against first use of nuclear weapons, reduction of delivery systems, understanding not to develop antiballistic missile systems, control on exports of arms to developing countries, and gradual reduction in the wea-

pon grade nuclear fuel stocks and finally a ban on nuclear weapons and general disarmaments. With the depolarised world, prolonger war in Vietnam, and the continued interference in the other trouble spots the chances of a nuclear non-proliferation treaty or any chances of it leading to reduction in uncertainty, are bleak.

As long as the nuclear powers do not accept to denounce nuclear weapons as weapons of war, to agree to nuclear disarmament, and practice the elementary principles of international moral laws not to interfere in the internal matters of the

countries of the developing world and reconcile to live in a world where different ideologies could live in peace, each country choosing the social order that would give to its people the benefits of modern technology to provide food, clothing, shelter and other amenities in the shortest possible time, the prospects of security for the mankind to survive, are dim. Such steps are possible only when nations are governed by statesman who could understand and appreciate the potentialities of modern technology in war and peace. But statesmanship is far behind science.

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## Language Problem of Today\*

The language controversy in India has passed through many phases and has recently created new interest in public. Many divergent views have been expressed by various people from time to time. To emphasize the importance of public opinion in this region, a panel discussion on the language problem was organised by the Jammu Branch of A.S.W.I. on October 6, 1967 at 3.00 P.M. in the R.R.L. Auditorium. Prominent persons of Jammu representing different professions were invited to participate and the response was exceptionally good. Shri S.P. Krishnaswamy, President, A.S.W.I. of Jammu Branch, welcomed the speakers and requested Dr. K. Ganapathi, Director, Regional Research Laboratory, Jammu to preside over the discussion. Dr. Ganapathi emphasized the need for such a panel discussion and requested the speakers to express their views, keeping in mind the need for a national language as well as a language for education in a free country.

A brief text of the views expressed by the speakers is given below:

1. Prof. M.R. Puri, Professor and Head of the Mathematics Department of Jammu University advocated Kothari Commission report and emphasized that the medium of instructions even at the University level should be the regional language. Hindi should be the link language to understand each other and English should remain as the library language for the purpose of scientific studies.
2. Prof. S.N. Wakhaloo, Professor and Head of the Geology Department, Jammu University said that we must adopt our own language and also have a common link language. He favoured the three language formula i.e. the primary education should be imparted in regional language followed by two more languages at a later stage. Because of the dearth of literature in science and technology, English should continue to be the medium of instruction at the University level for sometime more.
3. Dr. William Riberio, Surgeon Specialist, S.M.G.S. Hospital, Jammu also supported the three language formula. He said that Hindustani language in Roman script containing common words of all the State languages should become the link language. He was of the opinion that science and technology should be taught in English.
4. Shri H.L. Gupta, Principal, Model Academy, Jammu was of the view that Hindi should be adopted as the national language which is spoken by 42% of the people. English should be the medium of instruction for scientific and technical education and those students who wish to pursue scientific career may be given an advanced course of English at the Secondary stage. Primary education should start in the regional language.
5. Shri R.C. Chandoke, a prominent businessman of Jammu favoured regional language for primary education. He was of the view that English should continue for science teaching. No language should be forced on the people.
6. Dr. R.N. Bhat, Physician Specialist, S.M.G.S. Hospital, Jammu said that there

\* Report on Discussion organised by Jammu Branch of ASWI.

should be one common language which should form the medium of instructions in every State. He stressed the need to develop a common language which would take its own time. Until then we should maintain the status quo and let that common language develop of its own.

7. Dr. Y. Prakash, Professor and Head of the Physics Department of Jammu University was of the opinion that higher education upto graduate level should be in English. Technical education should also continue in English. He also favoured the three language formula.

8. Mrs. Minakshi Mathur, a House wife favoured Hindustani as the link language and English as the language of university education. She said that we should not change the present system of education because of the circumstances in our country. Moreover there will be translation difficulties.

9. Prof. D.N. Kaul from Teachers Training College expressed that English should continue for sometime more until we can catch up with the other economically advanced countries. Even if we have to change to Hindi we should retain the English technical terms and there should be no time limit.

10. Dr. K. Ganapathi, Director, Regional Research Laboratory, Jammu pointed out that mother tongues and regional languages are two different things. There are more than 800 mother tongues and only 15 regional

languages in India. He favoured three language formula. He was of the view that Hindustani in Roman script should be used as a link language.

11. Dr. Prem K. Gupta, Pool Officer said that we can not afford to introduce fourteen regional languages for the purpose of primary education. He was of the view that such a step would indeed create difficulty for people who are transferred quite frequently from one region to the other. He stressed the need to impart primary education throughout the country in one common language—may it be any. For the purpose of higher scientific and technical education, he favoured English as the medium of instruction.

12. Dr. P.R. Rao, Scientist, Regional Research Laboratory, Jammu was in favour of imparting the education in the mother tongue. He said that the scientific terms should remain in English.

13. Dr. Mansa Ram, Scientist, traced the history of languages and stressed that there would be difficulty in getting trained teachers in various languages if the present educational system is disturbed.

The speakers were given extra time to clarify and discuss various points which were raised by the fellow speakers.

The discussion concluded with a vote of thanks by Dr. J.S. Chawla, Secretary, A.S.W.I. (Jammu Branch).

#### CORRIGENDUM

Shri P.C. Sen, Secretary, ASWI, Jamshedpur Branch states that the "Report on Organisation of Research Work within the laboratories" which was published in the September issue of V.K. No. 9, 1967 was published under his authorship by mistake. The report was prepared by a sub-committee of the ASWIJ constituting the following members: Sarvashri P.K. Gupte, T.V. Prasad, R. Choubey, J. Bhattacharya, S. Mitra and P.C. Sen (Convenor of the sub-committee).

The draft was examined and discussed by the ASWI Executive Committee (1965-66) and later modified and re-written by Sarvashri G.V. Subramanya, H.K. Chakravorty and Dr. A.K. Lahiri of this branch into its present shape. The report was then passed by the General Body of this branch in 1966-67. Shri P.C. Sen as Secretary of Jamshedpur branch communicated the report to the Editor, Vijnan Karmee.

# Medium of Instruction in a Multilingual Society

R. K. YADAV\*

One great and obvious advantage man has over other species is the use of tools, including language, the most useful one. It helps man in their *collective* endeavour to come to terms with the environment, material as well as cultural. Thus language develops social activity. Education which is concerned with transmission and renewal of culture is entirely dependent upon the use of language. In fact, for long, education was largely tantamount to learning of languages.

In the past, medium of education was not a problem: proficiency in the use of the medium itself was education. Education was for a small elite only. For it, the classical languages—Sanskrit, Latin, Arabic etc., as mediums were seldom questioned. Common speech served the common man's purpose, which was to receive training in ordinary vocational activities. A man apprenticed to a master craftsman learnt the trade, and their ordinary speech was the medium. As modes of production changed and mechanical processes and social activities became more complex, the medium of instruction began to emerge as an issue. With increasing specialization in any branch of knowledge, the medium of expression gets more and more removed from ordinary speech. Even in Britain, as Herbart Morrison has mentioned in his memoirs, during the second World War at a centre of civil defence training where persons from all parts of the country had been called, the need for interpreters was felt because the English language as it was used

to impart instruction, was considerably different from the spoken forms the trainees had been familiar with. Also, political developments and historical events bring large and linguistically diverse groups into association. But their languages, especially written languages change much more slowly, and a common medium of communication and communion takes long to develop. The result is a multilingual society. Which language (s) should be used as medium(s) of instruction in schools and colleges proves to be a baffling problem.

Here, the problem in higher education mainly will be considered, because the medium in the universities nearly always determines or affects the medium in schools. On educational grounds alone the medium of instruction in schools does not by itself raise much controversy. It is generally recognized that the first lessons children receive should be through their mother tongue. In 1953, UNESCO published *The Use of Vernacular Languages in Education*, which says: It is axiomatic that the best medium for teaching a child is his mother tongue. Psychologically, it is the system of meaningful signs that in his mind works automatically for expression and understanding. Sociologically, it is a means of identification among the members of the community to which he belongs. Educationally, he learns more quickly through it than through an unfamiliar linguistic medium.

\*Reader, Teacher's Training College, Banaras Hindu University.

But practical difficulties in implementing this very sound policy in a polyglot society are enormous. The advocates of education through the mother tongue do not have an easy answer to a question like this one from a Nigerian teacher: How will you manage in my home town in which each classroom contains speakers of eight different languages? At many places in India the multilingual situation is also very difficult. If we do not adopt the nationally suicidal policy of restricting people to their own linguistic regions, we should readily allow institutions to use various mediums of instruction in the same school system in each region. But the question of providing a similar arrangement in higher education bristles with difficulties. The cost alone will be prohibitive.

No two language problems are exactly alike yet a consideration of some other language problems leads to a better understanding of our own. A look at the problem in other countries shows that broadly speaking these can be considered in three groups:

1. *Countries which have a common native language, but it cannot be used at present as a medium for higher education, e.g. Egypt, Iraq, Burma.* Like many other parts of Asia and Africa, Egypt remained under foreign domination during the period of explosion of modern knowledge. Arabic, the common national language, had been for a long time a good medium for the most advanced studies, and it contains many a rich literary and scientific treasure of old. But for modern purposes, as some Arab delegates pointed out candidly at a conference on Languages & Society in Tunis a few years ago, it is not a suitable medium. Egyptian students say that teaching in universities is in Arabic, but for modern studies, especially in science and technology use of a foreign medium usually English, becomes necessary.

In such countries the problem is by and large a problem of building a suitable indigenous terminology, or incorporating what is called international terminology'. Neither is an easy or quick solution; but because there is general agreement upon the medium of instruction and also the official language, the situation is not extremely difficult. In course of time, the use of the foreign language (s) may become unnecessary, which does not mean foreign language learning will be discouraged. Even in an advanced Asian country like Japan, which has common national language and medium of instruction, knowledge of English is almost compulsory in the universities.

2. *Countries where two languages enjoyed parity of esteem and bilingualism was accepted as a solution, e.g. Belgium, Canada, South Africa, Ceylon.*

*Belgium:* The compromise—bilingualism—seldom allows emotional integration of a national community, although but for the bilingual arrangements, some nation states would disintegrate. In Belgium nationalism developed because in opposing Holland the two regions of the country had a common cause. The Catholics in the north and the Frenchspeaking people in the south were both opposed to Holland. But the two regions stick to their languages and the relations between the two have been constantly strained on the language issue. Bilingualism is at best, an uneasy truce. A few years ago, following the revolt in the Congo, then a Belgian colony, national unity was in grave danger. The language question was one of the main factors. The political and educational development in the Congo itself had not been free from the linguistic squabbles at home.

*Canada:* In Canada, contrary to great expectations based on the liberal attitude of

the British towards the linguistic minority, bilingualism has had a great setback. About one fourth of the population is in Quebec, which accepted English as a second language. French was recognized for Federal purposes only in the whole of Canada. Both languages are suitable mediums for higher education. It was hoped the arrangement was the best solution and would succeed. But De Gaulle's recent visit to Quebec reveals how critical the situation is. In the absence of a common national language and medium of instruction, national unity is seldom forged. In Canada the Royal Commission appointed in 1963 had warned that on the language question the Federation itself was in danger. The difficulties created by the use of two languages as mediums in universities and the Public Service Commission Examinations proved overwhelming.

*South Africa:* Languages once introduced as mediums in a school system do not stop at any stage and tend to extend into the universities too. In South Africa, Afrikaans—the language of the Dutch settlers—had to struggle long against English, the language of the colonial power. Ultimately when the Union of South Africa came into existence, both languages were given equal status, and Afrikaans too is used as a university medium. English-speaking people in South Africa as indeed in Canada, are not earnest about learning the second language. So long as different mediums are there in the country, Afrikaans and English, consciousness of subnationality is bound to adversely affect national integration. For the present, the danger from black nationalism may keep them together.

*Ceylon:* Nearer home, Ceylon presents a similar problem. In her case, the Sinhalese speaking majority (80%) and the Tamil-speaking minority (20%) want their languages to be used as mediums of instruction, in

place of English. Politics in the country has been plagued by internal dissensions, mainly born of disagreement on the place of Sinhalese, Tamil and English. Sinhalese is being pushed into the university too fast or too slowly—and Tamil has been accorded for time being an equal status in certain areas.

3. *Countries where more than two languages are used, e.g., U.S.S.R. China, Switzerland.*

*China :* The problem in China is unique. She can be treated either as a monolingual society, because written Chinese is common, or as a multilingual society because in its spoken form Chinese split into mutually unintelligible dialects. Like India, she has a problem of script too. Because the common antiquated Chinese script is ideographic, it does not permit the use of modern mechanical devices. But the use of an alphabetic or syllabic script instead will make the country multilingual like India. Unlike India, however, China is determined to have one *Common script*, the Roman script, and one *common national language*, northern Chinese or *Pai Hua*. For quite sometime China too will have to depend on the use of some foreign language (s). Professor Bernal after a visit to China, a few years ago, said that Russian was being used more and more in place of English. His own lectures were at times interpreted by two or three Chinese to make him understood by the Chinese scientists coming from different parts of the country.

*U.S.S.R.:* In this respect the situation in the Soviet Union also was very complicated, because the farflung Russian Empire included peoples of many nationalities speaking languages which were at various levels of development. A solution was achieved because of the government's pragmatic and liberal, yet firm stand after the Revolution. The

various nationalities employ their languages as mediums of instruction; some in the primary stage only, some upto the secondary stage, and some in the universities also. In the interests of national unity, mobility of academic and professional staff, equalization of educational opportunity and easy access to modern knowledge, study of Russian is compulsory in secondary schools throughout the country.

Many who have studied language problems in various countries have pointed out that a similar plan should be worked out in India. But Hindi is not as developed a language for modern studies as Russian, and the U.S.S.R. did not have the problem of a foreign medium. Yet the solution adopted in the U.S.S.R. has certain lessons for India. In the former, multiplicity of scripts was felt to be a great handicap for the people. Now there is only one script, Cyrillic, used for Russian and most of the other languages. All languages were not allowed as mediums of higher education. Languages of the nationalities were developed and large funds were made available for this purpose. Regionalization of the medium in higher education has not been allowed to undermine the educational unity of the country, and movements and transfers of students and teachers is not hampered. In India, if the regional tongues only are used as mediums in colleges and universities, and a common medium, English or Hindi is not in use, there would be nothing to sustain the union of States. In the

U.S.S.R. soon after the Revolution for some years it was said that language was a superstructure and therefore all languages were of class nature. A national language was not needed. But in the 1930's the need for a common national language was recognized.

*Switzerland* : References to the language policy adopted in this multilingual country are frequently made in discussions of the Indian problem. But it is a special case. A small rich country like Switzerland, especially in view of its geographical position and political conditions, can do without a common national language and common medium of instruction. And it can, as they say, speak with one voice and have four languages. Trade, travel and tourism encourage the people there, as in the Scandanvian countries, to learn one or two languages more. Yet, in the absence of a common medium the difficulties in administration, law courts etc., are enormous. Every signboard, advertisement, notice of the federal government must be in three or four languages. Even the postal stamps of the country bear the name Helvetia, because in this Latinized form alone, it is acceptable to all linguistic groups!

Then in Switzerland, the three tongues are developed languages. For India, the Soviet Union and not Switzerland has set an example as for as solution of the problem of medium of instruction is concerned. To begin with a common script and a common terminology should be the objectives.



# ASWI Activities

## MYSORE BRANCH

### Studies & Memoranda

Study of the problems of scheme personnel was completed. A memorandum on this issue was submitted to DGSIR and also to Administrative Reforms Commission.

This memorandum along with earlier two memoranda on study leave and J.S.O. grade, were also sent to Scientific Advisory Committee to the Cabinet as also to Ministries of Education, Home affairs and Finance.

Another memorandum dealing with the special problems of personnel working in the EPO schemes of CFTRI, Mysore, was submitted to Director, CFTRI.

### Branch delegation meets the DGSIR

A delegation of the Branch Executive Committee waited on Dr. Atma Ram, DGSIR, on 12th September when he visited the CFTRI. The delegation presented a few memoranda to the DGSIR regarding *Study leave and question of JSO grade*, and discussed various matters of interest including those arising from their earlier meeting on 24 March 1967.

### *Extension of Five-year assessment rule of CSIR to all categories of scientific workers:*

The delegation presented to the DG copies of two representations submitted by the JSAs and SLA-JLAs of CFTRI on the above subject. They impressed upon him the urgency of the problem as the studies clearly showed that many persons of these categories were already stagnating

in their posts for over 6 years and many others were going to complete 5 years soon.

### *Evolving a more realistic system of recruitment and promotion for scientific personnel in India:*

The delegation appraised the DG in detail about the urgency of this problem, in the background of productive development of science and technology in India and of the systematic study undertaken by the Branch on it.

## KARAIKUDI BRANCH

1. Under the auspices of the branch, a discussion on Problems of Scientific Research in National Laboratories was held on 4th October, 1967. Dr. P.B Mathur initiated the discussion.

Messrs N. Subramanyan, K. Venugopal, K. Dakshinamurthi, K.S.A. Gnanasekaran, S.M. Afsar Naqvi, B.A. Sheno, S. Ranganathan and P.L. Joseph took part in the discussions. Shri P.S. Desikan summed up the discussion.

2. The branch has recommended the deputation of Shri K.S.A. Gnanasekaran to represent the ASWI at the seminar to be held by the Ceylon Association for the Advancement of Science.

## ASWI, ORDNANCE ESTT., KIRKEE

### 1. Omission of Interview Calls for appointment in Chandrapur Factory

Many an applicant was not called for interview by the concerned authorities. The Association enquired into the matter and

reason for this. The D.G.O.F. stated in his reply, that at the time when interview was held, the number of the vacancies at the said factory was far less than what were at the time of inviting applications. Hence all were not called for interview. Besides many applications found lacking in necessary details, were rejected. Though many of the applicants were not called before the Interview Board there was no reason for the fear. Interview Board may select the candidates but appointing authority is the D.G.O.F. He would see that undue advantage to any of the interviewed applicants for a jump in promotions would not be given.

## 2. Short time notices for Payment

Recently it had become a practice in HEF that payments were made at short time notice. This caused much inconvenience to staff. G.M. on approach by the association, had given assurance through AM/Admin that the practice would not recur.

## 3. Inconvenient System of Payment for shift staff

The Association has written to GM/HEF pointing out the difficulties faced by the shift staff on payment day. The gist of the contents of the letter is given below:

- (1) Payment of regular wages and OT is made to night shift staff from 6-15 AM. Many staff members go late by half an hour or more after payment is made. The contention of paying staff is that the shift staff can afford to wait a little time. Why shift staff should be singled out, for this injustice is beyond our ken. If payment is started earlier or made at two counters the inconvenience can be removed.
- (2) Similarly outgoing I shift staff are always late. This is mainly due to Day

Workers. Payment starts at 2-00 P.M. and day workers rush for receiving their pay immediately. Therefore on payment days outgoing staff should be paid first.

## 4. Drying of DNT/TNT bags in front of shift rooms

This practice was discontinued at the instruction of GM who was requested by the association to look into the matter.

## 5. Acidity of High Pressure Water in H E F

The highly acidic nature of High Pressure Water was brought to the attention of GM for necessary action. A reply is awaited.

## 6. Homage to our Colleagues

Disastrous explosion occurred in HEF on 21-8-1965 when 11 lives were taken away. It was thought a year back that all employees should on 21st August of every year, pay homage in the factory to all those who expired on duty. AM/Admin was reminded on 20th August by the Secretary and the next day all paid homage.

## 7. Punching Clocks in AFK

Many punching clocks in AFK have been out of order or recording incorrect time or causing illegible impression. Many staff members received "Notes" for no fault of their own. GM/AFK at the behest of the association has agreed to take necessary steps to replace or to get repaired the faulty clocks. He also assured that no staff member would be a victim due to the irregular functioning of the clocks.

## 8. A.T.S. trained Draughtsmen, Diploma holders and I.T.I. Trainees

The problems relating to the staff in these cadres were taken by the association and brought to the notice of the D. G. O. F. He has pointed out certain inherent

difficulties in treating at a par, personnel from these three groups. The different lengths of training time for these three categories, were also pointed out as a bar for treating them at par. The reasons given by D.G.O.F. are in the eyes of the association not satisfactory. Association is replying his points.

#### 9. Lunch Room in C.I.M.E.

There is no lunch room for staff in CIME. Staff have been taking their tiffin in offices or laboratory. Chief Inspector has responded favourably to the request of the Association that a separate lunch room be provided. He has told that as soon as ERDL vacate CIME office rooms, this can be done.

10. The Executive Committee of the association held 10 meetings so far. These meetings reviewed the activities, considered complaints and grievances from members and took steps for their redress.

#### 11. Joint Consultative Machinery : (J.C.M.)

Associations of various trades were sound-ed on the formation of a body to be known as Joint Consultative Machinery for negotiations with employees and government. There will be four bodies at different levels viz. at the National level, embracing all ministers, at the departmental level relating to the relevant Ministry, at the Directorate or Scientific Adviser level and at the local level. For the representation on departmental council, groups of the associations were formed by the Ministry of Defence. Our group is of five associations:

- (1) Scientific Workers Association, Kirkee,
- (2) Scientific Workers Association, Khamaria,
- (3) Scientific Workers Association, Kanpur,
- (4) All India Supervisors Association.
- (5) All India Clerks Association.

A meeting was called by Joint Secretary,

Min. of Defence on 26th July in Delhi, to decide one agreed joint representative from various groups of associations. Shri S. V. Kulkarni from our association had attended the meeting. It was decided there that each association from its group would represent on departmental council by rotation and share the tenure of three years equally. It was left to M. of D. to decide the sequence of rotation. As for our group, each association would represent on Departmental council for seven months and a week in the following order:

- (1) Supervisors Association
- (2) Scientific Workers Association, Khamaria
- (3) Clerks Association.
- (4) Scientific Workers Association, Kirkee.
- (5) Scientific Workers Association, Kanpur.

#### 12. Improvement of HEF Canteen

Exhaustive memorandum is already submitted to G.M. His reply too is received. The subject is under negotiations.

#### 13. Acknowledgement from Chief Minister of Bihar

Government of Bihar,  
Chief Minister's Secretariat,  
PATNA

No : 2232 C M S      Dated the 12-6-67.  
Dear Sir,

I am directed by the Chief Minister to convey his thanks for your donation—amounting to Rs. 1001/- (Rupees One thousand one only) for Bihar Relief Fund.

The Chief Minister greatly appreciates your noble sentiments and your sympathy for drought affected people of Bihar.

Yours Sincerely,  
R.R. Prasad

Secretary to Chief Minister, Bihar,

Shri S.P. Saxena.

Secretary, Association of Scientific Workers Ordnance Establishment, Kirkee.

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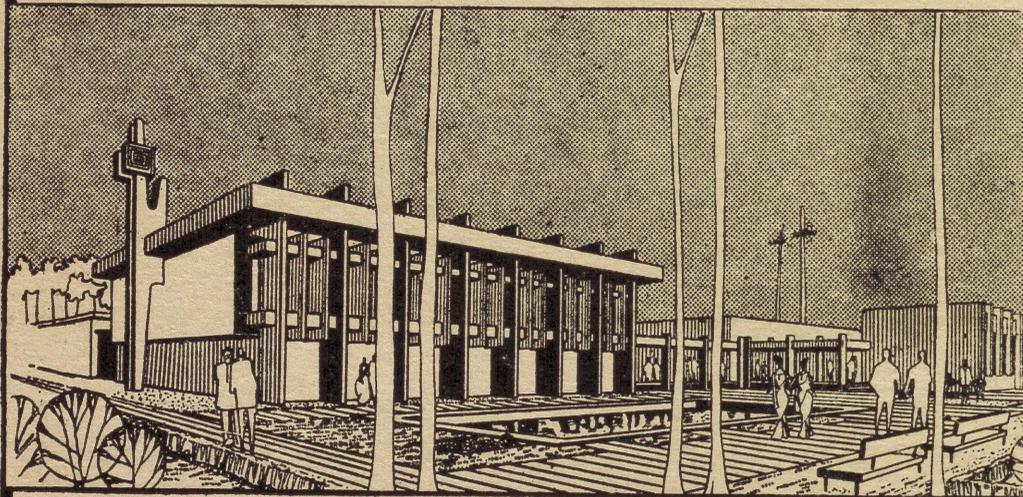
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## Jamshedpur's new cultural centre

The foundation-stone of Jamshedpur's Rabindra Bhavan was laid in December 1961 by Dr. Sarvepalli Radhakrishnan in the presence of Dr. Zakir Husain and other distinguished guests. It was a fitting beginning. The Rabindra Bhavan is designed to be a centre not only for the study of music, dance, drama and literature but also for presenting art and cultural shows from different regions of India.

The Rabindra Bhavan symbolises Jamshedpur where, as Dr. Radhakrishnan said, "national integration is seen at work" A city where men and women from all over India live happily, sharing in its amenities and its facilities for self-development, and participating in its social and cultural life.



*An artist's impression of the Rabindra Bhavan. The cost of this beautiful, modern building, the Steel City's tribute to the memory of the Poet, has been contributed by industry and individuals.*

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