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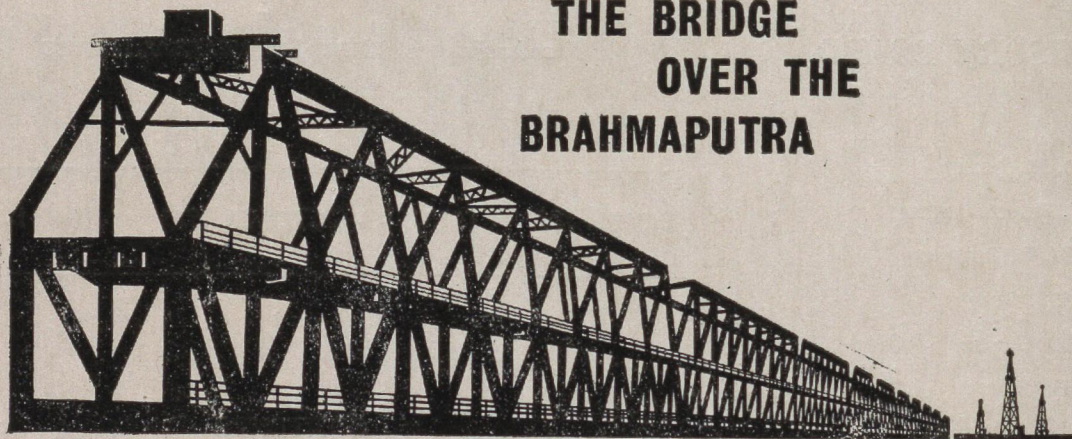
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THE BRIDGE OVER THE BRAHMAPUTRA



By day and by night, with deafening roar and rattle, goods and passenger trains hurtle across the new Brahmaputra Bridge, connecting Amingaon and Pandu. When on 7th June 1963, Prime Minister Nehru formally opened the Saraighat Bridge, wholly Indian in design and execution, it marked the culmination of a plan first thought of in 1910.

Work commenced in November 1958, and it took Rs. 10.6 crores and nearly four years of round-the-clock effort to throw the bridge across the mighty and turbulent Brahmaputra.

When the first goods train travelled over the bridge on 31st October 1962, it heralded a new era in the fast-developing economy of north-eastern India. For the first time, an all-rail-cum-road link was established between the tea gardens and the oilfields of Assam and the rest of the country.

No less than 4.2 million cubic feet of concrete, 40,000 tons of cement and 14,000 tons of steel were used to build the 10-span, two-tier bridge with a roadway on top and rail tracks below. Of about 11,000 tons of vital mild and high tensile steel required to build the girders of the bridge, about 60 per cent came from the steel works at Jamshedpur. This is yet another example of Tata Steel in the service of the nation.

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Why ASWI

The question may sound odd enough when the Association has existed for over fifteen years. But this will set us to self-analysis or self-criticism which is always useful. It will not help us to brood over the shortcomings in the past. There have been several notable points to its credit too. We have to look forward to the future. We have to think how we can strengthen this organisation and build it up into a powerful medium in which the scientific workers of the country can work jointly for a common cause. While individualism of the scientist and scientific workers should be cherished and honoured, there is no reason why they cannot come together to form a purposeful organisation. We have much to think and do at this time of national emergency.

Scientific workers in our country live in a sad state of isolation which is mostly their own creation. They are inarticulate. They are on tap and not on top. These are some of the major causes of their complex. Isolation is not the solution. Their importance and presence will never be felt so long as they choose to be isolationists.

The Trade Union colour of the ASWI has given some of them a creep. Others are not interested in its becoming a kind of Scientific Society of which we have many. Both have their points. If we fall apart on this issue we are neither Workers nor Scientists. Whereas we can be both. The ASWI provides for both.

Inaction breeds psychosis. The vicious circle goes on. We have to get out of the rut. The scientific workers must get to realise with confidence that they are the most important elements in the technological society of today. We must act, we must speak out our minds. Let the scientific workers utilize the ASWI effectively as a forum for action and articulate thoughts.

Let us enliven the ASWI at its Centre and at its various Branches and Units. While we

concentrate on our local bodies, let us not lose sight of the Association as a whole for the entire country. Scientists cannot be sectarians. Their activities and thoughts transcend local boundaries and even the boundary of the country to permeate into the international sphere. But these can be effective only when planned and purposeful activities are taken up.

The prestige and strength of the ASWI will depend only on its performance. This is the only thing that will attract and hold its members, not merely the persuasive drive for membership.

The basic function of the ASWI is to integrate science with society through scientific workers. Science is not a thing which can find its place only in books and technological production lines. Science is an integral part of society and culture. Are our scientific workers proud as they should be of their profession, influencing their home and society in which they live? Is the scientific attitude permeating and percolating? Can we do something about it through the ASWI, draw inspiration from discussions in this forum? What are the difficulties in the scientific profession due to the present policies? What are the social evils which can be rectified through the application of science or scientific studies? Likewise, what are the world problems: hunger, illiteracy, atomic weapons, and so on? These are some of the basic items on which ASWI can very well direct their activities.

There are numerous problems which can be taken up. There is no dearth of programme. It is only the interest of the Members that is necessary to trigger off the action.

Just to dispel certain misconceptions, it becomes necessary to reiterate that the Members' interest in the service conditions, official and social status etc. of scientific workers is by no means a lower instinct. It is but a healthy

aspiration of a virile community. The Union of the British Scientific Civil Service provides an excellent example of this kind. But our ASWI provides for other activities as well.

Vijnan Karmee, an official organ of the ASWI is the medium through which scientific workers and thinkers could, whether they are Members of the ASWI or not, express themselves in the form of articles, notes, science news, letters to

the editor, picture stories of projects and technological advancements, scientific wits and humours, and so on. This would make the journal interesting and purposeful.

Let us appreciate that it is the joint effort of all that would go to build up the ASWI as an effective body of scientists and technologists to promote the scientific temper and ethics, and the technological stability of the country. ASWI can only be what its Members would make it.

The Editor regrets very much the delay in bringing out the Journal due to shifting of the editorial office from Kanpur to Delhi involving various formalities and dislocation of normal working.

National Emergency and Our Scientists

Dr. S. HUSAIN ZAHEER

Director General, Scientific and Industrial Research

The Second World War prompted U.S.A. and U.K. to establish and strengthen their National Rosters of Scientific Personnel. India started a similar register in 1948 immediately after achieving political independence. This step was taken with the purpose of assisting her national economic development. Today economic development and national defence have become a unified vital item for India. Demand for scientific and technical personnel has increased on all fronts.

Forward planning of scientific and technical personnel requires comprehensive data of what we have at present. This is the statistical part. But, for their utilization and recruitment, it is necessary to obtain detailed information of each individual. Both these purposes are served if a comprehensive National Register can be built up and kept up-to-date.

The enrolment and revision of the Register have gone on continuously in the past in order to achieve better coverage and to bring the Register up-to-date. The enrolment in the National Register of Scientific and Technical Personnel is still voluntary. With the increasing utilization of the Register and awareness of its necessity, our scientists, engineers and doctors who are in the country or abroad, have progressively co-operated in maintaining this important national record. At this critical juncture the need for building up a complete and up-to-date Register is great. There is, therefore, no doubt that the qualified persons will extend a very conscious participation in the present programme of revising and enlarging the Register.

Upto the present time over 175,000 qualified scientific and technical persons have enrolled themselves in the National Register. But most of the data of the current Register will be back-dated through two years or more by the year 1963. It has therefore been decided that a complete overhaul of the National Register should take place and the programme launched immediately.

In the proposed scheme of enrolment/re-enrolment of the scientific and technical personnel, the scope will be enlarged keeping in mind the fuller use of our scientific and technical personnel who could be utilized and mobilized for the country's economic and defence requirements. The following types of personnel, whether employed, unemployed or retired, will be covered in the National Register:—

- (i) Graduates and Post-graduates in science subjects.
- (ii) Degree and Diploma holders in engineering and technology.
- (iii) Medical and Veterinary graduates and specialists.

Enrolment forms are available from certain organisations such as National Laboratories of the C.S.I.R., Employment Exchanges, University Employment Information & Guidance Bureaux and Public Service Commissions. The forms are also obtainable from the National Register Unit on request.

It is earnestly hoped that we shall be able to compile a comprehensive and up-to-date Register in 1963 with the co-operation of our scientific personnel whose services are required for the national cause.

Sharing Skills : Technical Aid to Developing Countries

RITCHIE CALDER, C.B.E.

Montague Burton Professor of International Relations, University of Edinburgh

I have just returned from four months in the countries of south-east Asia, here on behalf of the United Nations and all its specialized agencies I have been examining the effects of international aid. It was a very interesting assignment which might have been called 'Ten years after'. For ten years ago, also for the United Nations and its agencies, I went out to south-east Asia to look at the problems which modern science and technology might help to solve and at the technical assistance programmes which were then just beginning. On that occasion I started from Sarawak in Borneo, went to Java, Burma, Thailand, East Pakistan, India, West Pakistan, and Afghanistan. This time I went to the same territories, with the addition of Hong Kong (to see the refugee situation), the Philippines (to see a country saturated with aid), North Borneo, Sumatra, Malaya, and Nepal. Both in terms of geography and of projects the scope of this year's journey was much more extensive. I was asked to take into account not only UN aid but bilateral aid, the Colombo Plan, and the help from private foundations. I accumulated so much paper in the form of plans, feasibility reports, appraisals, and justifications that I had my own weight in excess baggage. I have all that and a confusion of impressions to sort out before I produce anything in the form of considered assessment. What I have to offer here is rather like the despatches I sent back to the United Nations—a series of direct observations which have still to be qualified by judgments.

One generalization which I have to make is that, considering the thousands of millions of pounds of aid which, from all sources, but mainly bilaterally, have been poured into the

region during the past ten years, the lot of the average human being is not much improved and in some cases is worse. This is due in part to a confusion of motives, as well as a lack of planning, in the distribution of aid, but even more to the population explosion. This, of course, was foreseen ten years ago, when it was obvious that if you had death control without population control the numbers were bound to multiply at an accelerating rate and offset the effects of material assistance. It is like running up a down escalator, or trying to fill a bath with the plug out. You have to move pretty fast up the escalator, or have the taps running full bore if you are going to maintain equilibrium.

I do not want to enlarge on the population problem, which is self-evident except to register it with some examples.

For instance, I made a hazardous pilgrimage to north Luzon, in the Philippines, to see the oldest rice terraces still functioning in Asia. There is some dispute as to when the first rice cultivators migrated to Luzon from south China, or what is now Indo-China, but it was long before the Christian era, and those terraces have been producing ever since. They are quite fantastic. The terraces with stone-built walls, in some cases eighteen feet high, climb up the peaks from the deep valleys—living pyramids of growing rice. They are more grandiose in extent and height—sometimes a thousand feet—than the pyramids of masonry at Giza. Throughout all these centuries the cultivators have tended these terraces with the agility of chamois and the patience of Sisyphus. When floods wash away the terraces they will go down into the valleys to recover the soil and

carry it back in baskets on their heads. The Igarots, the highlanders, are, apart from their skills as rice-growers, still a wellnigh primitive people and they are still practising headhunters. There are about twenty thousands of them in these valleys, just as competent and industrious as their ancestors, but in the middle of the rice fields there was a store at which they were getting Californian rice because they had exhausted the last rice harvest and were waiting for the next. All the productive skill of centuries was not sufficient to keep pace with the increasing survival rate. In the Philippines, generally, the population of twenty-seven million is increasing by seven hundred thousand a year and the food supplies, social services, schools, etc., are not correspondingly increasing. Over half a million children are unable to get into schools because of lack of accommodation. Only a third of those admitted in the first grade ever reach sixth grade, and only one in ten who start school ever finishes high school. The result is that talents are being squandered, juvenile delinquency is increasing and there is no real basis for the vocational training for the industries that are being introduced.

Central Java used to be the rice bowl of Asia. It exported extensively. Ten years ago I saw a most enlightened approach to the problems of increasing productivity. There was very little that one could teach the Javanese rice peasants, who had developed a sort of window-box economy, terracing every available foot of ground and, incidentally ingeniously planting and harvesting fish with the rice—putting the fingerlings in when the paddy fields were flooded and collecting them when the fields were drained for the ripening of the rice. Nevertheless, with international help, modern improvements were introduced—state farms for better seeds, state fish nurseries to supply the fingerlings, artificial fertilizers (but more important, since those were expensive, the development of green manure), the growing of legumes which, ploughed back, could nourish the rice, and a system of enthusiastic extension officers, to pass on knowledge of

better practices. Incidentally, 'sharing skills' can be a form of reverse lease-lend. The FAO—the Food and Agriculture Organization of the United Nations—in trying to encourage inland fisheries in protein-hungry parts of the world, found that the wise thing to do was to send students on fellowships from Africa, the Middle East, the Caribbean, and so on, to study fish husbandry under the illiterate Javanese peasants. Central Java has taken advantage of these improvements and the peasants work just as hard, but production is not keeping pace with reproduction. They are having to import rice, the United Nations Children's Fund has been distributing dried milk and has introduced a soya product—saridele—but I saw, in some parts of the hinterland, gross clinical malnutrition. Children are visibly suffering from kwashiorkor the protein-deficiency disease which turns their hair rusty red, cracks their skin like a crazy pavement and condemns them either to death or to a miserable life. There is xerophthalmia, the blindness due to vitamin A deficiency. There is hunger oedema, the swollen belly of a famine baby; and toxicosis, which produces dehydration in infants. This is so serious that they have day and night staffs at the clinics standing by to provide the transfusions without which the children would die.

These are hunger diseases, in a countryside which traditionally has been an example to the world of intensive cultivation. The population is increasing at a rate of 2.3 per cent per annum. This means that Indonesia has to find food for two million extra mouths every year.

In the Delta region of eastern Bengal—East Pakistan—I saw an ambitious irrigation scheme, backed by the UN Special Fund; this pumps water from the Ganges on to a low plateau, which, unlike the perennially drowned lands of the Delta, suffers from drought because of lack of precipitation. Through a system of 665 miles of canals with 380 engineering units there will eventually be irrigated 1,800,000 acres, capable of producing three food crops a year.

This sounds impressive until you realize that the population which was forty-three million when I was there ten years ago is now fifty-four million. They were hungry then and they are more hungry now.

The population of India is increasing by ten million a year. That is to say, a population equal to that of greater London or greater New York is added every year. Orissa, which if it was not the actual birthplace of rice, was certainly its kindergarten, is historically a rice-exporting area. Here, too, rice is being imported to feed rice growers. Industrial expansion, however, spectacular in India, can provide neither the work nor the products for a population with this rate of increase. All the investments of the past ten years in the textile industries of India have not added an inch to the average Indian's shirt.

Obviously this population problem is one which has to be dealt with. It is no good saying that the earth is capable of maintaining ten times the present population of three thousand million. What is frightening is not the figures but the speed of the increase. It has taken *homo sapiens* two hundred million years to reach the present figure of three thousand million. On present trends it will take less than forty years to double that figure. The immediate and inescapable challenge is that by 1980 we shall have to contrive to feed another thousand million people. It will need all our shared skills and scientific ingenuity, and a great deal more international effort than exists at the moment to provide the answers.

And the answers will have to be something different from those we are providing now. It is true that there are vast surpluses of food in the Western Hemisphere. Ten years ago there were thirty five million metric tons of surplus wheat and coarse grains. Today we have the incredible figure of 125 million tons of such surpluses in the world—mainly in the Western Hemisphere, where the United States Government has spent \$4,000,000 in price support schemes,

buying farm surpluses to keep up the market value. The United States is not ungenerous in making these foods available. I saw in south-east Asia something of the operations of SAC—Surplus Agricultural Commodities. Under this scheme much-needed foodstuffs are made available to governments, which market them and use the proceeds, in terms of their own currency, for agreed development programmes. This is a way of using food as currency. The FAO, with supplies made available to it, is going to extend this principle multilaterally.

I am all for it because it recognizes that, while emergency relief of this sort is necessary, countries cannot be left dependent on surpluses in the long term. As the United States has shown in the so-called 'Soil Bank', it is cheaper and, it can be argued, better for the soil, to pay farmers *not* to cultivate acres than to buy the produce of these acres and put them into store. Thus for reasons of internal economy or of international politics surpluses can be curtailed. In any event, there is the problem of distribution. There are not enough ships' bottoms in the world to redistribute that 125 million tons. There never has been an *Indian* famine. There have been Orissa famines, Bengal famines, Bihar famines, and so on. A harvest catastrophe, like the rust-plague in Bihar, will produce a local or regional disaster, and, vice versa, it is locally and regionally that we must help people to supply themselves. They must be enabled to improve their agriculture by methods which, through penury, peasants are unable to afford, or through ignorance cannot apply, or through systems of land tenure cannot extend.

We can share our skills with them, sometimes unwisely as applying temperate-zone agricultural methods to tropical soils which are quite different. But even if we did it wisely, well-meant efforts will be frustrated if the peasants have not got the means. That is why the SAC is a promising experiment, away from conventional economics. For example, in Indonesia, Nepal, and elsewhere I saw the proceeds of SAC being invested in agricultural centres,

research stations, training colleges, and breeding farms (cattle, poultry, fish culture, and so on), which were ways of helping the peasants to help themselves.

But we need new thinking in other directions as well. What is self-evident is not necessarily right. For example, as an old desert hand myself, I have tended to be very glib about 'bringing water to the desert'. Having travelled through and flown over large tracts of Pakistan and Afghanistan, I have had drastic second thoughts.

The population of West Pakistan increases by ten every five minutes, and every five minutes an acre of land is lost. Seventy million acres of West Pakistan is desert—arid for lack of rainfall—but it is also the land which the rivers, particularly the Indus, created, and those alluvial regions like the Sind are very flat. Superficially the soil, given water, is good. So seventy years ago they began to recover this region by irrigation. A succession of barrages have been built on the Indus. To British times belongs Sukkur. Ten years ago I was enthusiastic in my approval of the structure and purpose of the Kotri Barrage on the Lower Sind, east of Karachi. This was to bring into cultivation two million acres. This time I went to see the completion of the Gudu Barrage right in the middle of the Sind Desert, on the Indus, half-way between Karachi and Lahore. No more desolate site in the world could have been chosen, and the construction, directed by experts under the UN Expanded Technical Assistance Programme, is an engineering achievement of first magnitude. It is 4,500 feet long and has cost about £30 million. This is to provide controlled irrigation to 2,870,000 acres through three main canals. Today the problem of Kotri is the problem of salinity and that, ten years from now, may be the problem of Gudu. The irrigated lands are being poisoned by salt. The effect of spreading water by irrigation canals without corresponding mechanical drainage systems has meant that the water table has risen. There is very little rain, but the spreading of the water of the

Indus under the conditions of heat has meant that the surface waters, in high evaporation have led to an aggregation of salt and the underground waters have brought up salt from the subsoil. The result has been to create a kind of salt pan. Meanwhile, other barrages have multiplied all over West Pakistan, and irrigation has led to water logging. The result is when you look down from the air the countryside looks as though it is suffering from a malignant disease. Twenty families a day on the average are losing their farms through salt or sogging.

The situation is so serious that the President of the United States sent out a powerful scientific mission, which included his own scientific adviser, Dr. Jerry Wiesner, to study the problem. I have spoken to members of that mission and they are appalled by what they have found, and one estimate I was given for the cost of restoring the havoc which has been wrought in a single generation was a thousand million dollars. I emphasize this case because in discussing the sharing of skills we have to consider the skills we are sharing. I am becoming more and more oppressed by the tyranny of the experts. By 'tyranny' I mean the domination which the expert exercises with the authority of his expertise. He may be the master of his subject, but he knows very little about anything else. It is no part of the job of an engineer building a barrage to consider the hydrology of water-logging or salination. It was no part of the job of the agricultural experts who surveyed the suitability of the soil of the Lower Sind and, ten years ago, found it in 'good heart' to consider the effects of raising of the water table. Each pursues his single-minded purpose and the mistakes which are made by default are exaggerated by the vast amount of money which will go into a crash programme to find a self-evident answer to a self-evident need.

The same sort of thing happened in Afghanistan. Six hundred years ago Tamerlane and his hordes destroyed an irrigation civilization in the valley of the Helmand and the region around Kandahar and reduced a productive

area to a desolation which persisted until ten years ago, when the Americans went in to build a great barrage and canal system to restore the productivity. I saw that area from the air. It is incredible that in so short a time land could be reduced to such a scabrous condition. It glistens with salt.

With this kind of lesson the United Nations is now trying to forestall such mistakes. It has launched million-dollar schemes for land and water survey. This is the kind of investment which it was no one's job to undertake before. These are 'feasibility projects'—anticipatory wisdom. In that wisdom the large-scale projects which might follow may be discounted but at least irreparable damage may be prevented. The classical example was, of course, the British ground-nut scheme in Tanganyika, where £32 million might have been saved if the ecologists had gone in ahead of the bulldozers to appraise what would happen if you upset the balance of nature. If someone had studied the rain-shadow instead of simply looking at the rainfall records, they might have known in advance that they were putting the scheme on the wrong side of the hill. If someone had done a ground water survey, in short instead of looking at it merely as an engineering operation—a soil-mining operation, they would have done what the Special Fund is now doing.

The trouble over the past ten years has been that most things have been regarded in financial terms. I do not mean that money is unimportant. We shall have to spend vastly more money if we are going to remove the increasing disparity between the highly advanced countries and the poverty-stricken countries. But the having to argue with Appropriations Committees of Congress, or the Treasury, has produced a wrong attitude—that the answers can be found in the number of zeroes behind the sterling or the dollar sign. Of course they cannot. What we are really talking about is a redeployment of resources, and the most important of all resources are human resources. I shudder when

I hear politicians talking about 'allocating one per cent of the national income' to underdeveloped countries. This is the spirit of the flag-day, of the charity-minded, who feel noble and generous when they have paid their subscription. What we should be talking about is the use of our resources both in terms of materials and skills to help those countries to help themselves.

Indeed the story of international aid since the end of the Second World War is not a very impressive one. The decent instinct and enlightened self-interest were there, sixteen years ago, but the approach was wrong. The answer obvious at the time was the World Bank. On my recent south-east Asian journey I have been agreeably impressed by the enlightenment and imagination of the Bank. But by definition it was a restricted instrument. It had to abide by the principles of sound banking. No matter how 'soft' or 'long-term' the loans might be, the countries would eventually have to redeem them, and, moreover, the projects which the Bank could finance had to conform to 'sound' banking principles. The criterion was that they 'had to pay off'. It soon became obvious that the World Bank was not an effective answer. Then we had to have the Technical Assistance Board which, operating largely through the specialized agencies of the UN—FAO, Unesco, the World Health Organisation, the International Labour Office, etc.—could demonstrate what might be done. But this became 'window shopping'—like walking down the high street and seeing, behind plate glass, the things you might have if only you could afford them. So in turn we had to have the Special Fund which could finance projects which were far-sighted, but unpredictable in any terms which bankers would understand, and we have also had to have IDA, the International Development Association. This is an adjunct of the World Bank but its purposes are defined as 'to promote economic development, increase productivity and thus raise standards of living in the less developed areas of the world, in particular by providing finance to meet their important development require-

ments on terms which are more flexible and bear less heavily on the balance of payments than those of conventional loans'.

The moves are all in the right direction. The 'philosophy' is increasingly concerned with 'investment in human resources'. Now what is meant by that? This is what I would consider the real infra-structure. The economists think of the infra-structure as preparing the physical amenities which will produce a flow of investments. These have been conceived as ports, railways, roads, telephones, electrical supplies, which it is not the job of an industry itself to create but rather to take for granted. But in populated countries surely the most important factor in the successful development of industry is the human material available. It is difficult to build a factory on a bog and it is just as difficult, if not impossible, to build modern industry, the developments for which those countries are looking, on a morass of poverty—sick, hungry, and ignorant people.

This was recognized in the charters of most of the UN agencies, but what they represent has received a relatively small part of the thousands of millions spent in aid over the past ten, or sixteen years. The World Health Organisation, WHO, has done, with the help of the United Nations Children's Fund, a remarkable job in reducing the mass-diseases, with the result that people are living longer; children are surviving the lethal diseases of infancy and the hazards of toddlers to marry and to multiply. It has had the advantage of a medical breakthrough in terms of the antibiotics and the insecticides. The result is that the span of life in India, which was about thirty in 1946, is about fifty today. This in callous demographic terms means that the average mother who might have died at thirty can have fifteen more children.

FAO has not had the advantage of such a breakthrough. Agriculture is a way of life and it is very difficult to change a way of life. You cannot multiply acres as fast as you can multiply

children. And today we have the Freedom from Hunger Campaign, emphasizing the need to help people to help themselves. The answers do not entirely lie in mammoth projects, like irrigation barrages. They can effectively lie in simple ways, like improved seeds, new forms of rice, simple improvements in cultivation, rural industries to take the surplus population off the land, from sub-subsistence farming of too small plots, so that better methods can be employed.

Unesco has had a tougher assignment. It is a truism that sick and hungry people cannot learn, so that, in a way, it has had to follow WHO and FAO. But it also has to traffic in ideas and has been hampered by the ideologies of the Cold War and the suspicions in new countries of outside influences on the minds of the young. It has also been confronted by the difficulty that, while the principles of universal education, may, indeed, be universal, the practices are definitely not. I know that it is according to the book to use radio-teaching where there is a deficiency in the quantity and quality of teachers, but I found it uncomfortably incongruous to hear a Big Brother voice, with a decided BBC accent, thrusting its way into a jungle schoolroom and saying in barrack-square brusqueness: 'Now, teacher, ask the children to repeat after me.' Perhaps it is good pedagogy, though I doubt it, to talk about the Eskimos to longhouse children on the equator. It is at least better than the affliction of Eskimo children whom I heard being taught the dates of the Wars of the Roses and kerb drill (although they had never seen a wheeled vehicle) one hundred miles north of the Arctic Circle. The other manifest difficulty is that teachers are the academic untouchables, the professional sweepers, badly paid and poorly regarded, everywhere as far as I could judge except in Malaya, where they are paid and treated as an elite—as they should be if we want the best for the new generation. They are supposed to be equipping, young minds to staff, and to make the most of the opportunities provided by, the material.

developments—new steelworks, new factories, and new services.

'Find me ten thousand teachers,' said Biju Patnaik, the Chief Minister of Orissa 'and I will solve the problems of my state'. What a hope! There are not ten thousand teachers to be had. There are not the schools in which they might teach. The parents of Orissa cannot afford to let their children go to school, or, if they should, to keep them there long enough to acquire any good, because the children are wage-earners in impoverished homes.

In Orissa there is the vast steelworks, built in a jungle by the West Germans. It was scheduled to produce one million tons of steel a year. It has fallen short by 60 per cent. The West Germans blame the labour supply—untutored tribesmen. But the truth is that they did not *share* skill; they *imposed* their own. They transferred the practices of the Ruhr to the jungle, without really acquainting themselves with the eccentricities of the ores and coals, let alone with the peculiarities of the peoples. This is another example of the tyrannical assumptions of the experts.

The converse was expressed by the Chief Minister; he said, 'We have exchanged a political imperialism for an industrial imperialism. We have no trained people to replace the Germans. We have good scientists but we have no foremen, because we have no cadre of adequately educated people.'

Which brings me to my own cliché; the developing countries are being frustrated by the missing piston-ring and the missing foreman.

By the missing piston-ring, I mean the shortage of spare parts and the inability to improvise them. People who travel abroad know the gripe about the failure of British motor manufacturers to provide proper servicing and adequate spare parts. Magnify that into all the machines and instruments which are wished on to developing countries. I say 'wished on to' because there is a good deal of huckstering which

masquerades as aid. There are mechanical surpluses as well as agricultural surpluses. There is a tendency, of spurious good intention, to provide obsolete, or obsolescent, machinery for new countries—like benevolently giving a dress to the char. But if they are obsolete or obsolescent it also means that the spare parts have been discontinued. If they cannot order parts—or if they cannot get them for months—and if they cannot have the skills to improvise them, then factories, or vehicles, stand idle. Maintenance is one of the biggest problems in the world today. I know it is unfair, but not entirely untrue, to say that it is like offering a competitor a car which you don't want and which the pits cannot handle. You will win the race, while pretending he is in it.

And then there is the missing foreman. It is true that I meet everywhere excellent indigenous scientists. Most of them—at least in the top bracket—will have been trained abroad. They will have been trained away from the conditions in which they will have to work (for example, doctors who never go back to the villages where they are needed), but even if the research conditions exist the difficulty is to transfer them technologically to the factory floor or to the market (for instance, multi-purpose food). There is the missing foreman.

This brings me to the unappreciated role of the International Labour Office—unappreciated, that is, in the uninformed world outside the countries it is helping. Ten years ago, when I told the French photographer who was going with me that ILO was part of our assignment, he exploded. He was not going to the jungle, he said, to photograph filing cabinets! That—the idea of papers and conventions, conditions of service, wage-agreements—is still very much the impression which people have of the functions of the International Labour Office. But its present role is very different. It is out there in the field, roughing it with the rest of them. It is, with FAO, encouraging the development of rural industries. It is helping to create producer and consumer co-operatives,

like the co-operative store I saw in the treetops in a longhouse in equatorial Borneo. It is organizing and staffing polytechnics and training courses for operatives, foremen, managers, and productivity experts. In East Bengal it is training marine diesel engineers—very important work in a region where most of the transport is by river. All this is going on, but still on a small scale in relation to the magnitude of the problem; although I think most of my ILO friends in the field would agree that, both in scale and quality-wise, it would be difficult to extend it very far; this is because of the lack of primary schools, middle schools and high schools to provide the proper intake.

All this is duplicated, multiplied, in terms of bilateral aid—American, Russian, West German, and so on. It begs the everlasting question of how you get the people to train if there are not enough primary schools to provide the intake.

It also raises the question of what sharing skills really means. Surely it means the transfer of knowledge and experience. Neanderthal man was backward because, while he had the instincts of the tool-making animal, he could only demonstrate because he could not articulate. The skills of the Neolithic onwards were due, undoubtedly, to the powers to communicate. It was possible in the long traditions of the crafts and guilds to pass on the mysteries from master to apprentice, and for skilled men to travel everywhere, without necessarily knowing other languages, like the freemasons carrying the diplomas in the rituals and code signs which certified their craft-qualifications as certainly as the letters after a graduate's name. England, in the first Industrial Revolution, managed to mechanize illiteracy and, in the smugness of industrial success, postpone education until 1872. But in the nineteenth century other countries in Europe, and the United States, wanting to get in on the Industrial Revolution, recognized that there was an alternative to the master-to-man transfer of skills; that it was possible to educate people in technics. Classroom teaching could be a substitute for apprenticeship. This led to

the establishment of the Ecole Centrale of Paris and the polytechnics of Germany and Switzerland. The first country seriously to challenge Britain was Belgium and for reasons as coercive and urgent as those which prevail in the underdeveloped countries today. When Leopold became King of the Belgians, being Queen Victoria's favourite uncle and having spent most of his time in Britain, he had insight into the nature and practices of British industry. In 1842 primary schools were made compulsory in every commune in Belgium. In 1845 over half a million Belgians were unemployed because British mass-produced line had destroyed the handloom trade. This coincided with a crop failure, and the government had to undertake public works. These included the building of railways, canals and roads, but they also included schools, technical schools and technical colleges, and model workshops, where the products of an educational system could acquire the skills. Because of the compulsion of circumstance, Belgium had to artefact an industrial revolution and did so with such success that it got the contract for an iron bridge in Glasgow, in the heart of the iron and steel industry of Scotland. (It was quite a shock for me to get an invitation to the centenary of MIT and to realize that in Massachusetts there had been a technological college forty years ahead of the consolidation of Imperial College in the country which had fathered the Industrial Revolution).

The transfer of knowledge today can be by example—by the introduction of experts to demonstrate what can be done provided that they have competent indigenous counterparts who can function when the experts leave—or it can be by educational methods which can be initiated, and, later, 'topped up' by experts from abroad, or by sending students abroad. But the only way it will 'take', as one says of vaccination, is if there are prepared minds, like the sensitized film which accepts the photographic image. There is no substitute for a grounding in education.

Now I want to say as emphatically as I can

that, wherever, I have been on my recent journey or on any other journey, there is only one hunger which is greater and more clamorous than belly-hunger and that is brain-hunger. In most of the countries I have visited they are working two and three shifts a day in the available schools. It is not only the children; it is the adults. Anti-illiteracy is not just a cult; it is a conscious need.

There is a famine in books—at every level. I am a good internationalist and not a bit chauvinistic but I deplore the failure of British publishers who fail to recognize the fantastic opportunities which enlightened self-interest provides, and which the USSR has recognized—not, I want to say, with subversive motives; any merit they acquire is by making textbooks cheaply available, either in the languages of the country, or, more usually, in English. How can business men, and that is what my own publishers certainly are, ignore a market of 1,250 million in the area I have just left? I find my publisher friends anxiously canvassing the possibilities of the Common Market. It is nothing compared with the ravenous craving for the printed word in underdeveloped countries.

Let me give you an example: for devious reasons Afghanistan up to now has had English (that is American), French and German *lycees*. It now has a quite impressive university with an oversubscribed medical school and science faculty. The students arrive—including, nowadays, unveiled women—with the disability of language. The foreign professors lecture in whatever may be their own native tongue, with their Afghan counterparts (their associate professors) acting as interpreters into Afghan Persian—the only common ground for those who have been brought up in English, French, and German. The library is pathetic. The students have no proper textbooks and can only work from the cyclostyled Farsi lecture notes. Presently, the Russians are sure to move in and provide books in Farsi—accompanied by fellowshipto study in Moscow.

I make it a rule when I am speaking to experts never to discuss their own expertise. My only qualification here, or in the University of Edinburgh, is to tell the experts the conditions in which, in a world which is now a planet shrunken by sputnik, they will have to apply their expertise. I have seen quite a lot of libraries and documentation centres on my recent travels. They are, within limitations relative to the magnitude of the problem, doing a magnificent job. But tell me how, for instance, we are going to meet the needs of the sixty-six medical colleges which have been opened in India, either in terms of essential medical literature or of qualified teachers.

We can only help people to help themselves. We cannot do their jobs for them. But 'we' means the comprehensive 'we'—the people of the whole world. There is no longer any compartmentalization. We are all in it together. The impoverished countries are, in our shrunken world, like a slum at the bottom of our garden. Contagion can spread from it. The slum-dwellers are liable to die of hunger on our doorstep. They lower the tone of the neighbourhood and devalue our own prosperity, but they are also a constant shame and reproach to us.

Sharing skills is the least we can do. We have to do much more. We cannot treat this as putting money in the blind man's tin. We have to give all the knowledge and experience which we have got and support them by redeployment of our resources. We will not do that by exchanging minibuses for Mercedes cars in the bazaar and mart of a European system. There has to be much more fundamental thinking. By 1980 only one in four of the four thousand million souls on this earth will be North Temperate Zone Man—a useful term for evading, while including, American, Russian and the potential Common Market of Europe. The other three will belong to the countries which we now call 'underdeveloped' without which, and their resources of raw materials, the highly developed countries cannot maintain their standard of

life. The only way of maintaining or expanding those standards is to ensure that the other countries develop their resources to their own, and to our, benefit. For the last ten years we have never had it so good and Jack has been all right because we have been exploiting the cheap commodity prices of those countries. As Hammarskjöld pointed out, a 5 per cent drop in the trading figures of any underdeveloped country wipes out the good effects of all aid, multilateral, bilateral, and private investment. In the last ten years the gap

between the wealthy nations and the poor ones has not narrowed; it has widened. The wealthier ones are much wealthier and, by comparison, the poor are much poorer—a sorry comment on the bold new programme' which President Truman announced. There is something dangerously wrong, economically unsound, and morally outrageous in the present situation.

The 'shared skills' are a common heritage which by reinvestment—investment in people—can enhance the riches of this, our earth.

Reproduced from Aslib Proceedings, Vol. 14, No. 12.

SCIENTIFIC LAUGH

Statistics is like the Bikini suit: what it reveals is interesting, what it conceals is vital.

* * * *

Teacher: Can you give an illustration to prove that heat expands and cold contracts?

Pupil: Days are longer in summer, shorter in winter.

* * * *

A person applied for import licence for a 75 h.p. electric motor, 3-phase 440 volt., 50 cycle. The dealing officer put his note on it: Electric motor may be imported, but I see no reason why import licence should be granted for 50 cycles, as cycles are manufactured in the country.

* * * *

Who is a Chemical Engineer?

One who talks chemistry to engineers, and engineering to chemists

* * * *

Customer: I ordered for a rabbit dish, but this seems to be a horse's meat.

Waiter: In fact Sir, it is mixed in equal proportions.

Customer: How's that?

Waiter: Fifty-fifty, Sir, one rabbit to one horse.

* * * *

SCIENCE NEWS

1 *Equipment for "Tape your own TV Programme"*

Taped television enabling the family to record its favourite programmes for viewing again later has been developed in Britain.

A Nottinghamshire firm is producing the equipment and will offer it in world markets before the end of the year. It works in the same way as ordinary sound tape recorder using standard quarter-inch magnetic tape and recording on it sound and vision simultaneously. Replay procedure is same and tapes can be erased and used over and over again.

(Brit. Inf. Ser. BF 707)

2 *Test for determining fat content of milk Products*

The National Dairy Research Institute, Karnal has developed a new test for determining the fat content of milk products. The test known as 'Brisk Test' is conducted by using a ready made detergent solution which can keep well for a year at ordinary temperature.

Under the test, a clean line of demarcation is observed between the fat and non-fat layers of milk product, particularly cheese. A kit containing the necessary equipment for performing the test under village conditions has been designed by the Institute.

3 *Robot Nursing Assistant at Hospital:*

Many new developments to make life easier for the patient, the doctor and the nurse, including what might be called a robot nursing assistant were seen at the Hospital Equipment and Medical Services Exhibition held in London recently.

With the "robot" an ingenious arrangement of electronic apparatus, staff in one ward can keep a patient in another under constant supervision.

The apparatus monitors the patient, convey-

ing to the instruments of an observation panel such information as pulse rate, blood pressure, temperature and respiration rate. Alarm limits can be set on any of all the measuring instruments.

There is a "nurse call" and speech communication system, with ward-to-ward linkage, and a television camera that projects a continuous picture of the patient on to the screen of the observation panel. The camera is for use with critically ill patients only.

A cabinet by the patient's bed houses controls for a six-channel radio system, including television, sound and special tape-recorded programmes, remote control of the room lighting and the patient's television receiver, an electric shaver socket, and a loudspeaker connection to the public telephone system.

(Brit. Inf. Ser. BF. 647)

4 *Anti Corrosion Coating:*

A new range of resin coating to guard against corrosion, abrasion, and erosion in a variety of vessels, heat exchangers, and engineering equipment, is offered under licence to commonwealth countries by a British company.

One of these resin coatings is claimed to be the first that is really suitable for duties involving steam, hot water condensate, demineralised water and water with a high oxygen content. This is a silicone phenolic resin with a special inorganic filler or laminar type which blocks the passage of water molecules and increases the resistance to thermal shock.

The basic range of five thermally hardened coatings and three catalytically hardened coatings enables a wide variety of corrosive conditions to be met. It is claimed that mild steel fabricated plant protected with these resins can be much cheaper than alloy or stainless steels.

(Brit. Inf. Ser. BF 606)

Coal Tar Distillation in UK

Under the auspices of the Association of Scientific Workers of India (CFRI Branch), Mr. C. S. B. Nair, Senior Scientific Officer, CMRI, gave an interesting talk on 'Recent Researches on Coal Tar Distillation in U.K.' on Jan. 14, 1963. Mr. A. Ghosal, Vice-President ASWI, presided.

Mr. Nair said that all types of distillation plants are basically similar in design. The crude tar, after settling and filtration, is heated to 100°C in heat exchangers and passed on to dehydrators after a caustic soda treatment for removal of any ammonia. The dehydrated tar is flushed off by superheated steam injection at 360°C at atmospheric pressure. The oil vapours are subjected to fractionation to yield a number of products. Medium soft pitch is separated as residue.

Since coal tar is largely aromatic in nature, thermal degradation or dehydrogenation results in the production of coke of high molecular weight rather than in the production of shorter chain unsaturated aliphatic compounds. The thermal degradation of coal tar which consists chiefly of demethylation and dehydrogenation is slow upto temperatures around 400°C, but above it the reactions proceed rapidly and therefore the tar at this stage should not come into contact with metals. The main products of distillation are (1) Hydrocarbons-benzol, toluol, xylol, heavy naphtha, naphthalene, dimethyl naphthalene, fluorene, acenaphthene, anthracene and phenanthrene; (2) Oxygenated Compounds: phenols, cresols, xylenols, high boiling tar acids; (3) Nitrogen Compounds: pyridine, various pyridine bases, quinoline, quinaldine carbazole and (4) Coal Tar Pitch.

Some of the recent trends in the processing and utilization of these fractions are as follows:

(1) *Hydro-refining of Benzol & Naphtha*: Hydro-refining offers a convenient method for removing sulphur by taking it into gaseous hydrogen sulphide and at the same time converting the unsaturated hydrocarbons to more stable saturated form. Catalysts are now available which would cause hydrogenation of the undesirable compounds such as S, N, and O compounds and other unsaturated compounds. Hydrorefined naphtha is water white and has a market as 'solvent'.

(2) *Benzene Purification*: The Coal Tar Research Association of U.K. in collaboration with M/s. Newton Chambers Ltd, have developed a process of crystallizing benzene from hydrorefined grade benzene.

(3) *Naphthalene Recovery & Purification*: Mechanical methods are used for the concentration of naphthalene and production of technical naphthalene by fractionation of naphthalene. Methods have been developed for getting rid of sulphur from technical naphthalene by preferentially hydrogenating at 300-470°C under pressure.

(4) *Tar Bases*: A process developed at CTRA enables the removal of 2:6 lutidine from a mixture of β and γ picolines and 2:6 lutidine by counter-current extraction with a solution of nickel salt and toluene.

(5) *Tar Acids*: Recent work has shown that about 16 phenols form the major components of high boiling tar acids from H.T. Tars. The possible outlet of the individual tar acid will be along the following lines: phenoplasts, bactericides, weedkillers and fungicides, froth floatation agents, auto-oxidants, plasticizers, synthetic tannins, special solvents and chemical intermediates. The outlet of High boiling tar acids is as a corrosion inhibitor in pickling solutions and

against acidic stack gases. The major use of tar acids, at present, is as a cheap disinfectant.

The extraction of tar acids also continues to attract attention and many solvent extraction procedures have been attempted.

(6) *Coal Tar Pitches*: Their main use continues to remain for road tar, but now there is keen competition from petroleum pitches. The recent developments are: (a) the manufacture of coal

tar bitumen blend having good weathering properties (b) tar pitch based coating for protecting underground pipes.

Recent researches at CTRA aim at the following (i) improvement of the properties of pitch by incorporating polymers. (ii) Production of electrode type pitch for aluminium industry viz. by lead bath technique for submerged combustion.

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The Metric System of Weights and Measures is the only legal system throughout the country.

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Shirt: (full sleeves)	} 2.75 metres each
Coat:	
Trousers:	} 0.90 metre
Blouse:	

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Coal Mining in U.S.S.R.

Under the auspices of the Association of Scientific Workers of India (CFRI Branch), Prof. B. M. Vorobjev, Guest Professor on Coal Mining at the Indian School of Mines, Dhanbad, delivered a very informative talk on 'Coal-mining in the USSR' on March 19, 1963 with Dr. A. Lahiri presiding. His talk which was illustrated with tables and sketches of the latest types of Russian Coal mining equipment, was followed by an interesting discussion in which besides the staff of the CFRI many mining engineers and geologists participated.

Prof. Vorobjev commenced his talk with the present trend in coal production and the overall fuel balance. The coal production in the USSR was (1960) of the order of 517 million tons (of which about 117 millions are coking coal), which is going to be raised to about 1200 millions tons by 1980. For the past 5 or 6 years, the fuel balance has improved reflecting the changes in power and fuel balance. During 1928-58 the power balance in USSR has changed in the following manner: from 1928 to 1950 the share of wood fuel started decreasing while that of coal for power production increased but after 1950 the share of coal is falling; the share of oil and natural gas has started increasing. The fuel balance during 1958-65 is to follow the following trend: the share of coal will decrease from 59.9 to 48.0 per cent, that of oil will increase from 16 to 34 per cent and that of natural gas will increase over 5 times. This indicates that the share of liquid and gaseous fuels is increasing while that of coal is decreasing. Taking the production during 1961-62, the rate of increase of oils is 11.2 per cent, gas 24.0 per cent and coal 2.0 per cent (coking coal 4 per cent). According to present plan in the USSR, the production of fuel envisaged during 1960-80 is as follows: coal 513 m. to 1200 m. tons; oil 148 m. to 710 m. tons and gas 47 to 720 m. tons. As regards coal,

the problem is not so much of quantity but of quality and cheapness. There is now an increased trend towards open cast mining (20.4 to 51.5 per cent during 1960-80) but the share of underground mining is getting less. In the Eastern regions viz. Siberia, Kazakhstan etc. opencast mining is being developed while in the Western side (Donetz) the seams being thin (1 metre) there is no possibility for opencast mining. Most of the coking coal is obtained by underground mining, whereas coal for power generation by opencast mining.

USSR has made rapid developments in hydraulic (underground) mining. In this technique coal is broken, by means of a jet of water, and the coal water mixture is pumped. There have been rapid developments and increased applications of hydraulic mining than conventional mining, as by this method productivity can be increased.

The following are the main coalfields of the USSR (I) European part (a) Donetz Basin (about 1000 km.), one of the main coal fields of USSR. Before the revolution about 95 per cent of total coal was produced from here. This basin is the main producer of coking coal. Seams are thin. The main difficulties of working are: high gas-bearing coals causing explosions. Long wall Retreating Method of mining is adopted with cutter-loaders; (b) Moscow Coal Basin is the source of brown coal or lignite. They find application as source of chemicals and power. The seams are about 3-5 metres thick and are soft. Cost of coal is high. Shield method of mining is adopted. Underground gasification is also adopted in many places. The coal resembles our lignites at Plana (same geological formation); (c) Tkibuli (in Georgia) Coal Basin. This coal is liable to spontaneous combustion. Hydraulic mining technique is adopted; (d) Pechora Basin—The average thickness of seams is 2.5 metres and they are enclosed in frozen

measures, so they are difficult in working. This coal basin has been developed after the Second World War; (e) Ural Region — Sverdlosk, Chelyabinsk Kizel etc. Some of these are brown coals. Horizontal thickness is 150 metres. Extraction is done by open cast mining. It is profitable to have such a big opencast mining because of the thickness.

(II) Eastern Part—(a) Kuzbass—the coal reserves are 450 m. tons. They are continuous coal seams which are thick. The coal is of good coking variety. Some of these are of high quality which can be used directly (as raw) in the blast furnace because of their low ash content; (b) Karaganda Basin has coking coal; (c) Siberia is still industrially under-development, but the area has huge reserves of coal (Table 1). In Sakhalin Island, there is a coalfield.

Table 1—Present Reserves & Output of Coal

Reserves (in billion tons)	Reserves (%)	Present output	coal (%)
European part	657	7.6	68
Asian part	8012	92.4	32
Total	8669	100.0	100.0

Mining Techniques :

Mines are very highly mechanized and more than half of coal-winning is done by Longwall

(Retreating or Advancing technique), the length of seam face generally being 100-200 metres. All cutting and underground transport is now effected by machines. The Longwall technique is generally applied on thin or moderately thin seams but sometimes also applied on thick seams which are split into slices (horizontal or inclined slices). In Kuzbass (thickness 5-10 metres), this method has been applied using shields so this particular technique in this case is called 'Shield-mining'. Coal is cut by cutter-loader near the face provided with hydraulic self-moving supports. Transportation of coal is done by shaking chain-conveyor.

Now 'winning-aggregates' are being employed. In this case only one or two apparatus control all mechanism of the coal-face. There is no man at the coal-face. Hydraulic mining is being applied in all the main coalfields in the USSR viz. Donbass, Kuzbass, etc. By means of 60-70 atm. pressure jet of water delivered from hydro-monitor, coal is broken down which mixed with water gravitates through the flumes to the sump from which the coal-water mixture is pumped to the washing plant at the surface for de-watering and sale. The main advantage of this method is increased productivity per man (3 or 4 times) over the conventional method. The speaker stressed that favourable mining and geological conditions exist in India for the application of this method. It does not require very costly machinery.

C. E. C. Meeting

Minutes of the 3rd C.E.C. Meeting of the Association of Scientific Workers of India and the Annual Council Meeting (1963) held on 28th January, 1963 at 5-30 PM in the CSIR Conference Hall, New Delhi.

(At the outset the Actg. President, Dr. S. Husain Zaheer who was in the chair, decided with the consent of the members present that a combined meeting of the CEC and the Council will be held to save time).

Members Present :

Dr. S. Husain Zaheer	(Actg. President),
Shri Baldev Singh	(CSIR Unit, Delhi)
„ S. S. Sokhey	„
Dr. H. A. B. Parpia	„
„ V. S. Nair	„
„ J. C. Srivastava	„
Shri V. N. Chhibber	„
„ R. C. Sawhney	„
„ K. Kashyapa	„
„ S. V. Sharma	„
„ R. C. Tewari	„
„ A. Rahman	„
„ Y. R. Chadha	„
„ Kamalesh Ray	„
„ G. Thyagarajan	(Secy. Hyd. Branch)
Dr. D. N. Misra	(CDRI, Lucknow)
Shri S. Bhattacharji	(CFRI, Jealgora)
„ M. R. Raman	(Min. of Def., Delhi)
„ S. Ramabhadran	„
„ J. N. Misra	„
„ Y. H. Rao	„
Dr. M. S. Iyengar	„
„ S. Z. Ali	„
Dr. Rais Ahmed	Srinagar
„ N. P. Gupta	Delhi
Dr. G. M. Verma	(Gen. Secy., Pubn., Kanpur)
Shri U. B. Kanchan	(Jt. Secy., Kanpur)
Shri A. K. Singh	(Gen. Secy., Org., Kanpur)

(The Council observed with regret the loss

to the Scientific World due to the sad demise of Prof. B. C. Guha & Prof. Neil Bohr. The members present observed two minutes silence).

1. Confirmation of the minutes of the previous meetings :

The minutes were read out and confirmed.

2. Report of the General Secretary (Org.) :

The report of the General Secy. (Org.) was adopted.

3. Report of the General Secretary (Pubn.) :

The report of the General Secy. (Pubn.) was read out and discussed :

“The Chairman, Dr. Zaheer while summarising the discussion suggested that the Branches and Affiliated Organisations should pay a particular attention this year to find out reasons why the Indian Scientists are inarticulate and are not availing of opportunity to utilise this forum (VIJNAN KARMEE). Every effort should be made to ensure that there is no dearth of articles for the Journal during the current year. Keeping in view the financial position, it was decided to approach the Govt. for grant-in-aid to meet the deficit of the order of about Rs. 3,500/-; it should also be ensured that there is no break in the continuity for publication of Journal for want of funds.”

The report was thereafter approved and adopted.

4. Annual Report of the Treasurer :

The annual report of the Treasurer was read out and discussed. It

was observed that the income from membership fees was practically nil. The President desired that the new CEC should go into the reasons for this low contribution to the Centre. With an approximately 1,300 membership, the Branches and Affiliated Organisations must be collecting a sizeable sum and as such contribution to the Centre should be more. If the contribution from the membership is low in the Branches, the reasons for this should also be analysed. Perhaps, the method of collection and the membership may be looked into and one of the suggestions *viz*: to arrange for collection directly from the Central Office by issue of VPP should also be explored. The new CEC should ensure that the membership should be increased considerably during the year.

The report was thereafter approved and adopted.

5. Reports of Secretaries of Branches :

The Branch representatives from CFRI, Jealgora, CDRI, Lucknow and RRL, Hyderabad and CSIR Unit, Delhi gave a brief outline of the activities of the respective branches during the year. These will be covered in the form of a detailed report in the V. K. in the ensuing months.

6. Proposals/Resolutions :

(i) Resolution Nos. 1 & 2

The Council observed with regret the loss to the Scientific world due to the sad demise of Prof. B. C. Guha and Prof. Neil Bohr. Resolutions No. 1 & 2 were passed by the Council Meeting and the members present also observed two minutes silence in honour of the departed souls.

(ii) Resolution No. 3 — Retention of Trade Union Character of ASWI

Resolution No. 3 given in the Appendix D was discussed and adopted.

(iii) Resolution Nos. 4 & 5

The above resolutions sponsored by RRL,

Hyderabad and CSIR, Unit, Delhi were considered by the Council and adopted.

(iv) Resolution No. 6.

As a feature which would go a long way towards felicitating our scientists and to encourage them in their endeavours, the Association decided to convey its regards and commendations to Indian Scientists who were recipients of special awards, etc. Specific resolution No. 6 to this effect was passed.

It was also decided that the President and the General Secy. (Pubn) should be authorised to include further names in this place if considered necessary by them.

(v) Resolution No. 7

It was decided that an elective post of General Secy. (Propaganda) should be created. A resolution to this effect No. 7 was passed.

(vi) Resolution No. 8

The above resolution regarding enrolment of Graduates in Science in the National Register was discussed. It was felt that the resolution should be re-worded. However, since the suggestion implicit in the resolution was already accepted, the Council agreed to the sponsor withdrawing the same.

(vii) Resolution No. 9

Resolution No. 9 regarding provision of extra increments when individual scientific workers bettered their educational qualifications was discussed. It was pointed out that this aspect had been pursued by the Association earlier. It was decided that the V. K. should publish a detailed article to this effect and the problem should also be pursued vigorously during the year.

(viii) Resolution No. 10

After some discussion, it was decided that this resolution pertaining to the Study Leave should be referred back to the sponsors since it was not clearly framed. There are two aspects

to be kept in view viz: (i) liberalising implementation of existing study leave rules; and (ii) liberalising the existing study leave rules themselves. CEC would take up during the year fresh resolution in this regard.

(ix) *Resolution No. 11*

While this resolution was accepted in principle, it was felt that the same should be re-worded.

(x) *Resolution Nos. 12 to 19*

Resolutions No. 12 to 19 were considered in toto. Since these relate to the Scientific Policy Resolution and also the problem already pursued by the Association earlier, it was decided to appoint a Committee comprising of the following:

Dr. S. Z. Ali
Shri Bhattacharjee (CFRI)
Shri Baldev Singh and
General Secretaries

to consider the entire resolution in toto and place before the CEC—

- (a) a resume of the present position of the problem as pursued by the Association earlier;
- (b) action arising out of the implementation of the Scientific Policy Resolution of Government of India; and
- (c) a detailed and specific mode of implementing the suggestions made in the resolution under discussion.

The Council, however, decided to accept these resolutions in principle and authorise the CEC to take necessary steps for implementing the same on the basis of the Sub-Committee's report.

(xi) *Resolution No. 20*

This resolution was considered. The problem had already been taken up by the Association earlier. It was decided that the CEC will arrange to submit an up-to-date resume of the present position and also take necessary steps to get this implemented.

(xii) *Resolution No. 21*

The resolution pertaining to the scales of Scientific Assistants was referred to the Committee appointed to consider Resolution Nos. 12 to 18.

(xiii) *Resolution No. 22*

This resolution was also referred to the Sub-Committee referred to above.

7. Appointment of Auditors for the year 1962-63:

It was decided to appoint M/s. M. L. Gupta & Co., Chartered Accountants, The Mall, Kanpur, as Auditors for the year 1962-63. General Secy (Org.) was asked to take necessary action in this respect.

It was also decided to get the accounts of the Association audited for the financial year 1962-63 at Kanpur before shifting the office to Delhi.

8. Office-bearers/CEC for 1963:

The CEC for the year 1963 was constituted as given in the enclosure to these minutes.

The meeting came to a close with a vote of thanks to the chair.

A. K. SINGH

Out-going General Secretary (Org.)

Annual Report of the General Secretary (Org.)

1962

The factual report of the work carried out by the Association during the year 1962 is given below :

ORGANIZATIONS

Meetings :

Three meetings of the CEC have been held during the year. One meeting of the Annual Council and one meeting of the Annual Genral Body meeting was held in January, 1962 at Cuttack.

Branches /Units /Affiliated Organisations :

The Association has its Branches/Units/Affiliated Organisations in the following places :

Branches /Units :

Hyderabad, Lucknow, Jealgora, Bahadrad, Delhi, Calcutta, Mysore.

Affiliated Organisations :

Lucknow (UP, PWD Research Institute Scientific Workers Asscn.), Madras (Southern Rly. Chemists & Metallurgists Staff Asscn.), Pimpri-Poona (Association of Scientific Workers).

The affiliated organisations of Khamaria, Kirkee and Kanpur were affiliated through Federation of Defence Scientific Workers of India. State Federation of Defence Scientific Workers of India has been de-registered, action has been initiated to affiliate these Organisations directly with ASWI.

Registration under the Societies' Act :

On the basis of the resolution passed at the Annual Meeting held at Roorkee in 1961, regarding the conversion of the ASWI from the Trade Union to Societies pattern, steps were taken to give effect to the same. The resolution was given wide publicity through the V.K.

Circular letters were also issued to the Branches/Units/Affiliated Organisations. A formal endorsement of the resolution was also obtained from the Branches/Units/Affiliated Organisations. In the light of the resolution for the conversion and also the amendments drafted at the last Annual General Body Meeting, the Constitution of the Association was re-drafted and this was also circulated to the members of the CEC for their cognizance and signatures. The Registrar of Trade Union was informed of the steps taken by the Association regarding the conversion.

An application in accordance with the procedure was filed with the Registrar of Firms and Societies at Lucknow. The Dy. Registrar of Societies has since informed that the clause in the constitution pertaining to the protection of economic and service conditions of the scientific workers was not within the terms and reference of the Societies Act. This question was taken up with the Ministry of Law with the help of the Law Adviser of the CSIR. On the basis of his advice as well as per advice of other legal Consultants, certain amendments pertaining to objections raised by the Registrar were made so as to fulfil our objectives within the Societies Act.

At the second CEC meeting of the Association held in Delhi, it was decided after long discussion that copies of the remodelled constitution be circulated to all the branches/units and affiliated organisations for approval and comments. It was also emphasized by the Acting President, Dr. Husain Zaheer that every care should be taken to ensure that whatever right and privileges the Association has at present should not be lost consequent to any such transformation that may be brought about.

Opinion of the majority of the branches/units reveals that members are not in favour of Conversion of ASWI from Trade Union to Societies Act. However, it is this Council Meeting to take the final decision on this issue.

Recognition of ASWI by the Government

The question of applying for recognition of the ASWI with the Government was also considered by the CEC and as this was related to the registration of the Association to the Societies Pattern, the draft letter has been kept pending. On finalisation of the conversion issue, the matter will be pursued.

CSIR, SWA

The formation of one Central Association or the CSIR viz: CSIR SWA was considered. An effort was made to get the CSIR Branches together for this purpose. Subsequently, on the basis of the CSIR circular for formation of Staff Association in the various CSIR Establishments, the CEC decided during the year that wherever our branches exist in the CSIR Estt. efforts should be made to convert them to an autonomous associations in the light of the CSIR circular mentioned above. A detailed circular letter was issued to the concerned branches outlining the procedure to be followed for this purpose. Efforts from Hyderabad Branch and Jealgora Branch are encouraging in this regard.

Economic and Service Condition Problems :

A number of economic and service condition problems were referred to the Centre either directly or in the form of resolutions on behalf of the concerned Branch/Unit/Affiliated Organisations. These were pursued by correspondence/negotiations with the concerned authorities. The progress on these matters have been periodically published in the Vijnan Karmee. A list of few such problems is given here for the information of all the members:

<i>Problem</i>	<i>Sponsored by</i>	<i>Pursued with</i>
1. Study Leave	CEC/Council of ASWI	Ministry of Home Affairs/Finance Ministry

2. Condonation of ETE Service rendered between two TE Services vis-a-vis seniority.	Federation of Defence Scientific Workers	Ministry of Defence
3. Transferability of Service Benefits/facilities	CEC/Council of ASWI	Ministry of Home Affairs
4. Grant of additional increments to Scientific Staff in junior grades	Lucknow Branch	Ministry of Railways, AEC, Chairman, Inter-University Board, Ministry of Defence and CSIR

Symposium on Higher Scientific and Technological Education, '1962'

(Sponsored by the World Federation)

The CEC and the Indian Region Centre of the World Federation considered the circular letters received from the World Federation regarding participation in the above mentioned Symposium. The details pertaining to the Symposium have been published in the Vijnan Karmee during the year. The CEC appointed a small Working Committee comprising of Dr. S. Husain Zaheer, Mr. M. R. Raman, Mr. S. Ramabhadran and Sri G. Thyagarajan (Hyderabad) for carrying out this work. The following delegates were sponsored to attend the Symposium at Moscow in Sept. '62.

1. Dr. S. Husain Zaheer (Chairman),
2. Prof. P. C. Mahalanobis, Calcutta.
3. Prof. A. C. Joshi, Chandigarh.
4. Prof. B. R. Seshachar, Delhi.
5. Prof. S. N. Bose, Calcutta.
6. Dr. Gurbaksh Singh, Banaras.
7. Brig. S. K. Bose, Bombay.
8. Dr. Rais Ahmed.
9. Mr. A. Rahman.

Due to personal/official reasons, the following Delegates attended the Symposium at Moscow :

1. Prof. P. C. Mahalanobis.
2. Dr. Rais Ahmed.
3. Dr. Gurbaksh Singh.
4. Prof. S. N. Bose.

Papers presented by the Delegates were highly appreciated.

Symposium—ASWI

Based on the suggestion of the President, the CEC considered the question of arranging Symposium on a subject relevant to Employees and Employers relationship in as much as it concerns the scientific workers.

The 1st CEC appointed (one man) committee of Dr. S. Husain Zaheer for the purpose. In the 2nd CEC meeting, Dr. Zaheer submitted his detailed report. Based on this report, the CEC decided that the title of Symposium should be "ROLE OF THE INDIAN SCIENTIST." The discussion should include — "Scientist in Industry", "Scientist in Educational Institutions", "Scientist in Research Institutions" and "Scientist in Indian Society". Every attempt should be made at the Symposium to evaluate the existing situation, the problems encountered, and steps taken or suggestions made to overcome the difficulties. The venue of the Symposium should be Regional Research Laboratory, Hyderabad. It should be held some time in February or March, 1963. The Committee approved all the details pertaining to the organisational aspects like duration, invitations, individuals to be sponsored and final programme, publications and financial matters. It was decided that the ASWI should approach the Ministry of Scientific Research & Cultural Affairs for a grant to conduct the Symposium. Accordingly, an application for the grant of Rs. 10,000/- was moved to the Ministry of Scientific Research & Cultural Affairs, New Delhi. Ministry has intimated that the request for grant of funds for Symposium cannot be acceded to at present.

Audit Report :

The accounts of the Association for the year ending 31st March, 1962 were audited by M/s. Gupta & Co. and the audited report is enclosed together with the Treasurer's report for information of all the members.

Observations :

Over the course of 8 to 9 years now the Association has been passing through the doldrums. Efforts are being made by the CEC to revitalise the organisation. However, the efforts have been only to keep the organisation going on a care-taker basis. The appeal for increase in membership and the effort for recognition, have to be pursued with vigour. The decentralised pattern has to be resorted to if the local interest of the primary members of the organisation is to be fulfilled. The major question of policies etc. have to be taken up by the Association on a mutual basis. A large number of scientific institutions viz : production, design development and teaching institutions are springing up all over the country and the number of scientific and technical workers are also increasing by leaps and bounds. It is possible that in this development phase the need for an organisation like ours is not being properly appreciated but the ultimate success of the scientific work in the country will depend much on an organisation like the ASWI which alone can provide the forum for their getting together and also appreciate the responsibility of the tasks that lie on the shoulders of the scientific workers. Officially sponsored bodies for this purpose may not entirely provide the means for sorting out some of the difficulties which an average scientific worker may feel in the course of his work and such bodies cannot also fulfil the responsibilities pertaining to the aims and objectives laid down in our constitution.

The Council taking this opportunity of thanking all the office bearers and particularly the President Prof. M. S. Thacker and Dr. S. Husain Zaheer for carrying the responsibilities of the organisation on their shoulders and for keeping the organisation alive during the year.

A. K. SINGH,
General Secretary (Org.)

KANPUR
Dated: 22-1-63

Annual Report of the General Secy. (Pubn.)

During the year 1962, an additional feature of German Lessons has been incorporated in the Vijnan Karmec. The lessons have been presented in such a way that a reader can get a working knowledge of German language in about a year or so. At earlier stages, translation of each lesson was usually published in the following issues so that beginner may get self-confidence and keep up the interest.

We have published twelve issues in the foregoing year almost regularly though at certain periods the mailing of the journal was not as prompt as expected. In the beginning of the year some complaints were received that the despatched copies had not reached the destination. Some of the later issues were sent by registered post. The postal authorities were also requested to look into the matter. Due to declaration of Emergency, most of our workers who were engaged in Defence Establishments were required to work for extra hours and so could not devote much of time to supervise the mailing and despatch of some of the issues of the journal at the end of the year. However, efforts were made to clear the work as quickly as possible.

The financial position of the Journal does require a mention. We cleared almost whole of the debts of previous years though we are still not on the plus side. We also squared up our financial dealings with Indian Regional Centre by repaying them an outstanding loan of Rs. 2,000/-.

Mr. U. B. Kanchan, Jt. Secretary went on tour for acquiring advertisements to Bombay/Poona. Despite certain difficulties, he has been able to get advertisements worth about

Rs. 2,000/-. His further efforts in this respect brought us some dividends. During 1962, we got revenue from advertisements to the tune of approx. Rs. 3600/- (from April '62 to Dec. '62) as against Rs. 1800/- in the year 1961. This has been possible with the kind help from our Acting President, Dr. S. Husain Zaheer and Dr. B. Mukerji, CDRI, Lucknow. We had a mind of sending Sri U. B. Kanchan to Calcutta for the same purpose but due to emergency conditions in the country, he could not go on a long leave for that purpose. Some small amount of advertisement charges of previous years had to be written off as it was found to be unrealisable despite serious efforts in that direction. It is hoped that if some sincere efforts are made to procure advertisements, the Journal can be made self-sufficient to a great extent financially.

We, however, regret to say that despite our repeated requests, we could not get contributions in the form of articles (from our members in general) to be published in our journal. Had this been possible, we would have made the journal more attractive and interesting than at present. However, we have published most of the articles in our Journal in 1962 obtained from foreign scientists on exclusive basis. These we hope, have added to interesting readable matter of our journal. However, positive suggestions from our members in this regard will help the Secretariat office for the next year in making the journal a cooperative effort.

G. M. VERMA,
General Secretary (Pubn.)

KANPUR.
Dated: 21-1-63.

Annual Report of the Treasurer (1962)

Appendix 'A' gives the audited statement of accounts for the year ending 31st March, 1962. Appendices 'B' & 'C' give the Actuals of Income and Expenditure as on 20-1-63 and Budget Proposals for 1963-64 respectively.

The Association derives its income, as known, from three sources: (i) Membership—Direct and Affiliated Organisations/Branches/Units, (ii) Sale and Advertisement revenue from 'Vijnan Karmee' and (iii) the Government grant received from time to time to cover the excess of expenditure over income in the publication of 'Vijnan Karmee'. From financial point of view, the year has been "Bad, good and again bad." Bad because the Association has received a meagre amount of Rs. 79.75 towards the membership fees (Rs. 46.00 direct and Rs. 33.75 as Centre's share from affiliated organisations). Good because response from advertisers has been an encouraging one and has yielded good income. Total collections from the advertisement revenue including outstanding bills are Rs. 2452.49 nP. Again bad, because no Govt. grant has been received except Rs. 3000/- which was received in Aug. '62 and immediately utilised in clearance of pending bills of the Press. Including Dec. '62 issue of 'V.K.', the Association owes Rs. 1600/-

approx. to the Citizen Press, Kanpur.

"Tightening up of belt" adopted by the Government as a result of shameless and brutal attack by the Chinese has affected us too. Under the present circumstances, we cannot depend on the Government grant. We have to stand on our own legs. It is my humble appeal to the members and Branches /Units /Affiliated Organisations to stand up to the occasion, at this critical moment, thereby helping the country and the Association.

The Association took a loan in the past from the Indian Regional Centre, WFSW to meet its expenses in the publication of Vijnan Karmee. A sum of Rs. 2,000/- was paid to the Indian Regional Centre and the accounts were squared up. Rs. 750/- have been taken as loan again from the Indian Regional Centre for an immediate payment to the Press. The Organisation expenses this year amount to approx. Rs. 850/-. Every effort has been made by me to economise—a policy adopted by my predecessor.

J. S. YADAVA,
Treasurer.

KANPUR.
Dated: 21-1-63.

APPENDIX 'A'

Income & Expenditure Account for the Year Ended 31st March, 1962

Expenditure	Rs. nP.	Income	Rs. nP.	Rs. nP.
To Salaries		By Subscriptions :		
„ Rent		(i) From Members	92.00	
„ Stationery & Printing	24.51	(ii) Centre's share from		
„ Travelling allowances & Conveyance	142.97	branches	359.10	451.10
„ Postage & Telegrams	136.00			
„ V.K. Publication & Distribution		„ Vijnan Karmee Publication		
expenses	7,040.43	Grant from Govt.		
„ Bank Charges	2.00	of India		6,500.00
„ Audit Fee	70.00	„ Advertisement Income		2,834.30
„ Miscellaneous Expenses	48.00	„ Sale of Journals		60.00
„ Depreciation	36.00	„ Miscellaneous Receipts		230.88
„ Association Registration Fees	50.00			
„ Subscription	100.00			
„ Excess of Income over Expendi- ture transferred to General Fund				
A/c	2,426.37			
Total :	10,076.28	Total :	10,076.28	

Income & Expenditure Account of 'Vijnan Karmee' Publication for the Year Ended 31st March, 1962

Expenditure	Rs. nP.	Income	Rs. nP.
To Printing & Duplicating expenses	5,485.90	By Grant-in-aid from Govt. of India	6,500.00
„ Establishment expenses	824.00	„ Advertisement Income	2,834.30
„ Postage and Telegrams	234.41	(out of which Rs. 1,169.25	
„ Bank Charges	40.70	was outstanding on 31-3-62)	
„ Stationery	254.62	„ Sale of V.K. Journals	60.00
„ Conveyance & T.A.	162.47	„ Miscellaneous Income	230.88
„ Miscellaneous expenses	38.33	(Sale of Paper)	
„ Excess of Income over Expenditure	2,584.75		
Total :	9,625.18	Total :	9,625.18

M. S. THACKER
President

G. M. VERMA }
A. K. SINGH } General Secys.

J. S. YADAVA.
Treasurer.

AUDITOR'S REPORT

Checked and found correct subject to the remarks in the Audit Report.

Kanpur,
7th July, 1962

GUPTA & Co.,
Chartered Accountants.

APPENDIX 'B'

Actuals of Income & Expenditure A/C for the period 1-4-62 to 20-1-63

Expenditure	Rs. nP.	Income	Rs. nP.
Stationery and Printing ..	75.25	Membership Fee—	
T. A. & Conveyance ..	258.49	(i) Direct ..	46.00
Postage & Telegrams ..	150.40	(ii) Branches ..	33.75
Bank charges ..	4.00	Advertisement revenue ..	2452.49
Affiliation Fee ..	200.00	Publication Grant ..	3000.00
Miscl. expenses ..	90.31	Sale of Journal ..	57.00
Establishment charges ..	70.00	IRC for Publications ..	1990.45
V. K. Printing charges ..	4945.94	Excess of expenditure over income ..	1605.24
,, Conveyance & T.A. ..	505.88		
,, Stationery ..	33.06		
,, Mailing charges ..	182.46		
,, Postage & Telegrams ..	369.10		
,, Miscl. expenses ..	68.06		
,, Office Equipment ..	223.28		
,, Bank charges ..	18.25		
I.R.C. Publications ..	1990.45		
Total: ..	9184.93	Total:	9184.93

Statement of Assets & Liabilities as on 21-1-63

Liabilities	Rs. nP.	Assets	Rs. nP.
Pending printing bills of V. K. (Citizen Press) till 11/62 issue ..	974.00	Advertisement revenue outstanding ..	2185.37
Sri U.B. Kanchan, Jt. Secy. ..	14.37	Office equipment ..	358.00
General Fund ..	2606.46	Advances for Expenses: ..	471.02
Loan from Indian Regional Centre ..	750.00	Sri M. R. Raman ..	151.18
		Sri S. Ramabhadran ..	46.58
		Sri D. V. Varma ..	87.26
		Sri A. K. Singh ..	64.65
		Sri G. M. Verma ..	82.90
		Sri D. Pal ..	38.45
		Cash in Palai Bank ..	14.78
		Cash in P. N. Bank ..	258.10
		Cash in hand ..	1.36
		Excess of liabilities over assets ..	1056.20
Total:	4344.83	Total:	4344.83

APPENDIX 'C'

Budget Proposals for the Period 1-4-1963 to 31-3-1964

Income		Expenditure	
	Rs. nP.		Rs. nP.
Subscription	.. 2000.00	Allowances & expenses to Officers	400.00
Advertisement revenue	.. 3000.00	Stationery/Printing	.. 500.00
Grant & Donations	.. 12500.00	Affiliation Fee & others	.. 300.00
Sale of Journal	.. 200.00	V.K. Publication	.. 12500.00
		Establishment	.. 4000.00
Total :	<u>17,700.00</u>	Total :	<u>17,700.00</u>

APPENDIX 'D'

RESOLUTIONS SPONSORED AT CEC MEETING

RESOLUTION No. 1

(Sponsored by CEC)

It is with deep regret that the Annual Council Meeting of the Association of Scientific Workers of India have to record the sad and sudden demise of Professor B. C. Guha on 20th March, 1962. Professor Guha was one of the Founders of the ASWI and was very closely associated in active capacity as the General Secretary, Vice-President and President in the initial stages. Last year, he was elected as the Vice-President of the Association at the Annual Meeting held at Cuttack. It is unfortunate that the Association will not be in a position to have the benefit of advice and help of one of the very active members in its fold. His contribution to Science, Scientific work and the Scientific Workers of this country will however, remain as a permanent record of his dedication to the cause.

RESOLUTION NO. 2

(Sponsored by Hyderabad Branch)

This Annual Council Meeting of the Association of Scientific Workers of India expresses its profound sorrow at the demise of Dr. Niel Bohr, the father of modern physics and one of the world's greatest atomic physicists. This meeting considers his death a very great loss to nuclear physics and to the scientific world and conveys its condolences to the bereaved family.

RESOLUTION No. 3

(Sponsored by CEC)

Preamble :

Efforts were made to get our Association registered on a Society pattern under Societies Act on the basis of the resolution passed by the General Body in the year 1961 at Roorkee Session. The Registrar of Societies, Lucknow was contacted. He informed that it was possible only if we delete certain clauses from our Constitution pertaining to the position of the Association vis-a-vis the economic conditions of scientific workers.

It was felt that such a step may not be liked by our members. The amended constitution, however was circulated to our branches and their advice was sought. Almost all the branches have reciprocated our feelings in as much as the deletion of the economic clause has not been favoured.

It is resolved that the Association should maintain its existence as a Registered Trade Union body.

RESOLUTION No. 4.

(Sponsored by Hyderabad Branch)

This Annual Council Meeting of the ASWI, unequivocally condemns the armed aggression by the Govt. of the People's Republic of China against India. The Association considers this aggression a betrayal of the ideals of peace and the principles of Panch Sheel agreed to between the two countries.

The Association pledges its whole-hearted support to Government of India in vacating the aggression and restoring the territorial integrity of the country. It calls upon all scientific workers in India to put in their maximum efforts in the cause of the defence of the motherland.

RESOLUTION No. 5.

(Sponsored by CSIR Unit, Delhi)

The National Emergency caused by the Chinese aggression against India places upon the Scientific workers and other citizens of the country the sacred duty and responsibility of defending the motherland. The strength of a nation in modern times lies in its scientific and industrial potential. Scientific workers in the research institutes, industries and the universities have an important role to play in increasing the industrial and defence production.

Conscious of their duties and responsibilities the members of the Annual Council of the Association of Scientific Workers of India resolve :

- (i) that they solemnly pledge their full support to the Government of India in the task of defending the motherland and assure the Prime Minister and the people that no sacrifice will be too great for them in this sacred cause,
- & (ii) that they will devote their entire energies and talents to the advancement of science and technology for the defence and development of the country.

RESOLUTION NO. 6

The Annual Council Meeting of the ASWI conveys its hearty felicitation to the following Scientists :

- (i) Dr. S. Chandrasekhar, Professor of Astrophysics, Yerkes Observatory, Chicago University, USA (on the award of the Royal Society's Gold Medal).
- (ii) Dr. V. Subrahmanyam, Director, CFTRI Mysore (for the Babcock Hart Award in the USA).
- (iii) Prof. Chandrasekharan, Professor of Mathematics, Tata Institute of Fundamental Research, Bombay and Dr. C. Radhakrishna Rao, Head of Deptt. of Theoretical Research Training, Indian Statistical Institute, Calcutta (for the Shanti Swarup Bhatnagar Award by the CSIR).

RESOLUTION NO. 7

(Sponsored by CEC)

It is proposed that an elective post of one General Secretary (Propaganda) should be created in the Central Executive of ASWI so as to look to the creation of new Scientific Worker's Associations, in different scientific and technological institutions throughout India. This will help in improving the representative capacity of Association of Scientific Workers of India and will go a long way in getting its recognition from Government of India as officially representative body of Scientific Workers of India.

Resolutions Sponsored by CFRI Branch, Jealgora

RESOLUTION NO. 8

1. The ASWI has one of its objects the maintenance of a scientific personnel's register and since its very inception the Association has been working towards this aim. Since several years, a National Register Unit has been functioning under the CSIR. The Unit is maintaining a national register — which is published from time to time—of qualified scientific and technical personnel having at least Master's degree in Science, Bachelor's degree in professional or specialised courses (viz: Agriculture, Veterinary, etc.), Diploma in Engineering or Technology or post-graduate qualification in medicine. The Unit has already rendered useful assistance to appointing authorities, like the UPSC and other organisations.

In the UK and the continent, a B.Sc. degree in Science is considered adequate for work leading to a doctoral or any other higher research degree. The Institute of Fuel (UK) is awarding its Associate membership—with eligibility to mention themselves as fuel technologists—to holders of B.Sc. degree with research experience in Fuel Technology. Even in India in the national laboratories and elsewhere, there are many scientists holding very high and responsible positions in the research and technological divisions who had obtained only the B.Sc. degree during their academic career.

In this connection, it may be mentioned that an Associate of the Royal Institute of Chemistry (ARIC) in UK is recognised for carrying out researches for doctoral thesis. A similar institution in India—The Institute of Chemists (India)—is holding annually an examination for (B.Sc. degree and above) its Associateship, which is not as yet recognised by the Indian Universities. The Indian Universities may therefore be requested to consider recognition of an Associate of the Institute of Chemists (India), AIC, for eligibility for doctorate.

Those who are only B.Sc. are, however, strongly advised to prepare privately for such examinations on passing which their qualifications are enhanced. The Branch may be asked to gather detailed information for such examinations (of different corporate bodies) in different branches of science; if necessary a Sub-Committee may be appointed for this purpose.

Considering all these points, the CSIR should enrol B.Sc. with sufficient experience in a branch of science, as specialists (in that particular branch) in the National Register, so that the anomaly may be removed. The following resolution seeks to redress the grievance of the B.Sc. degree holders in this regard:

"The members of this Branch of ASWI consider that the B.Sc. degree qualification is minimum and adequate for carrying out researches in Science, and that a minimum 3 years' research or industrial experience in a particular branch in a national laboratory or recognised institution after obtaining B.Sc. degree should enable to be considered a specialist in that branch. We, therefore, request the National Register to enrol such graduates in Science as specialists in their respective field of work."

RESOLUTION NO. 9.

In many cases among the scientific workers whether employed in teaching, research or in industry, there is a desire for further study for bettering both their prospects as well as knowledge. Such laudable attempts for extending knowledge deserve the fullest encouragement and support of employers and others and grant of facilities. In recognition of such laudable attempts, the scientific workers, on obtaining any higher degree or diploma, should be given some extra increments.

Resolved that the scientific workers should be encouraged to enhance their academic qualifications, and therefore, it is suggested that such workers whether employed in research, teaching

or in industry, should, on obtaining a higher degree or diploma, be given some extra increments as a recognition for the furtherance of their knowledge."

RESOLUTION NO. 10

Due to various reasons many people join the scientific services with the minimum academic qualifications which can get them a suitable job. However, in a number of cases the desire for further study is there, as much for the sake of gaining greater knowledge as to better one's service prospects. This is an entirely laudable aim which can profit both the employee and his employer but to achieve this aim it is necessary for the employer to frame liberal study leave rules so that after a period of service (say, 3 years) it is possible for an employee to obtain such leave without jeopardising his service seniority or undergo financial hardships.

"Resolved that as the improvement of an employee's scientific or technical qualifications can only be of benefit to the employee and his employer, those bodies which employ scientific and technical personnel should frame liberal study leave rules for this purpose."

RESOLUTION NO. 11

Even in normal times, the shortage of qualified and experienced scientific and technical personnel has been a handicap to the national plans for the industrial development. The position has become even more grave with the realisation, after the Chinese aggression, that a massive and rapid scientific and technical effort is needed to place the country's defences on a sound footing. In such a situation, it is necessary that all scientifically and technically qualified and experienced personnel who are at present not actually engaged in research, development or production should now be released from such duties to take up work for which their specialized qualifications and training fit them and which constitutes a part of the national defence effort.

Having regard to the shortage of suitably qualified and experienced scientific and technical personnel in the country and further having regard to the grave situation in which the country now finds itself, it is necessary to utilise to the maximum the country's resources, among which must be counted its scientists, engineers and technicians. It is, therefore resolved that the Government be moved to make full use according to qualification, training and experience, of the scientific and technical brain-power in the country."

Resolutions sponsored by Lucknow branch

RESOLUTION NO. 12.

The General Body of the Association of Scientific Workers of India, Lucknow Branch in its meeting held on 26th Sept., 1962 to consider the ways and means of improving the service conditions of scientific workers in the country, observed that the improvements effected during the last 15 years, since independence, have not proved to be adequate for building up high traditions of scientific research and teaching which are the foundations for rapid development of the nation's economy. It was strongly felt that the existing conditions of service, viz: mode of recruitment, low salary scales and the methods and prospects of promotion, were highly unsatisfactory and primarily responsible not only for making the specialised intellectual capital in the country shy or in many a case even prone to fly out, but also for causing a serious drift of the would be scientists away to the administrative services — the overall effect being that the country was not deriving the best of what the science could offer. This was a matter of grave concern and the members felt that such a state of affairs should not be allowed to continue. The need for amelioration of such conditions was all the more obvious at the present juncture, when the nation could ill-afford any wastage of its manpower and all the scientific talent has to be mobilised for country's defence and for the nation's production drive.

The General Body, therefore, resolved to put

forth the following concrete suggestions for adoption by the Central Government and the State Governments with a view to create the much needed healthy and suitable atmosphere in the country for rapid development of the national economy.

RESOLUTION No. 13.

There should be complete parity of grades between all scientific, technical, teaching and administrative services at both the central and state levels.

RESOLUTION No. 14.

Recruitment to scientific and teaching services should, in general, be through fellowships of two types: Junior (Rs. 350-25-450) and Senior (Rs. 400-50-500), the selection being made by a central committee on the basis of academic performance in the University. The academic qualifications for Junior Fellowship should be M.Sc. or a basic degree in the professional examinations or an equivalent degree or diploma, while for Senior Fellowship Ph.D. or 3 years research experience or equivalent advanced training. The performance of research fellows for absorption into regular cadre should be assessed after 4 years in case of a Junior Fellow and 2 years in case of the Senior Fellow.

RESOLUTION No. 15.

The following grades are recommended for the scientific and teaching services:

Scientific Officer /Assistant Professor:
Rs. 500-50-1250.

Principal Scientific Officer /Associate Professor: Rs. 1000-60-1300-75-1600-100-2000.
The seniormost among the P.S.O.'s /Associate Professors shall be the Head of Division Professor, drawing an additional allowance of Rs. 200 /.

RESOLUTION No. 16.

Promotion should not be dependent on the availability of a post in the next grade, but only

on performance. A scientific officer's work for the purpose of promotion should be subject to an assessment by a suitably constituted committee after five years of entering the regular cadre. In the eventuality of his not being found suitable for promotion at the first chance, he may subsequently be given two more chances after every 3 years.

RESOLUTION No. 17.

The starting salaries in different professions should be based on the number of years spent in the University and in training thereafter if any.

RESOLUTION No. 18.

The Heads of all technical departments should be persons with suitable academic background in the particular field.

RESOLUTION No. 19.

The management of Research Institutions should be entrusted to a Council constituted of the Heads of Divisions with a Chairman to be appointed by rotation every 2 years from amongst them, and an additional allowance of Rs. 300/- may be given to the Chairman.

RESOLUTION No. 20.

(Sponsored by CFRI Jealgora)

Discrimination between Research & Non-Research Scientists

We resolve that the discrimination between those engaged in Laboratory work and those in Engineering, Statistical, Publication, Information, etc. in the CSIR in regard to their pay scales and age of retirement be removed, since such a discrimination is not justified and leads to counter problems.

RESOLUTION NO. 21.

(Sponsored by CFRI, Jealgora)

Scale of Senior Scientific Assistants

In the light of the Pay Commission's recommendations as adopted by the CSIR under

'Revised Pay Scale Rules', the scale of the Senior Scientific Asstt. (also STAs) have been revised to disadvantage of the incumbents, that is it has been revised from Rs. 250-25-500 (plus DA) to Rs. 325-15-475-EB-20-575, thus lowering the rate of increment from Rs. 25 to Rs. 15.

On making representations from many quarters viz : from ASWI Branches and by individual (SSAs and STAs) appeals for revising the scale to Rs. 325-25-575 so as to at least retain the previous rate of increment, the CSIR has under Circular No. 15(30)-E1 Pt. III of June 16, 1961 made a consideration for those SSAs and STAs who have been appointed upto 17-11-60 to continue in the old rate of increment *i.e.* their pay scale has been revised to Rs. 325-25-575. But in the case of those appointed on or after 18-11-60, the revised pay scale continues to be Rs. 325-15-475-EB-20-575.

It is strongly felt that it is unjust to discriminate the scientific workers in the same rank and designation (with the same duties) as this goes against the spirit and principle of quality enshrined in our Constitution.

We therefore resolve that there should be only one scale of pay *i.e.* Rs. 325-25-575 for all SSAs and STAs whether they have been appointed before, on or after 17-11-60 and that this scale should continue hereafter.

RESOLUTION NO. 22

(Sponsored by CFRI, Jealgora)

This Annual Council meeting places on record its appreciation of the scientific and technological aid rendered to our country by foreign experts in recent times. However, it has been felt that in some fields expert help has not been rendered upto our expectations. We are of the opinion that in cases where this has been so, due to, say, buildings (laboratories, factories etc.) and plans being not ready for the experts to carry-out their work, the Indian Scientists, Technologists and the proper authorities should

take the initiative in utilising properly, for the development of this country's economy in spite of the formal impediments in the execution of given plans, the expertise of the foreigners in the shape of say, forming study groups with these experts for giving courses of lectures and seminars, etc. Steps may also be taken to see that such foreign experts are not henceforth employed indiscriminately without setting ready the plans or the exact nature of their (experts) work.

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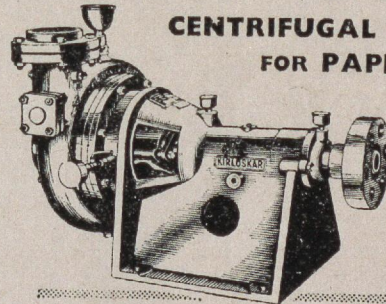


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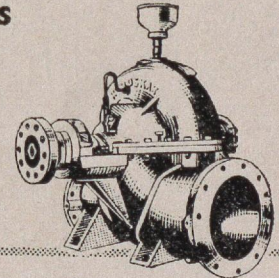
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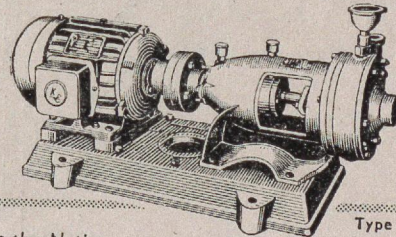
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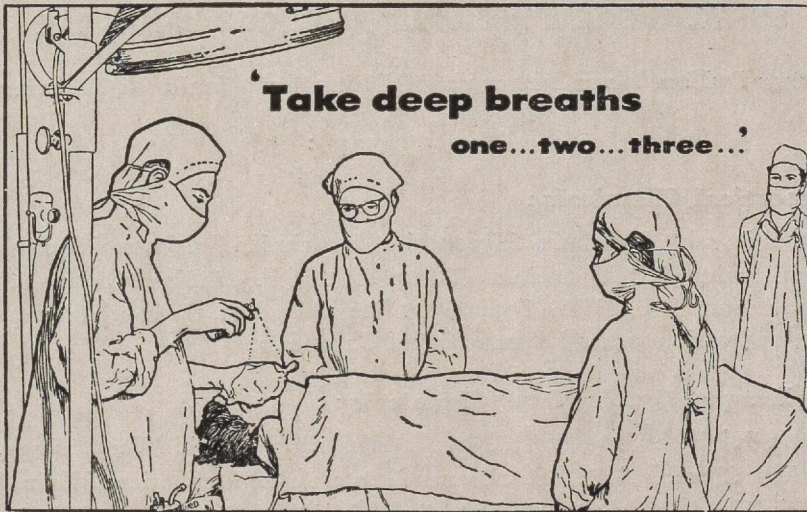
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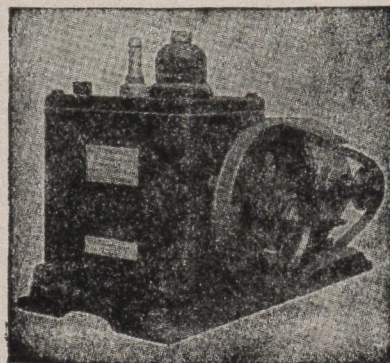
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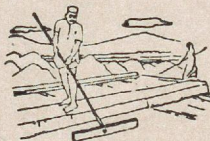
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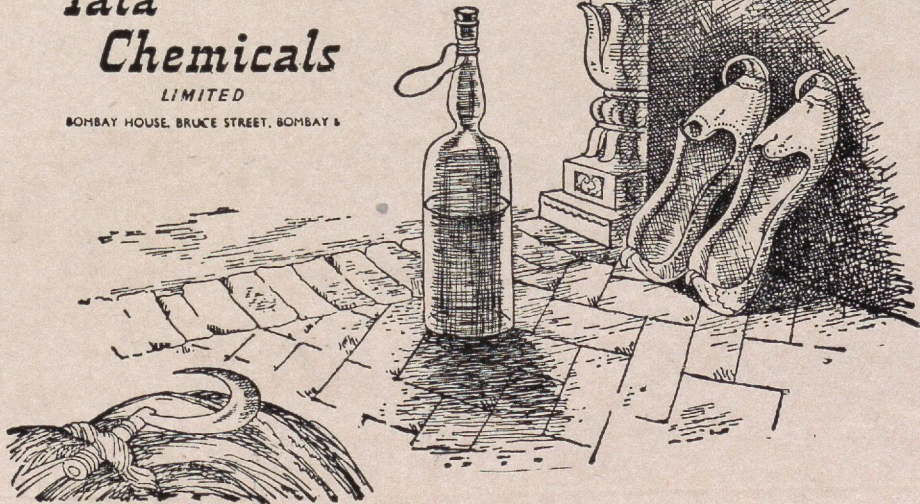
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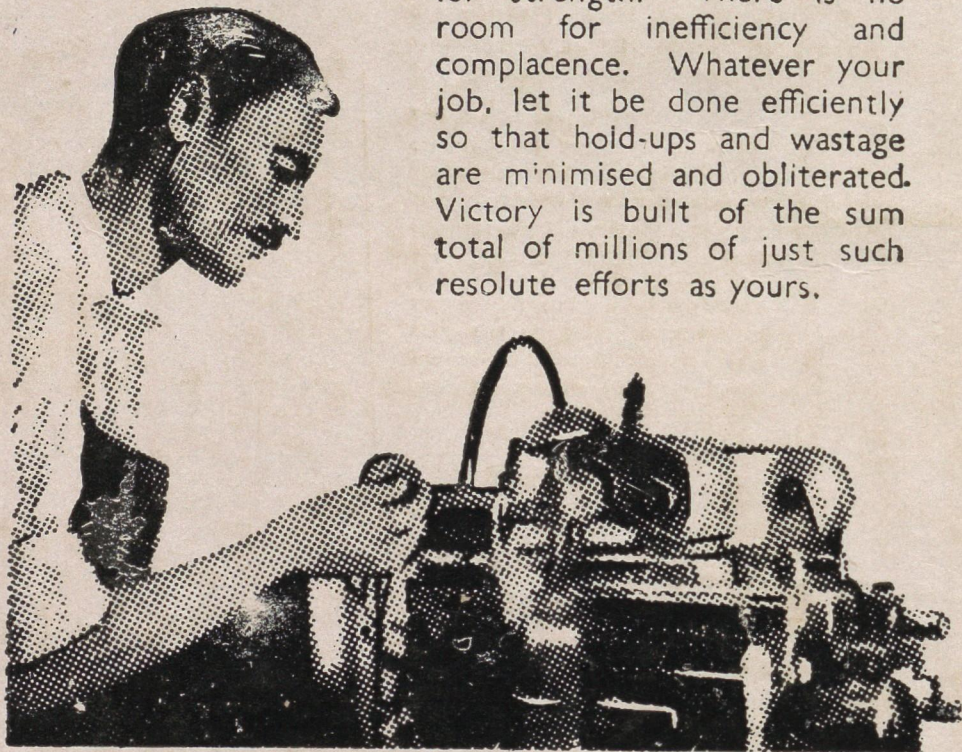
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