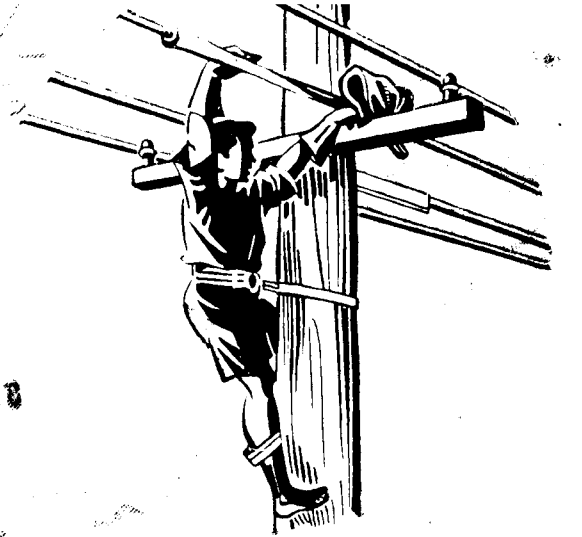


THE ALIND

781

Chronicle



Mr. Kalathil Velayudhan Nair, Minister of Works and Transport, gave away the prizes on Factory Day, 1953. Picture shows O. C. Chacko receiving the championship cup.

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Power from the Atom
Factory Day—Story and
Pictures
The Travancore Rayons
Damodar Valley Corpo-
ration

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Mr. V. Seshasayee.

ON this auspicious occasion of the celebration of the third anniversary of our Factory, I send you all my very best wishes. I was looking forward, with the keenest anticipation, to personal participation in the festivities, but, I have reluctantly had to deny myself the pleasure, on account of my present indifferent health. It is, indeed, a great pleasure and an honour to us, that the Hon'ble Minister of our State for Public Works, is with you this evening. I join you all in extending to him a most warm welcome, both as our supplier of electric power, on which we so much depend for running this factory, and as a very valued and large user of our product. Let us all assure him and our other customers that we will continue to give them only material of the highest quality.

Currently, as you all know, the First Five-Year Plan is in operation. Great things are in the making in this country. Projects like the Damodar Valley which a few years ago were not even dreams are at present fast moving towards reality. And all of us of this company have a part to play in the historic experiment that is being carried out in India to-day.

The nation is definitely moving forward, and for it to move even further forward, continued hard work and perseverance on our part individually and collectively will be necessary. The coming years offer a challenge to every one of us to do our best and to make the most of our time, and I am sure that all of you will take full advantage of the great opportunity offered.

This is a day of festivity and merriment and let me, on this joyous day, wish you all good health and every happiness.

Tiruchirapalli.

V. SESHASAYEE.

* * * *

I thank you for your invitation for the Factory Day celebrations. I wish all success to your noble efforts for maintaining good personnel relations.

Indian Aluminium Company Ltd.,
Calcutta.

P. N. KRISHNA PILLAI.

* * * *

Greetings and best wishes for successful celebrations and increasing prosperity to all concerned.

The Mettur Chemical & Industrial
Corporation Ltd., Mettur Dam.

K. K. RAMAN.

* * * *

Sincerest thanks for your kind invitation. All success to the most interesting programme drawn up for the occasion.

Indian Institute of Metals,
Calcutta.

D. DAS GUPTA.

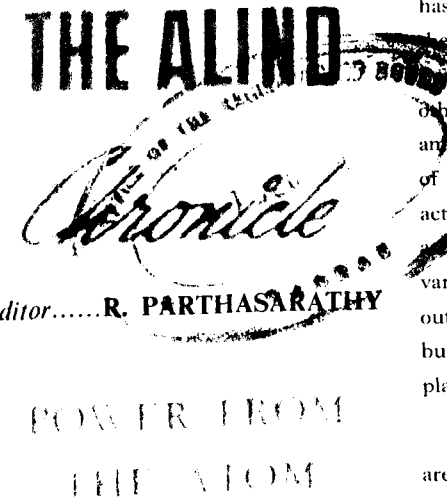
* * * *

You are amply justified in feeling proud of the efficient industry which is serving our country so well, almost from the very day of its birth . . . I convey my very best wishes to all concerned.

I am sure through your concerted efforts and fine team-spirit you will not only bring greater glories to your organisation, but will, also, set a standard for other companies to follow.

Calcutta.

S. BHATTACHARYA.



A LITTLE over six years have passed since the first atom bomb was exploded at Hiroshima on August 6, 1945. In the intervening years, the American Atomic Energy Commission and various private organisations working in collaboration with the Commission, have been investigating the possibility of exploiting the atom as a source of electric power. And enough progress has been registered to establish that the scheme is within the realms of possibility. Its economic feasibility has, however, yet to be worked out.

An atomically powered electric plant will have virtually identical electrical generation and distribution systems as any present-day thermal station. Only the furnace and boiler will be replaced by a nuclear reactor and heat exchanger. Heat produced by the atomic fission process in the reactor would be absorbed by a liquid metal passing through the reactor core. The liquid metal would then be piped to a water boiler, producing steam. The steam would drive a turbine generator producing electricity.

Particularly since the U.S. Government made the announcement that it would propose changes to the Atomic Energy Act destined to "create a wider oppor-

tunity for private investment" for building and operating atomic plants, speculation has been rife in the United States about the economic feasibility of an electric power station using atomic energy. In other words, the present law would be so amended as to permit private ownership of fissible materials and nuclear reactors. Although the proposed changes are expected to be effected only next year, various utilities, industries and consulting outfits, in the United States are already busy calculating the cost of an atomic plant.

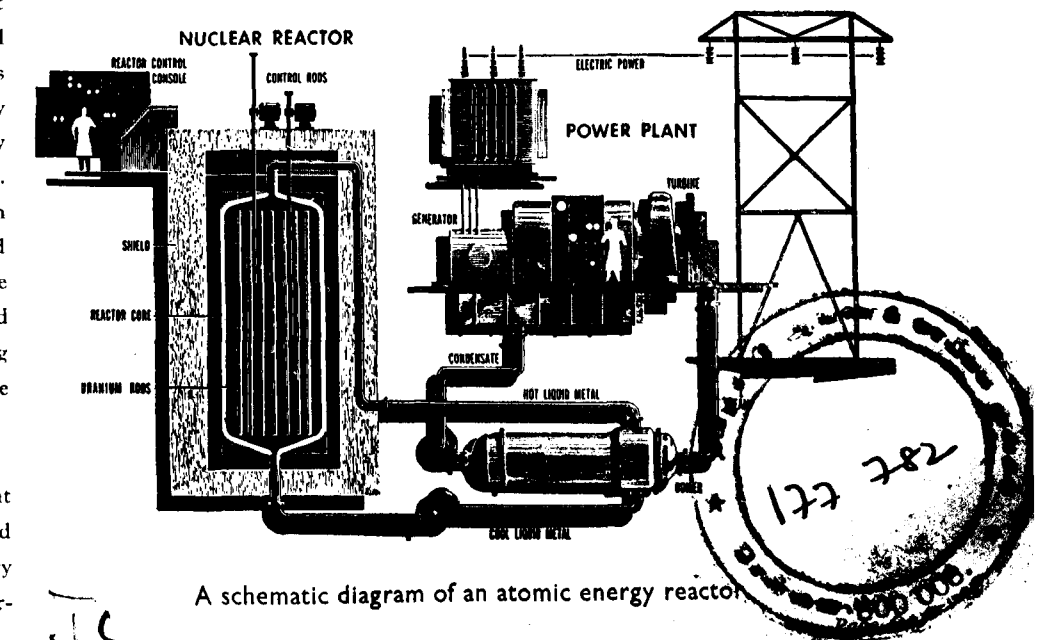
It would, also, appear that U.S. experts are divided over the question of whether an atomic power plant should be built with a dual purpose reactor, producing both heat and plutonium, or a single-purpose reactor using uranium as a fuel and producing heat. The dual-purpose reactor would be economical only as long as the U.S. Government can be expected to buy all the plutonium produced for its hydrogen bomb programme. But there is no guarantee that the AEC's plutonium requirements would go on interminably.

Another major problem in the exploitation of power from the atom is tied up with considerations of safety. No plant with a site approximately with the size of

an equivalent modern steam plant will be big enough to be safe according to present atomic safety standards. The exclusion area alone may cost about 50 per cent of the present cost of an equivalent steam plant.

Again, at even an optimistic estimate, the cost of electric power generation in an atomic plant would be between 2.5 to 4 cents per kWh which compares unfavourably with 1.5 cent per kWh, representing the average cost of power from other sources in the U.S.A. Nevertheless, the areas where the cost of other fuels like coal, natural gas or diesel oil would be high, and where hydro-electric potential is non-existent, it might be profitable to make use of small-capacity, high-cost, atomic power stations.

The breathless excitement, at present associated with the atom, is bound to wear off, in the course of some years. The problem of power generation from this source will then boil down to one of pure economics. Although, at present power from the atom does not look altogether promising, it is to be hoped that in the not-too-distant future, the atom will not suggest only a dreaded bomb, but another source of energy harnessed to the benefit of humanity.



A schematic diagram of an atomic energy reactor.

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news & developments

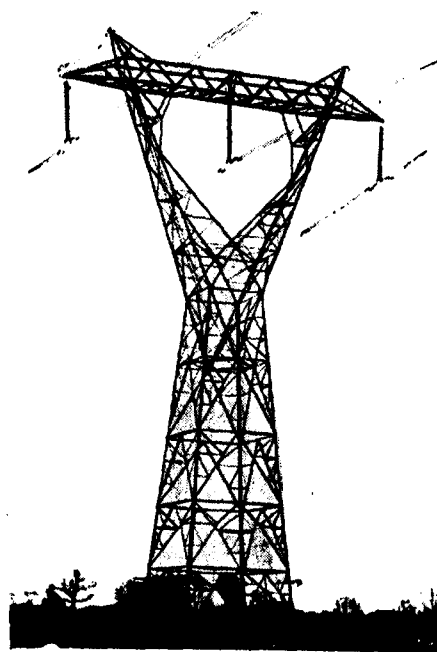
THAT aluminium is non-injurious to both man and beast is well known. Recently, however, it was established that aluminium application was positively beneficial. Large burns, slow-healing, infected old wounds, open sores, deep operation wounds, even stomach ulcers, and especially those wounds where other "proven" remedies had failed, have all been found to react well to aluminium treatment. Immediately after application, it was stated that pain decreased—often totally disappeared—and scars looked much less frightful. Most favoured is aluminium powder as it can easily be sprayed on wounds. There are many theories about the curing effect of aluminium powder, but, in all likelihood, it is to be found in the physical, electro-chemical and colloido-chemical properties of aluminium. Relief from pain is due to the shifting of the centre of the wound to the alkali side, since the local acidosis gets neutralised by aluminium. The reaction product is aluminium acetate, having an astringent effect, and by coagulation of the albuminous substance, it forms a soft scab.

Aluminium therapy has been found most to benefit persons exposed to silica dust. In the United States, foundry workers of Myers and Bros. Co. (Ohio), are given doses of finely-ground aluminium powder to neutralise an acid formed in the lungs by silica. In a year, sixteen such treatments are given. Doses start at one minute, and gradually increase to six minutes, but are scaled to individual needs.

Britain's Supergrid: "When Sir John Hacking recently made alive formally the first section of the 275 kV supergrid, an historic step was taken in the develop-

ment of power transmission in Great Britain," as the *Electrical Times* observes in a recent issue. The object of this Supergrid, it is stated, is not only to reinforce the heavily loaded 132 kV Grid, but also to provide bulk supplies of power to heavy industrial areas.

The towers will be 136 ft. 6 inches high, spaced normally at 1,200 feet, and will carry 2-3 phase circuits, each consisting of two ACSR conductors per phase. These twin or "bundled" conductors will be suspended 12 inches apart in the horizontal plane, and will be made up of 54 aluminium wires, each of 0.125 in. in diameter and seven steel wires of the same section, the aggregate cross-sectional area



A Supergrid tower.

being equivalent to 0.4 sq.in. of copper. The spacing at the middle cross-arm will be 36 ft. 6 inches. The height of the towers is such that it will be possible to operate the line at 380 kV, should that

become desirable in future. To do so will, however, necessitate a greater number of insulators of new design.

Aluminium Transmission Towers:

From Italy comes news of a new design in transmission towers to carry a 275 kV single-circuit which weighs only 4.8 tons compared with the 7.8 tons of the corresponding tower used by the British Electricity Authority. This has been achieved mainly by using aluminium tubes for the bracing members, high-tensile steel for the main members, and the most important bracing members, and by using electrically-welded joints where practicable. A sample tower has been constructed to this design and successfully tested.

Aluminium in reactors and transformers:

For the current-limiting reactor, aluminium not only saves scarce copper, but also offers several engineering advantages. Even the dry-type reactor of average-size contains about 800 lb. of copper, while a large one has about 4,000 lb. A large oil-immersed reactor may require nearly five tons of copper. By developing reactors using aluminium, a company like Westinghouse, for example, will be saving something like 200 tons of copper a year. The lower strength of aluminium will make it necessary to have more supporting columns and bracings. Also, the higher thermal expansion has to be taken in account. An aluminium-wound reactor, however, weighs about one-fourth less than its copper counterpart, and since the oxide layer acts as an insulator, no insulation between strands to cut down eddy-currents is needed. GEC have also switched over to aluminium for reactor windings, and have reported savings of over 10 per cent in overall cost.

technical notes

ACCORDING to a recent report, Kaiser Aluminium and Chemicals Corporation have pioneered the development of a new type of spiral aluminium cable called "triplex" for service drops and secondary lines. Many utility firms have already started using "triplex" on a large scale for secondary distribution lines strung along streets. In one typical installation, only one pole per block was required, and service drops were taken off in mid-span. A reduction of 30 to 40 per cent in line costs has been reported. Reduced voltage drop and greatly improved appearance were also achieved.

In the United Kingdom, too, a big switch-over to aluminium house service over-head service connections has taken place. These are mainly polyethylene insulated cables more familiarly known as "Aluplas". Aluminium Insulated Cable is bound with aluminium tape at the tapping point to the all-aluminium bare conductor. The use of aluminium services enables bi-metallic connection to be made inside the building or meter box, thus obviating electrolytic corrosion at the connecting point. Aluminium insulated service wire is now readily available with most forms of covers or insulation such as braided weather-proof, natural, synthetic rubber and plastic.

2. JOINTING OF ALL-ALUMINIUM AND SMALL SIZE ACSR CONDUCTORS (UP TO 1 SQ. IN. EQUIVALENT COPPER AREA—Dog OR Hare ACSR).

A. TORSION SLEEVE JOINT: The twisting or the McIntyre joints are probably the simplest form of mid-span joints designed to withstand the full tension of the line. The two ends to be jointed are slipped into the opposite ends of an oval aluminium sleeve which is then gripped at each end in a pair of twisting tongs (Fig. 1) and given the required number of twists (Fig. 2).

For all sizes of all-aluminium cables and very small sizes of ACSR, (copper equivalent No. 8 SWG) only one tube will be required per joint while for bigger sizes ACSR two sleeves will be required per joint. For smooth body cable three tubes per joint will be required.

Before making the joint, the inside of the cable should be cleaned perfectly. "No-ox-id" grease or zinc chromate or graphite paste introduced in the sleeve will ensure better conductivity and corrosion resistance. This type of joints is thoroughly reliable, and can be readily made by unskilled labour. The joint has a high electrical conductivity and withstands approximately the full breaking load of the conductor. In making up the joint, care should be taken to twist in a

direction opposite to that of the outer stranding of the conductor.

B. TUBULAR COMPRESSION JOINTS: The joint consists of a steel tube compressed on the steel core and an aluminium tube compressed on the complete cable. A portable screw compressor, with suitable steel dies, is usually used. Two sizes of dies are required for the aluminium tube and the steel tube respectively. (Fig. 3). The bores of the aluminium and steel joints must be cleaned perfectly. The outside of the steel joint and cable is usually painted with zinc chromate paste before the aluminium end is compressed over the cable—as this will ensure a gas-tight joint and eliminate the possibility of corrosion of the steel core. Care should be taken to see that the steel joint is exactly in the centre of the aluminium joint, and that steel core ends meet exactly at the centre of the joint. The joint is usually compressed starting at the centre and working first towards one end and then towards the other making sure that the dies always overlap the previous position.

3. JOINTING OF BIG SIZE ACSR.

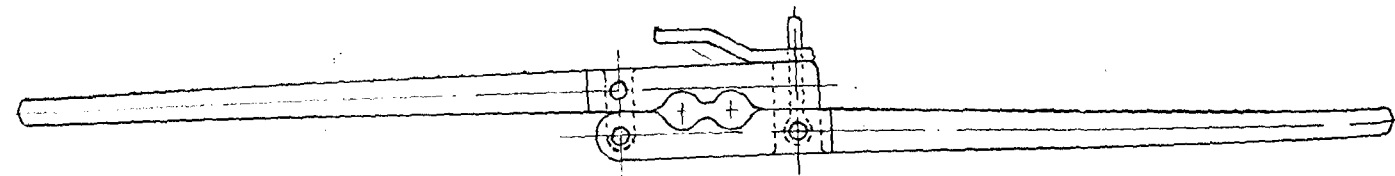
A complete fitted compression-joint assembly is shown in Fig. 4. It

consists of an aluminium barrel and a steel barrel. A portable hydraulic compressor with suitable pairs of dies for applying the aluminium barrel and steel barrel are required. The aluminium and steel bores should be thoroughly cleaned and the aluminium barrel slipped over and along one of the conductor ends. Both the conductor ends are then bound with aluminium wire at a distance from each end $1\frac{1}{2}$ inches more than half the length of the steel barrel. Then the aluminium strands are cut off from each conductor exposing the steel core for a distance equal to half the length of the steel barrel—plus one inch. Then the two ends of the steel core are bound with aluminium wire. The steel core ends are inserted into the steel barrel making sure that they meet in the centre of the barrel. Then the compressor is used to compress the steel barrel working from the centre first, to one end and then to the other. In a similar manner the aluminium barrel is compressed after thoroughly greasing the ends of the conductor and the steel barrel and placing the aluminium barrel exactly symmetrically over the steel barrel. Usually filler holes and plugs are provided to enable the injection of zinc chromate paste, using an ordinary grease gun. The plugs are finally hammered in.

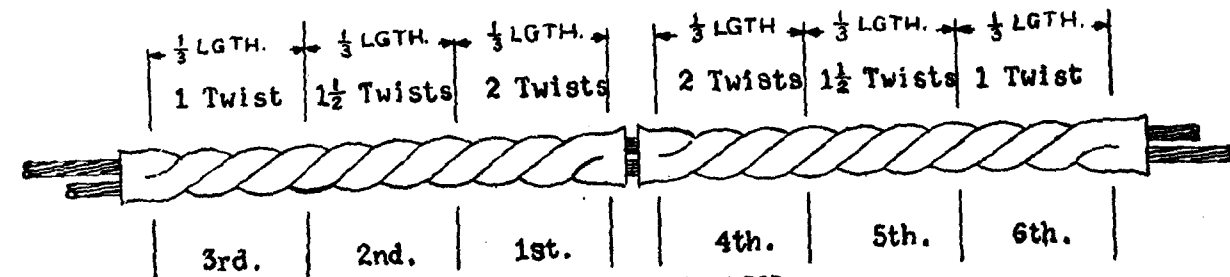
Table of Comparison between Aluplas Conductors & Rubber Insulated Copper Conductors for H. S. O. S.

"ALUPLAS"					H. S. O. S.		
Aluminium Conductor Plastic Insulation					Copper Conductor Rubber Insulation		
	1	2	3	4	5	6	7
	Number and Diameter of Wires in Conductor	Thickness of Polythene Insulation	Overall Diameter	Weight* per 1000 yards	Number and Diameter of Wires in Conductor	Overall Diameter	Weight* per 1000 yards
1.	7/044	0.030	0.292	92.0	7/036	0.270	175.0
2.	7/052	0.030	0.316	114.5	7/044	0.300	235.0
3.	7/064	0.030	0.362	174.0	7/052	0.330	300.0
4.	7/083	0.040	0.439	261.0	7/064	0.370	420.0
5.	19/056	0.050	0.490	323.0	19/044	0.405	515.0
6.	19/064	0.050	0.530	399.0	19/052	0.450	685.0
7.	19/083	0.050	0.625	570.0	19/064	0.525	985.0

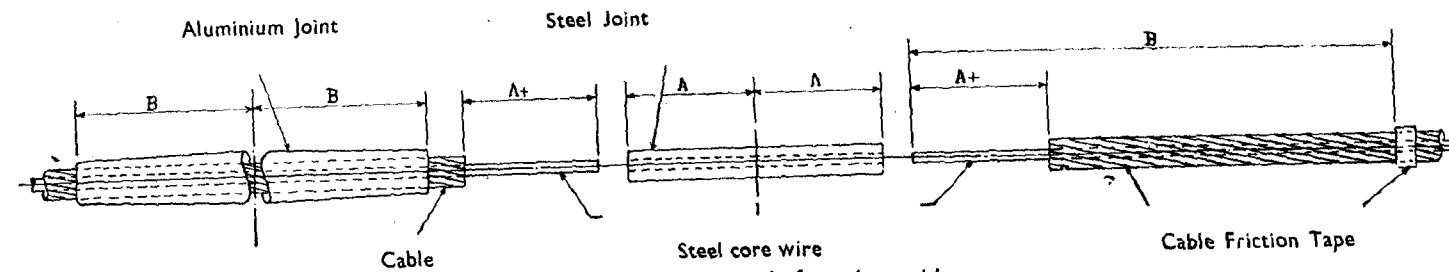
*Note how in final weight aluminium conductor compares with an equivalent copper conductor.



1 Twisting Joint Wrenches.

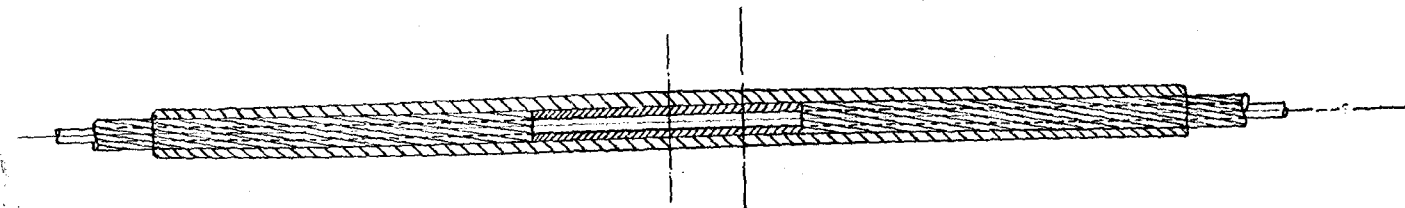


2 Twisting Joints for ACSR.

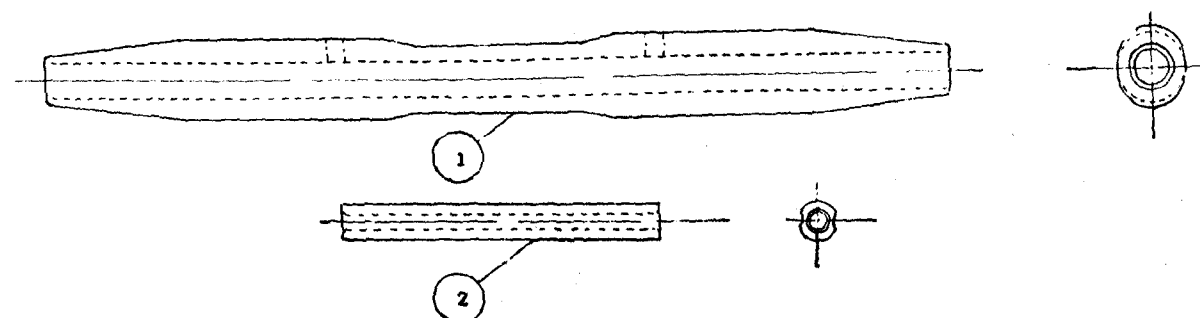


3 Exploded view before Assembly.

A. Half the length of Steel Joint
B. Half the length of Aluminium Joint

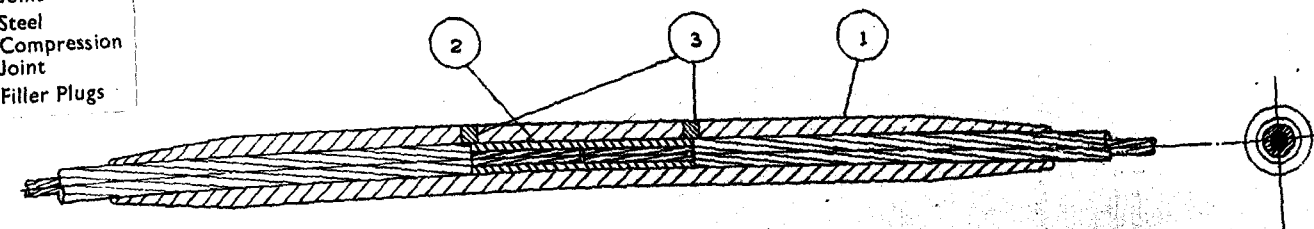


3-A Tubular Joint Assembly.

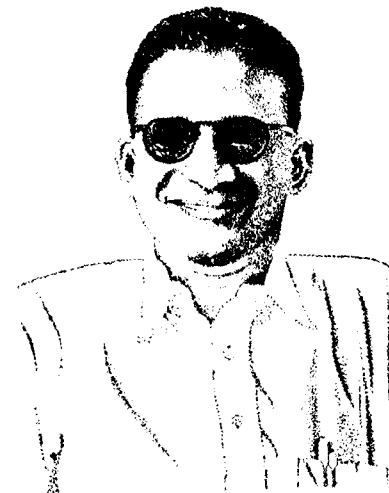


4 Compression Joint for big ACSR (Before Compression).

- 1 Aluminium Compression Joint
- 2 Steel Compression Joint
- 3 Filler Plugs



Compression Joint for big ACSR (After Compression).



V. G. G. Nayar.

WELCOMING the guests on Factory Day (May 25) Mr. V. G. G. Nayar said that on account of certain unforeseen circumstances, the Factory Day celebrations which should normally have been held in April had had to be postponed by a month.

Continuing, Mr. Nayar said : " It has been a great year—a year we will long remember—a year which has given us all cause for genuine pride—a year from whose results we shall draw inspiration and confidence for long years to come. During this year, we have produced nearly 5,000 miles of transmission and distribution line conductors, most of which are already carrying energy to thousands of homes and factories all over the country. Although we are closing the year with the greatest volume of production and sales so far achieved, the year has not been without its trials and tribulations. Power scarcity in this area considerably hampered our operations, and deprived us of production for over two precious months. Also, vagaries in the international market threatened, at one time, to upset our raw material supply position. But fortunately, we

" A Great Year - A Year We will long Remember "

V. G. G. NAYAR'S SPEECH

emerged through all our difficulties in good shape."

Other points that the speaker made were :

" In the coming months, we shall have to face competition both from Indian and foreign manufacturers. And we can hope to withstand this competition, only if we maintain and improve upon the high levels of efficiency already attained by us. In this task, I am confident that I can count on the same spirit of ungrudging co-operation that has so far been vouchsafed to me, and has all along been animating all ALINDERS."

" The year under review, as the years that have gone by, has been characterised by consistently cordial relations between all sections of the Al-Ind organisation. Better levels of productive efficiency, team spirit and discipline were all there, during the year, as in past years. Enthusiasm for work was also there at its highest pitch. But for the earnestness of purpose displayed and the fund of unstinted effort that was always forthcoming, the excellent results achieved during the year could not have been possible".

Stating that the organisation was a young one consisting mainly of young men, Mr. Nayar said that the Company was justifiably proud of all its members, so full of life and *elan*. " It is most comforting to know that each ALINDER, for his part, has an unbounded faith in the fact that he is working for a good and progressive organisation. This faith will help both the Company and the employee to march hand in hand, onward and onward, and cover many more milestones in the path of their joint progress".

Referring to the interest and solicitude taken in the progress and prosperity of the company by customers all over the country Mr. Nayar observed: "On this occasion our hearts naturally go out in gratitude to all our customers—to all those State electricity departments and electricity undertakings in the country who gave us the opportunity of serving them".

" On our side", he added, " we would continue to look upon a customer as ' a part of us ' and not ' apart from us ', and as one on whom we are always dependent. It is, therefore, with feelings of genuine joy that to-day we extend a most cordial welcome to Sri Kalathil Velayudhan Nair not only as the Minister of Works of our State, but as one of our esteemed customers. We are most grateful to him for finding the time to be with us this evening, notwithstanding the cares and distractions of his high office. And we are sincerely grateful to him for giving us an opportunity for conveying—through him—to the State Government our warmest thanks for all the assistance and co-operation we have been receiving."

Concluding, Mr. Nayar said that it was a pity that indisposition had prevented Mr. Seshasayee ' that dynamic personality, the very personification of simplicity and efficiency, our friend and guide ' from being with them at their festivities but he was sure that all of them would be very much in his thoughts that evening. They drew solace from the fact that it had been possible for Mr. B. V. D. Menon, Director-in-charge, his able deputy, to be present with them, despite his being more than normally busy on account of his projected tour abroad, the speaker added.



B. V. D. Menon

DIRECTOR B. V. D. Menon made a memorable speech on Factory Day. While making it, he was frequently cheered and a great ovation greeted him, as he sat down. Highlights in the speech were :

1. *Clear the backlog of orders ;*
2. *There is competition in the business, and to ensure for ourselves a reasonable share of the business, we must produce more ;*
3. *Loss of prestige is involved only when there is a fall in production, otherwise no ; and*
4. *Your problems are our problems.*

Excerpts from Mr. Menon's speech are given below :

" It is again my great pleasure and privilege to address you on our Factory Day "

"Push on Production" Competition in Cable Manufacture

B. V. D. MENON'S FACTORY DAY ADDRESS

Day. We are celebrating the third anniversary of our inauguration. On this memorable occasion, we are fortunate to have in our midst, the Hon'ble Minister for Works, whose presence here, in spite of the many pressing demands on his valuable time, is evidence of the great interest he takes in our activities, and in the welfare of us all. Till now, we have been celebrating Factory Day more or less as a domestic function. But, this year, we are giving an opportunity to our esteemed customers, friends and well-wishers, to see for themselves the ' atmosphere ' in which we live and work."

" In my address to you, last year, I tried to bring home to you the importance of the work in which we are all engaged at Kundara. I also told you how much our State and the country depended on us for their general electrification programmes. Added emphasis is lent to our work, this year, as some of the schemes in construction last year are now nearing completion. Certain power stations of the Damodar Valley Corporation are ready for commercial operation, and in our own State, the Sengulam hydro-electric station is nearing completion with the Poringalkuthu station rapidly coming up. Thus several million units of electrical energy are becoming available for distribution to hundreds of

towns and villages in the country. The conductors and accessories that we manufacture are more than ever needed, since farm, factory and the home, all alike, impatiently await supply."

" The Five-Year Plan has imposed on us heavier burdens and a graver responsibility. To-day we have orders on hand for the manufacture of several thousand miles of conductors, and unless we run through this accumulation, and shorten our delivery dates, we will have fallen down on our job as an industry."

" I remember mentioning to you in my speech of last year that some of the production standards that you have set up in this factory are often as good as, and sometimes even better, than corresponding Canadian standards. It seems to me now that we should eschew such comparisons, and that we should view production from an absolute, rather than a relative, standpoint. Let us push up productivity to the maximum limit that we can, so that the backlog of unfinished work can be completed and machines and skilled manpower capacity be utilised for yet further production."

" Last year, I also touched on the possibility of our having to face competition in the trade. That competition has now

come, and we find ourselves in a neck-to-neck race, where prices of our products are concerned. People in the copper cable business are all taking to aluminium cable manufacture, and we have at least two big units in the country to-day making small sizes of cables—perhaps, as well as ourselves. Even for the bigger sizes of transmission conductors, the competition from U.S.A., Canada, U.K., and the Continent is most keen, and only through increased production and savings in manufacturing costs, can we hope to hold our own and ensure for ourselves a reasonable share of the business. In other words, we are cutting our profits to the barest minimum so as to be competitive in our trade. To ensure, therefore, a fair wage level to you all and a fair return to the shareholder whose money has enabled us to come into being, we must produce much more than last year. Indeed, we have no time to rest on our oars—not even time to glory in our past performances—except, perhaps to draw inspiration from them for the future."

" On the subject of higher standards of production, a word or two will not be out of place. Management, supervisory personnel and ordinary workers have all been getting along here in an atmosphere of mutual understanding, sympathy and co-operation. Even though three years of commercial operation is but a very brief period in the history of an industrial establishment, it is matter for justifiable pride that so far we have not lost even a day's production due to differences or disputes. The management of this Company has always seen to it that what money can be spared after making essential reserves for our business is shared with you all. We have also tried our best to link the productive operations of this Company to a wage-incentive scheme, so that scope may exist for extra earnings

through efficient working. I shall be the last person to disclaim that in setting standards for measuring work and for determining efficiencies, we may not have committed mistakes. But to err is very common, and the mistakes themselves happened only because, if I may say so, we had the courage to try out new schemes. Neither published text-books nor sets of formulae, nor stereo-typed systems can furnish a solution to the peculiar problems confronting an industry. We have to think out our own ideas, give them a fair trial, be bold enough to analyse the results and own up our mistakes at frank, friendly discussions among ourselves, so that better and more equitable schemes can be devised. And this is precisely what we have been trying to do in this Company

Director B. V. D. Menon returned in September from a brief but extensive foreign tour. Among the countries he visited were Italy, France, Belgium, England, Switzerland, Sweden, Canada and the United States. Primary object of the trip was to place an order for a rod mill after personal inspection.

and I appeal to you to extend to us your co-operation in the continuance of such a policy."

" Friends, you know we have here a system of un-official meetings for the operative personnel of this factory—where we freely and frankly discuss matters relating to production and the working of the wage-

incentive systems. I request you to take these meetings and conferences seriously, and give them the best you can by way of suggestion and criticism."

" Again, let us not allow ourselves to be hoodwinked by wrong and false notions of what is called " prestige ". To those in charge of production and charged with the responsibility of ensuring production, the only " loss of prestige " is a fall in production. Similarly for the workers, the only " loss of prestige " can be a lowering of the production standards they themselves had set up in the past."

" Let us, therefore, pledge ourselves to a much greater effort and much greater production during this year. This is essential as much in national interest as for the survival of this infant industry. Let us always see our way clearly through difficulties by trying to understand the other man's point of view and by co-operating with him."

" Will every worker please remember that his officers are there not only to enforce discipline and get out of him his share of work, but also to listen sympathetically to his peculiar difficulties and to help him find a satisfactory solution to his problems, big or small ? "

" We have ambitious plans of expansion. The next few months will see our cable mill capacity doubled. The Central Government have sanctioned the establishment of an Aluminium Rolling Mill, and we will go ahead with that major project to ensure self-sufficiency as regards our vital raw material. To our employees, these development programmes hold forth opportunities for learning new trades and increasing their knowledge. Please make the most of these opportunities so that heavier responsibilities might rest lightly on you in the years to come."

Industrial Relations MINISTER ON ALIND'S LEAD

Sri Kalathil Velayudhan Nair's
praise for Aluminium Industries

New Metals Age: At a meeting of the Institution of Engineers, Tiruchirappalli (Paper Centre) held at the Power House on March 28, Mr. V. G. G. Nayar, General Manager, gave an interesting paper on "New Metals Age". The author traced the history of the various known light metals like Aluminium, Titanium, etc., and dealt with the contribution of these metals to industry.

ALIND Abstracts: A publication which is finding growing acceptance with engineers all over the country is *ALIND Abstracts*, a digest of all that is "current" about aluminium. Only mimeographed copies are, at present, being got out, but if demand grows, we might consider printing the *Abstracts*. We take this opportunity of expressing our grateful thanks to all those who have taken the trouble to write to us about this new service of our company.

Anti-corrosion alloy for marine propellers: Substantial progress in the use of Nikalium, a nickel-aluminium bronze with greater strength and erosion-corrosion resistance than manganese bronze, when used in marine propellers, has taken place since its development in Britain was first announced two years ago.

At that time the alloy had already been used in 25 propellers of less than three tons apiece. Since then the manufacturers have been increasing sizes gradually as experience was gained, until they now have completed, or have on order, 77 large propellers of up to 10½ tons, as well as a good number of the smaller variety. A promising sideline development of Nikalium is in the manufacture of water turbine runners for hydro-electric schemes.

Page Eight

"EVERY member of this Factory feels that he is engaged in essential nation-building activities, and acts accordingly. The confusion prevalent in several concerns in the country would not be there, if the spirit which animates the workers of this factory were to be at work in those concerns", declared Mr. Kalathil Velayudhan Nair, Minister for Works and Transport, at the Factory Day Celebrations of Aluminium Industries on May 25.

Continuing he observed: "There are very few companies which look far ahead, which show vision, and which are willing to meet the requirements of labour. If only other managements are to follow the lead given by the Aluminium Industries in labour relations, all would be well in the State and the country".

Stating that participation in the celebrations gave him the greatest pleasure the Minister said, "I am grateful for the opportunity given to me to witness this complete concord between management and labour. The celebrations

afford striking proof of unity between two diverse, but not irreconcilable, interests".

Continuing, Mr. Velayudhan Nair said: "We realise the importance of this industry to the State as well as to the country. To-day, people in the countryside demand electricity as a matter of right—just as food and water."

"Your Company is playing an important part in providing the conductors necessary for the translation of ideals of rural electrification into concrete realities. Your Company, again, is one of those few industrial enterprises which have consistently been successful financially and otherwise, ever since it went into production".

Concluding Mr. Velayudhan Nair assured the company of the best consideration of his Government for its development programmes. The minister who was earlier received by Mr. B. V. D. Menon, Director, and Mr. V. G. G. Nayar, first sat for a group photo with the employees. He also gave away the prizes,

Among others who spoke . . .

(We publish below excerpts from the speeches of employees who spoke on Factory Day).

1. **C. A. Antony**, Skilled Helper, Inspection Section.

There is proper understanding in this Company between labour and management, and schemes have been devised here to give labour a share of the profits. If all industrial enterprises could only follow this pattern, there would hardly be any labour-management trouble.

2. **M. K. Varghese**, Production Foreman.

The three-year old has started finding its way about . . . One outstanding, even revolutionary, feature of this organisation is the method of payment by results—by which a worker can add to his earnings in proportion to the efforts he puts in to step up production. . . Labour should not consider its efforts wasted provided its reasonable needs and demands are met. The shareholder has a right to expect a reasonable return . . .

3. **S. Damodaran**, Accounts Clerk.
Many happy returns of the Day!

4. **K. R. Sankaranarayanan**, Secretary and Accountant.

Our difficulties have only served to cement us together, to put forth of our joint best for the good of the company—and so—of ourselves.

India's Five-Year Plan is a first step in the realisation of a Welfare State. Let us firmly grasp this fact. Our happiness and the happiness of generations to come are dependent—it may only be to a small extent, but every little counts—on our efforts in this Factory.



Dr. E. K. Raman Pillai.

5. **Dr. E. K. Raman Pillai**, Company Medical Officer.

Workers should take care of their health. Health is a simple matter of diet and exercise. Smoking was particularly bad. This pernicious habit should be given up.

6. **P. K. Varghese**, a leading businessman of Kundara.

How remarkable has been the success of Aluminium Industries will be apparent if you just compare its achievement with that of other companies in the neighbourhood . . . This is a company in which all of us can take a just pride.

Page Nine



1. Mr. B. V. D. Menon unfurling the ALIND flag.
2. M. P. Mammen and T. A. Narayanan Nair—Winner and Runner-up in the Handicap Race for Seniors.
3. Watch and Ward staff, saluting the ALIND flag.

4. Gopinathan Nair receiving the General Manager's cup for the best all-rounder.
5. Prayer by Parur sisters.
6. M. K. Varghese and M. V. John (Caroms).
7. P. Rajagopal and P. A. Oomen (Slow cycle).

Story of the Celebrations

AS IN previous years, Factory Day, 1953, was a thoroughly heart-warming ceremony. Celebrations, this year, were held on May 25, instead of on April 24, the historic date on which Aluminium Industries was formally declared open. Restrictions on the use of electricity occasioned this postponement.

Owing to indisposition, Mr. V. Seshasayee, Managing Director, could not be present. All of us missed him greatly, but drew consolation from the presence of Mr. B. V. D. Menon, Director.

The day's programme got off to a fine start with the unfurling of the ALIND flag by Mr. Menon at 8 a.m. This ceremony was followed by the opening of the new canteen.

Between 9 and 11 a.m. the finals of some of the sport events were run through. The morning part of the programme concluded with a sumptuous lunch by, and for, ALINDERS, a few guests excepted.

The programme of the evening may be said to have begun with the group photo and the 'tea' we had with Mr. Kalathil Velayudhan Nair, Minister for Works and Transport, our chief guest for the day.

Formal proceedings commenced with an invocation song by Parur Sisters, staff artistes of All-India Radio, Trivandrum.

Mr. V. G. G. Nayar, General Manager, then, welcomed the gathering. This was followed by a very fine speech by Mr. B. V. D. Menon. Brief excerpts from the speeches of employees and guests and a short summary of the Minister's speech are given elsewhere in this issue.

It may not, however, be possible to deduce from the published accounts of the speeches what fine efforts these were. Mr. Kalathil Velayudhan Nair, in particular, was in excellent form.

He has really a "telling" way, and he impressed his audience as much by the matter of his talk as by his manner.

Earlier, the Minister gave away the prizes to the successful contestants in the various events. Indeed, the number of prize-winners was so large they did not come in single file, they always came in a battalion, or so it seemed—that the Minister humorously remarked that it would be a good idea, if for a change, we would institute in future a prize for absolute non-participation in any event!

In the interval between the speech of the Minister and the speeches of the others, dramatic divertisement was provided by the sudden appearance in the hall of a swarm of beggars who whined pitiously for alms, a drummer who beat the devil's tattoo with a difference, and a gentleman who had some "sweeping" changes to make.

One beggar, in particular, with crutches on, drew deep sighs from the audience. Had he been let loose on us to purge our souls of all their evil, as a mild form of spiritual catharsis—like a Shakespearean tragedy or something—we wondered. Pity gave way to admiration when it was brought to light that he and the rest of his heterogeneous crew were merely participants in Fancy Dress. When it comes to make-up wizardry Max Factor (Jr.) has nothing on our employees. And that goes for Max Factor (Sr.) too!

The pleasant function came to a close with a vote of thanks proposed by Mr. P. A. Ibrahim, Office manager.

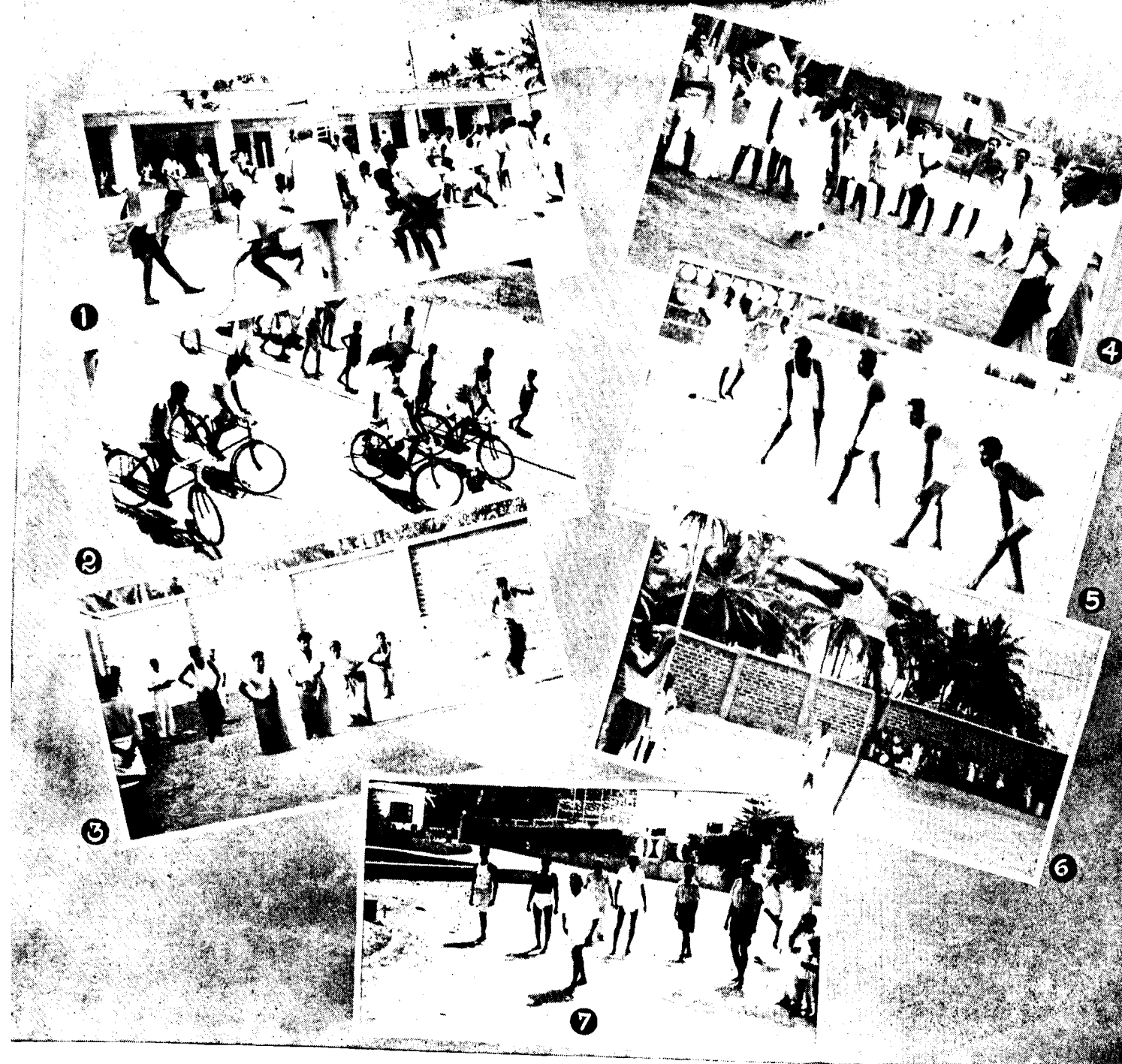
A word about the athletic events and tournaments of Factory Day is necessary.

Although the actual celebration came off in May, committees were constituted as far back as January. And the committees were composed of people who would not just let the grass grow under their feet. There were as many as 28 items. All the items of tournament sports were completed in the second week of May, and practically all the major athletic events—in the third week. Items left over for staging on Factory Day were the finals of Seniors Running Race, Sack Race, Tug-of-war and Cycle Race—all of which the competitors took in their stride—before lunch. The first item in particular provided ample fun and enjoyment. The post-lunch *piece- (de-resistance)* was the finals of the Tug-of-war. As in former years, the contest was between Factory (Mech. Maintenance) and Office, but unlike, in previous years, office won. Some case this—of triumph of mind over body!



Fancy dress competitors.

1953 Factory Day Sports



1. Tug-of-war. 2. Slow cycle race. 3. Sack race. 4. Putting the shot—S. Damodaran has a try. 5. 100 metres dash—participants poised for action. 6. Pole-vault—a lively picture of G. V. Nair in action. 7. Handicap race for Seniors.

Badminton : (Fives)

Winners—Factory Team (A)
T. Ramanathan
O. C. Chacko
K. Seetharaman
K. Ramachandran Nair
M. V. John.

Runners-up—Office Team (B)
K. Gopinathan Nair
K. Bhaskaran Pillai
P. R. C. Nair
K. T. Rao
P. Sivasankaran Nair.

Badminton : (Open Doubles)

Winners—O. C. Chacko and N. N. Iyer.

Runners-up—T. Ramanathan and P. Bhaskaran Nair.

Badminton : (Doubles—Teams selected by lots)

Winners—T. Ramanathan and G. Kesavan Nair.

Runners-up—K. Ramachandran Nair and K. Gopinathan Nair.

Badminton : (Singles)

Winner—T. Ramanathan.

Runner-up—K. Seetharaman.

Table Tennis : (Singles)

Winner—K. Bhaskaran Pillai.

Runner-up—K. Seetharaman.

Ring Tennis : (Singles)

Winner—K. Gopinathan Nair.

Runner-up—P. Bhaskaran Nair.

Ring Tennis : (Doubles)

Winners—K. Gopinathan Nair and C. S. Kaladharan Pillai.

Runners-up—M. Philips and P. Bhaskaran Nair.

Caroms : (Singles)

Winner—P. Bhaskaran Nair.

Runner-up—K. S. Kalyanakrishnan

Caroms : (Open Doubles)

Winners—N. N. Iyer and P. Bhaskaran Nair.

Runners-up—M. K. Verghese and M. V. John.

Caroms : (Doubles—Teams selected by lots)

Winners—K. Seetharaman and V. Paramu.

Runners-up—O. C. Chacko and K. Gopinathan Nair.

Chess :

Winner—A. R. Nadar.

Runner-up—M. Philips.

Volleyball : (Eights)

(Inter-sectional)

Winners—Thomas Kurian (Captain), M. V. John, C. S. Kaladharan Pillai, O. C. Chacko, M. K. Verghese, K. Ramachandran Nair, K. S. Kalyanakrishnan and K. V. Lawrence.

Runners-up—A. R. Nadar (Captain), P. A. Ibrahim, K. R. Sankaranarayanan, M. Mathen, N. N. Iyer, M. Philips, P. Bhaskaran Nair and K. Bhaskaran Pillai.

Volleyball : (Eights—Teams selected by lots)

Winners—Thomas Kurian (Captain), P. A. Ibrahim, M. K. Verghese, M. Mathen, Edgar Levario, K. M. Yohanan, K. Gopinathan Nair and G. Kesavan Nair.

Runners-up—A. R. Nadar (Captain), K. Ramachandran Nair, K. R. Sankaranarayanan, P. Ramachandran Nair, K. Bhaskaran Pillai, Stephen Fernandez, P. Rajagopal and N. G. Das.

Long Jump :

O. C. Chacko—I.
N. N. Iyer—II.

High Jump :

K. Gopinathan Nair—I.
K. V. Lawrence—II.

Hop-Step-and-Jump :

A. V. Thomas—I.
O. C. Chacko—II.

Pole Vault :

G. V. Nair—I.
O. C. Chacko—II.

100 Metres Dash :

N. N. Iyer—I.
O. C. Chacko—II.

Putting the Shot :

O. C. Chacko—I.
G. V. Nair—II.

400 Metres Dash :

P. Ramachandran Nair—I.
P. A. Oommen—II.

Cross Country Race :

P. A. Oommen—I.
K. Gopinathan Nair—II.
K. Bhaskaran Pillai—III.

Sack Race :

V. Bhaskaran Nair—I.
K. S. Kalyanakrishnan—II.

Slow Cycle Race :

P. Rajagopal—I.
P. A. Oommen—II.

Three-legged Race :

M. V. John—I.
M. Philips—II.

Tug-of-war : (Inter-sectional)

Winners—(Office Team)
S. Damodaran, S. Bhaskaran Nair, P. A. Oommen, N. N. Iyer, M. Mathen, A. R. Nadar and M. Philips.

Runners-up—(Mech. Maintenance.)
P. Antony, P. N. Sivasankara Pillai, Thomas Kurien, P. Innas, N. Krishna Pillai, A. Mohamed Kunju and K. Nanu.

Blind-man's buff :

Thomas Kurien—I.
K. M. Yohannan—II.

Champion :

O. C. Chacko.

General Manager's Cup :

(Best All-Rounder)
K. Gopinathan Nair.

Handicap Race for Seniors :

M. P. Mammen—I.
T. A. Narayanan Nair—II and Abdul Rahiman (Consolation Prize).

Fancy Dress :

P. A. Oommen—I.
M. V. John—II.
K. R. Balakrishna Pillai—III.

MINNAL PRANAYAM

EMPLOYEES STAGE POPULAR MALAYALAM PLAY

A WELCOME feature of this year's Factory Day celebrations was the Malayalam play put on boards by ALIND employees. The piece chosen was a farce called *Minnal Pranayam* ("Lightning Romance") by Mr. N. P. Chellappan Nair, noted playwright.

An oldish spinster head-mistress who suggests feminine pulchritude only by antithesis, but who, nevertheless, fancies herself to be a ravishing beauty is under the delusion that she—and not her niece and *protege*—is the object of the amorous attentions of an elderly widower, a lawyer by profession. The school mistress is the victim of a practical prank played by a man-servant and a maid who incidentally provide the subsidiary love interest of the play. In the end, as is only to be expected, boy gets girl or girl gets boy, seeing that the locale of action is in matriarchal Malabar, and the play has the usual happy ending. The plot is tenuous—and the story slightly dated, although plausible enough. Much of the strength of the play lay, however, in its witty dialogue. The lines glittered and sparkled like neon advertisements hung against the night sky of a big town. The blue-stocking schoolmistress murders the queen's English with an insouciance bordering on the cheerful. (Oh yes, she peppers her Malayalam with a liberal sprinkling of English all right). In the "nice derangement of epitaphs", even Sheridan's Mrs. Malaprop cannot hold a

candle to Nanni Amma. Where every English phrase of hers was a beauty, it would be invidious to individualise, but still 'chastity fund' (for 'charity fund') was a corker which neither age can wither nor custom stale.

A hand-picked cast put over the play well enough, but the performance would have been even better for a slightly faster tempo. The time-lag between scenes was, often, trying.

N. Neelakanta Iyer was positively superb as Nanni Amma. Of a witty disposition by nature, here was a role simply cut out for him, and he acted as if to the pedagogic manner born. As Madhu Pillai Vakil, K. Gopinathan Nair gave a memorable performance. (Practically a briefless barrister, Madhu Pillai often collected his fees in kind—jack fruit and tapioca for preference!).

The role of Chandrika, the heroine, was ably sustained by

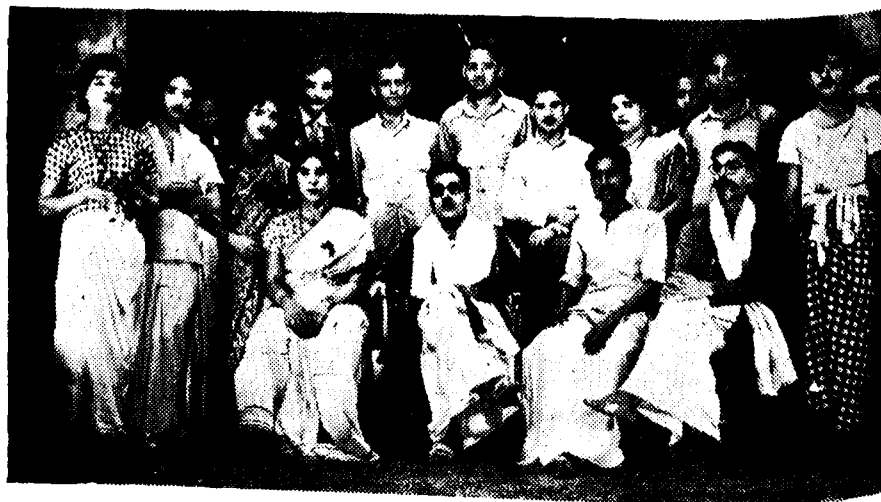
P. Sivasankaran Nair.

Chandrika's foil was Sarada. P. K. Kumaran Nair, who took on this role, gave a pleasing enough performance, but was now and then slightly off-colour.

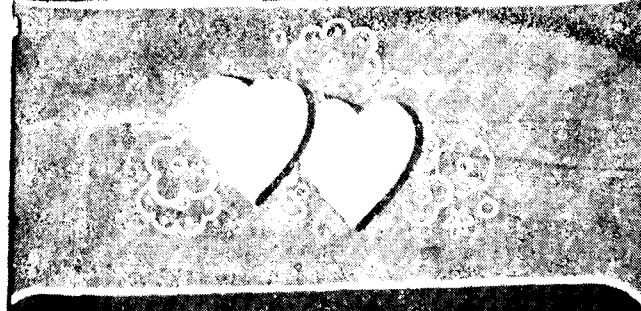
M. K. Varghese, as Krishnan Unnikartha, (father of the hero) an avowed enemy of education for women ('they'll start writing love-letters if you give them education') acquitted himself quite creditably; so also, did C. S. Kaladharan Pillai who acted the role of the hero Balachandran Nair. Kunjan Pillai, as Madhavi the maid, was most realistic.

K. V. Marshally had rather a difficult role to put over—that of Radhakrishnan a Rus-sophile and the very sublimation of pessimism—but he acted his part with consummate ease.

Altogether, ALIND employees gave convincing proof of their histrionic ability on Factory Day, but as the play came to a close around cock-crow time, the cast as well as the audience showed visible signs of wear. In fact, several of them looked perfect pictures of the morning after the night before—but it was, as an old film title has it, 'One night of love'.



The hand-picked cast of *Minnal Pranayam*.



OUR congratulations and good wishes go to the following employees who recently entered the married state.

Herbert T. Surrao, Cable Mill, with Miss Viola. (Bottom)
P. Mathen, Lab. Asst., with Miss Annamma, and S. Kumaran, Foundry, with Miss Thakamma. (Top)

Births

Daughter to N. N. Iyer, 22nd February.
Son to K. R. K. Nair, Works Supdt. 26th March.
Son to M. V. John, Group Leader, Cable Mill, 28th June.
Son to K. K. Thomas, Group Leader, 18th July.
Son to A. R. Gopalan Nair, Operator, Cable Mill—27th July.
Daughter to T. Ramanathan, Metallurgist—1st August.
Son to C. S. Kaladharan Pillai, Store-keeper—5th August.
Son to N. Govinda Pillai, M/c Shop—6th August.
Daughter to G. V. Nair, Machinist, M/c Shop—8th August.
Son to S. Ibrahim Kutty, Cashier—12th August.
Daughter to M. Mathen, Clerk, Office—13th August.

We said welcome to ...

N. Sadanandan, Mechanic—Mach. Maint.
A. Kumaraswamy Pillai, Driver.
M. K. Aliyar, First Aider.
M. N. Vasudevan Nair, Electrical Section.
T. N. R. Menon, Apprentice, Die Shop.
G. Balakrishnan Nair, Mech. Maint.
Herbert T. Surrao, Cable Mill.
C. Cherian, Cable Mill.

We said farewell to ...

George Mathew, Machine Shop.

STANDARD for ALUMINIUM CONDUCTORS

A STANDARD specification for hard-drawn stranded aluminium conductors and steel-cored aluminium conductors (ACSR) for overhead power transmission purposes was issued in May by the Indian Standards Institution.

An important feature of this specification is the inclusion in it of all-aluminium conductors.

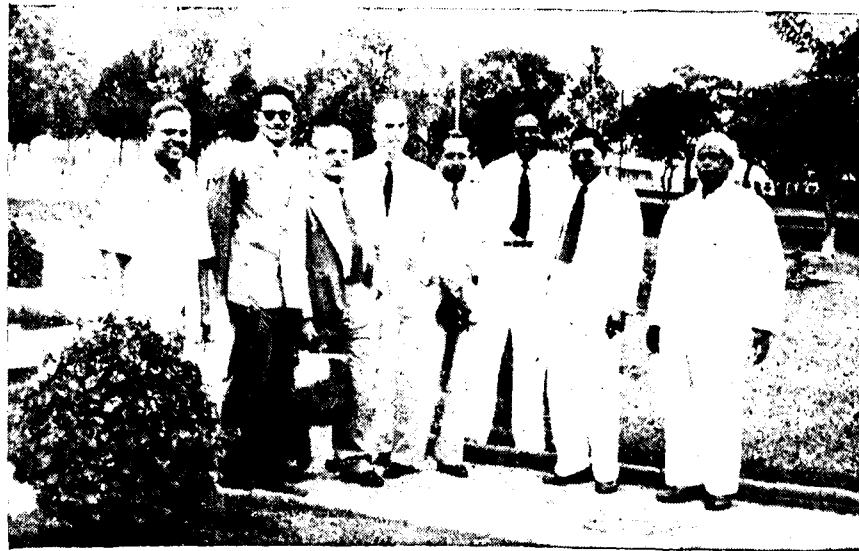
This specification is expected to encourage the utilisation of an indigenous metal in the background of a world shortage of electrolytic copper, an entirely imported material.



Mr. J. P. Mehrotra,
Dy. Director, Engg. (ISI)

The requirements for hard-drawn aluminium, as specified in the standard, take into account the British and Canadian standards on the subject, as well as the standard which is expected to be finalised by the International Electro-technical Commission in the near future.

Page Sixteen



Members of the Electrical Conductors and Insulators Sectional Committee from L. to R. Mr. S. P. Tonse, Central Railways, Mr. V. G. G. Nayar, Aluminium Industries Ltd., Mr. D. G. F. McIntosh, Indian Cable Co., Ltd., Mr. W. Evans, and Mr. T. S. Sitapati, both of Nicco Ltd., Mr. Reddi, Posts and Telegraphs, Mr. I. M. Pai, Indian Steel and Wire Products, Ltd., and Mr. K. P. Banerjee, Metallurgical Inspector, Tatanagar.

With regard to steel-cored aluminium conductors, the standard also covers the requirements for steel wires used in the manufacture of these conductors, and permits either electro-galvanized or hot dip galvanized wires to be used.

Genesis of the Standard

In the past, India had chiefly been depending upon British Standard Specifications for the purchase of materials from abroad, and for the guidance of manufacturers in this country.

With the setting up of the Indian Standards Institution, much progress has been registered in the preparation of Indian Standards. These Standards, while incorporating all the desirable features of international standards, take into account Indian conditions and Indian experience. Before the issue of the present standard, standards had already been drawn up by ISI for hard-drawn copper conductors for overhead power transmission, rubber-insulated cables and other types of copper conductors.

Taking into consideration the large-scale requirements of steel-cored aluminium conductors for the execution of the various huge electricity development projects under the Five-Year Plan and the special attention brought to bear upon the manufacture of these conductors by the setting up of a plant at Kundara, the Indian Standards

Institution set about its job of drafting a standard for ACSR with considerable despatch and expedition. Indeed, as far back as mid-1950, the draft standard for ACSR and aluminium conductors was circulated among manufacturers, selling agents, importers and eventual users.

The draft was mainly based on the then prevalent BSS : 215—1934. In January 1952, while the draft Indian Standard was still under discussion, the British Engineering Standards Association issued their first amendment to BSS : 215. The Electrical Conductors and Insulated Sectional Committee carefully considered this amendment, and decided to adopt it *in toto* in the Indian Standard. Suggestions and recommendations made from time to time by the International Electro-technical Commission on aluminium conductors and the steel wires used in ACSR, also, received the most careful consideration of the Committee. However, for lack of complete information on the subject of the purity of Indian-made aluminium and steel-wire, the Committee did not think it advisable to lay down at present rigid rules regarding the chemical composition of aluminium or steel-wire.

Among others on the Electrical Conductors and Insulated Sectional Committee are Mr. B. V. D. Menon, Director, and Mr. V. G. G. Nayar, General Manager.

CINEMA CLUB

A 16 mm. projector was acquired in June 1953, and ever since life in the colony has been as animated as some of the cartoons that we have been screening. A wide range of interests was covered in the showings. Education, health and industrial safety provided the theme of several films. Pure entertainment pictures such as *Bride goes wild*, *Bandit of Sherwood Forest* and *Jungle Jim* and documentaries like the *Coronation of Queen Elizabeth II* were also shown.



Mrs. Ibrahim with child.

Among agencies who helped us with educational and industrial pictures should be mentioned—USIS, British Information Services, Office of the Australian High Commissioner, National Film Board of Canada, Government Public Relations Department, Trivandrum, Associated Electrical Industries (India), Limited, and Indian Oxygen and Acetylene Company, Limited.

OUR NEW CANTEEN

DIRECTOR B. V. D. Menon formally declared open the new canteen of Aluminium Industries on Factory Day in the presence of a large gathering. A feature of the ceremony was that instead of the traditional tape, a length of aluminium wire was cut.

It would appear that Wilbur Wright, the celebrated inventor of the aeroplane, after he had made his historic first flight, said—when pressed for a speech by the crowd assembled to greet him: "Thank you, gentlemen, for your welcome. I may look like a parrot (this, while stroking his beak-like nose!) and I fly, but I don't talk!"

Mr. Menon made as laconic a speech on the occasion. Said he: "I really don't know what to say at a function like this. My experience of canteen



Opening of new canteen—Mr. B. V. D. Menon cuts a length of Aluminium wire.

opening is very limited—as a matter of fact, this is just my second canteen. I can only pray that good trenchermen as we are, the canteen will serve us good and wholesome food in fantastic quantities at reasonable prices, and not the other way round!"

This little (in-)formality over, the gathering adjourned to the new building for a ceremonial cup of tea.



Taking a ceremonial cup of tea—(from left to right) Mr. S. Sury of Associated Printers Mr. B. V. D. Menon, Mr. V. G. G. Nayar and Mrs. Vijaya G. Nayar.

Page Seventeen



SUIT or sari, gown or gloves, the facings of a dinner jacket or the hangings of a home—all contain rayon. Indeed, in almost every modern scene where fabric plays its part, “versatile and hard-wearing rayon”, as our copy-writers would have it, is present.

The appeal of the fabric is not, however, limited to a small sophisticated set. Conveyor belts, telephone wire insulation and sound proofing belt are some of the ways in which this yarn that science has spun serves industry.

Why we are yarning away about rayon in this issue is easily explained. In the last issue of ALIND CHRONICLE, we did the story of the Travancore-Cochin Chemicals, Limited, a “neighbour”. (The device of enclosing words or phrases in inverted commas to indicate that they are being used in a special sense is, as magazine readers know, a time-honoured one, but if ever inverted commas cried out that a word was being used in a very special sense, they should do so now !)

This neighbour's neighbour is the Travancore Rayons, Limited, and a neighbour's neighbour is as good as our own !

Between the Travancore-Cochin Chemicals and the Travancore Rayons, the tie is not merely one of contiguity. Caustic soda is one of the chief raw



Mr. M. Ct. M. Chidambaram Chettyar.

materials required in the production of rayon and transparent paper by what is known as the viscose process—so the tie between them is also one of supplier of an essential raw material and consumer.

Location

The factory is located close to a small town known as Perumbavoor, near Alwaye, on the banks of the river Periyar, the clean, soft waters of which go, for a large part, into the production of rayon. Other advantages are nearness to suppliers of raw materials, the fine water-way provided by the Periyar, nearness to rail communication and availability of cheap electric power.

The factory buildings have been constructed on up-to-date lines, completely in reinforced concrete, with a special type of conoidal roofing, unique in India. The total factory area is about 400,000 sq. ft., of which 50,000 sq. ft., is below ground level. The layout has been so planned as to make the entire production from the raw material to the finished product, a continuing series of processes.

Rayon yarn is the principal product—at present in deniers of 100 and 150 in the form of cakes, cones and hanks. A joint product is transparent paper,

technically known as “cellulose sheeting”. Production now is at the rate of 5 tons of rayon yarn and 1½ tons of transparent paper a day, but by the end of this year or at least, early in 1954, the company hopes to step up yarn production to 8 tons and paper production to 2½ tons a day.

Raw Materials

The main raw materials required in the production of rayon are wood pulp, caustic soda, sulphuric acid and carbon di-sulphide. As stated already, Travancore Rayons gets its supplies of caustic soda from Travancore-Cochin Chemicals. Its sulphuric acid requirements are met by another factory nearby—the Fertilisers and Chemicals, Limited. With carbon di-sulphide being produced by Travancore Rayons itself, wood pulp is practically the only important raw material, which has to be imported. (For sulphur, of course, most countries are dependent on a few limited sources.)

regulated timing and conditioned-temperature process to permit proper chemical action and to ensure a uniform product.

The matured cellulose crumb is then packed in revolving churns and a measured amount of liquid carbon di-sulphide is added. This leaves the crumb chemically readily soluble. The product at this stage is known as ‘cellulose xanthate’ and is orange in colour.

Cellulose xanthate is mixed with a weak solution of caustic soda in a machine where revolving blades beat and mix the substance into a solution. This compound is known as ‘viscose solution’ named after its glue-like, sticky property. This solution is the base for the production of Viscose Rayon Yarn and Transparent Paper.

After ensuring that the solution is of correct consistency, any dulling agents or dyes may be added at this

Aging the solution at controlled temperature and filtering it to remove dirt and foreign matter make the solution ready for the next stage of its journey of transformation into a solid in the form of filament yarns.

Spinning rayon is quite unlike the process of spinning associated with natural fibres. The heart of the process is a platinum mechanism of the size of a thimble, containing a number of tiny holes practically invisible to the naked eye called the ‘spinnerette’. The viscose solution is pumped through these holes in fine, liquid streams, which upon contact with acid, turn into strands of yarn. This occurs because the viscose solution is alkaline and hardens into filaments immediately upon contact with acid. Each hole in the spinnerette forms one filament or strand. The combined strands from one spinnerette twisted together form yarn. Usually, the filaments are produced in long, unbroken strands to form continuous rayon yarn. The yarn

THE TRAVANCORE RAYONS LIMITED

The “Viscose Process”

Briefly, the method of making rayon by the “viscose process” is like this.

Cellulose—the basic raw material of rayon—is got from spruce, pine and hemlock wood and cotton linters. The raw stock is cooked by chemicals and live steam into a pulp. The water is later squeezed out, and the pulp is pressed into sheets of cellulose to the thickness of blotting paper.

The cellulose is next steeped in a solution of caustic soda to extract impurities and to change the sheets chemically into ‘alkali cellulose’. After steeping, the cellulose sheets are squeezed under controlled pressure so as to remove excess liquid, without interfering with the proper chemical reaction.

Damp sheets of cellulose now pass into crumbling machines where revolving blades tear and break them into small fluffy particles. The crumbs are then carefully aged under

stage which would become a part of the rayon itself. If nothing is added the resulting yarn is of brilliant lustre.

is then washed, dried to a standard moisture content, and wound into bobbins or other forms, required by the various weaving establishments.

Personnel

Labour employed in the factory is around 600 at present. The supervisory cadre consists of both Indian and foreign technicians.

Right from its inception, Mr. A. R. Ramanathan, Resident Director, has been in charge of this first and foremost rayon factory.

Mr. M.Ct.M. Chidambaram Chettyar, whose vision inspired this enterprise, has in this undertaking brought a vital new industry to this land. Our very best wishes go to this Company.

Mr. A. R. Ramanathan,
Resident Director.

Our
Friend,

THE CUSTOMER

A CUSTOMER of whom we are justly proud is the Damodar Valley Corporation. It is not however pride born out of a business association—most cordial as it has been—with an authority whose project rivals the greatest river valley development projects in the world. There is satisfaction in the thought that it has been given to us to assist in a modest, but significant, manner the electrical development of the valley.

Primarily aimed at flood control and irrigation, the DVC scheme which covers a drainage area of approximately 8,000 square miles is patterned after the multi-purpose project of the Tennessee Valley Authority of America, commonly known as TVA.

“River of Sorrows”

The river Damodar rises in the hills of Chota Nagpur and passes through



Gauria-Karma Dam—built as part of DVC's headwaters control programme.

the provinces of Bihar and Bengal to the sea at Hooghly. The river and its tributaries have been doing great havoc, receiving as they do, over a short period, a very heavy rainfall.

The Damodar flood of 1943 was far from the worst that this “River of Sorrows” was capable of; the one in 1913 had been definitely bigger and the greatest of them had probably occurred in 1843. But most damage resulted from the 1943-flood.

The taming of a whimsical giant like the Damodar is no easy task, but still it had to be done. In brief, this is the *raison d'être* of DVC.

... but no “Vale of tears”

The valley contains roughly 80 per cent of the coal deposits of India and some of the highest grade iron ores in the world, large reserves of bauxite

and aluminium laterite, mica, limestone, lead, silver, quartz, and other vital minerals. But lack of controlled water supply and lack of power have been holding back development.

In the optimism generated by the end of war, it seemed possible to complete the whole scheme in five or six years, but, in present conditions, this is hardly possible. The project has, therefore, been phased into two parts.

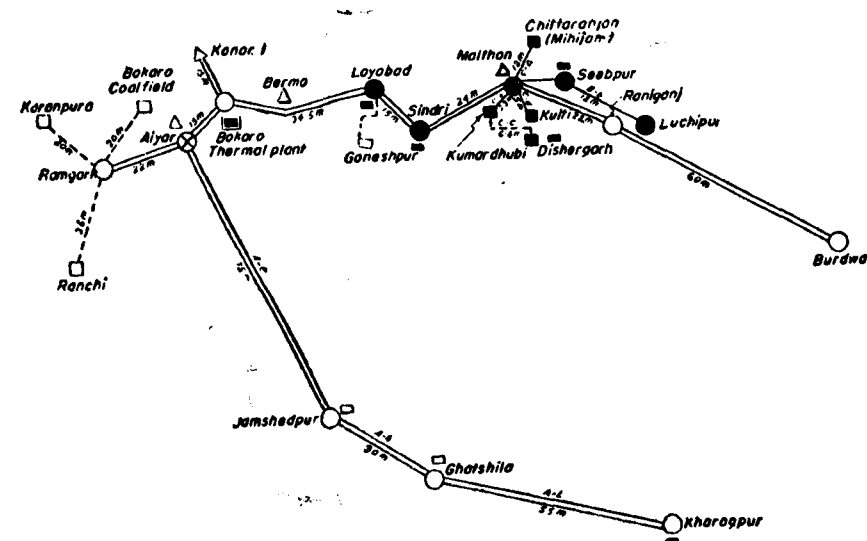
The scheme as a whole consists of seven storage dams, eight hydro-electric stations with an installed capacity of 240,000 kW, a 200,000-kW thermal plant to firm up the seasonal variations of hydro-electricity, an extensive high voltage transmission system, an irrigation barrage and canals measuring 1,500 miles, 90 miles of which will be navigable,

Transmission System

Phase one comprises four dams with associated hydro-electric stations at Tilaiya, Konar, Maithon and Panchet Hill, a 2,00,000-kilo-watt, thermal power plant at Bokaro, 470 miles of 132 kV, 66 kV and 33kV transmission lines and ten grid substations, a barrage and irrigation canal measuring 1,550 miles and a 90-mile navigation channel connecting the Bengal coal-fields with the Hooghly.

The various industrial consumers and utility concerns will be supplied at 33 kV through 14 receiving stations.

The 132 kV double circuit line is carried on lattice steel towers having an average span of 1,100 ft. and a



Schematic Map—Transmission System and Substations.

THE DAMODAR VALLEY CORPN.

height of nearly 90 ft. The use of high tensile strength light steel is a special feature of these towers. The conductors used are A.C.S.R., having copper equivalent section of 0.2 sq.in. These conductors are spaced 13 ft. between phases in vertical formation and 26 ft. between circuits horizontally. The lines are protected from direct strokes of lightning by the provision of A.C.S.R. ground wire running on the top of the towers, providing a shielding angle of nearly 30 degrees.

The line insulator consists of a string having 9 discs of 5 inches diameter provided with arcing horns. At the angle points special towers are pro-

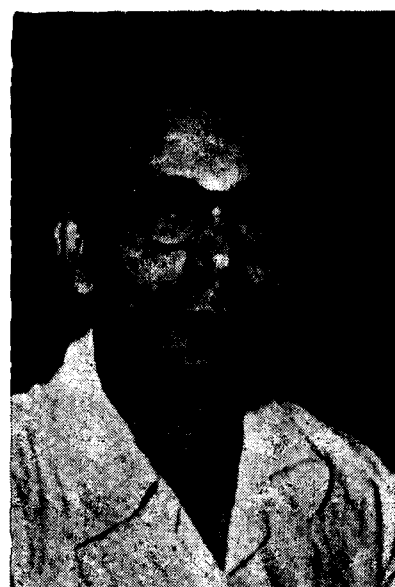
WHERE ALIND CABLES TAKE THE LOAD

132-kV TRANSMISSION LINES : CONDUCTOR ‘LARK’ (Copper equivalent 0.2 sq.in.)

1. Jamshedpur	— Ghatsila	Double Circuit	30 miles
2. Ghatsila	— Kharagpur	”	55 ”
3. Ranigunj	— Burdwan	”	65 ”
4. Maithon	— Panchethill	”	9 ”

33-kV Distribution lines : Conductor ‘DOG’/‘HARE’ (Copper equivalent 0.1 sq.in.)

1. Kumardhubi	— Dishergarh	Double Circuit	3 miles
2. Maithon	— Kulti	”	6 ”
3. Loyabad	— Sinua	”	1 ”
4. Loyabad	— Ganeshpur	”	8 ”
5. Ranigunj	— Seebpur	”	6 ”
6. Ranigunj	— Hirapur	”	5 ”
7. Ranigunj	— Luchipur	”	9 ”
8. Ramgarh	— Karanpura	”	17 ”
9. Loyabad	— Digwadih	Single Circuit	8 ”
10. Luchipur	— Durgapur	”	13 ”



Mr. P. K. Bhattacharya,
Chief Electrical Engineer.

vided to take care of the bends up to 90 degrees.

Each tower is earthed individually through counterpoises to keep down the footing earth resistance below 8 ohms, because most part of the line runs through hard and rocky soils.

Each line has got at least one barrel of transposition to avoid interferences with neighbouring communication circuits; for this purpose special transposition towers have been used.

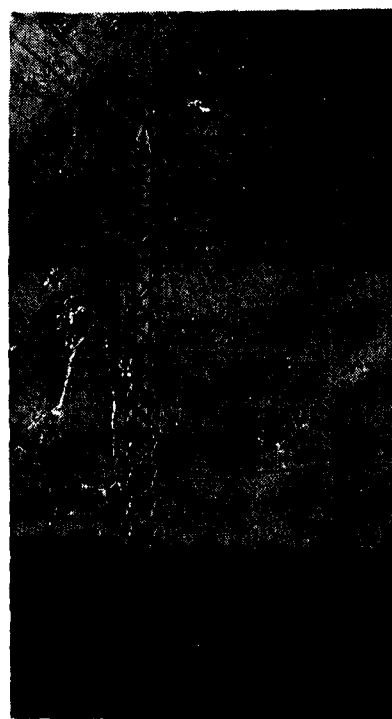
To maintain stability in the power system the line circuit breakers are provided with high speed reclosing overload, reactance, impedance, carrier relays. Carrier current relaying is an important feature of this grid. The inter-communication will be through very high frequency radio communi-

Page Twenty-two

cation. This grid will have a central load-dispatching station situated at Bokaro, to facilitate the management of economic transmission. The circuit breakers used in the grid are of various types, the most important being the bulk-oil, poor-oil and the air-blast type. ..

● The operational phase of the Damodar Valley Project has already begun. The Damodar Valley Corporation is distributing, through its own grid, the surplus power from the Sindri Fertiliser Factory, giving immediate relief to the coalfields and other industries which had been suffering from an acute shortage of power.

We are obliged to the POWER ENGINEER, Simla, for details of the transmission system and the map.



Loyabad-Ganeshpur 33 kV distribution line where 'ALIND' ACSR has been strung.



A luminaries (4)

K. RAMAKRISHNA NAIR,
Works Superintendent.



THERE is a Malayalam proverb which says, 'There is no concoction without dry ginger'. A school-master once added a postscript to it—'And there's no school skirmish without Ramakrishnan !'

As a school-boy, Ramakrishnan Nair, has been in and out of more scraps than he now cares to remember. The white hope of the family was, however, the black despair of the history master. And what the Sanskrit Pandit thought of our young hoodlum, we would rather not reduce to imperishable printer's ink ! The child is certainly not the father of the man, so far as Ramakrishnan Nair is concerned. (Incidentally, he is the father of a child now). He is to-day such a staid, solid and quiet person that it is difficult to imagine that he should have been such a jackanapes once.

In 1941, he bade good-bye to his Kottarakarai school, to join the Chengalvarayan Naicker Technical and Industrial Institute for a course of electrical engineering—from which in 1944—he came out with a diploma.

The first job that Ramakrishnan Nair took on was at the Hindustan Aircraft, Bangalore. He was posted

to their Power Plant Department, but shift duty for nights on end so shattered his health that he was obliged to tender his resignation.

In April 1945, Ramakrishnan Nair joined the Fertilisers and Chemicals, Travancore, Limited, Alwaye. He was first posted to their Receiving Inspection, then transferred to Works Inspection, shunted back as In-charge of Receiving Inspection, and finally posted to Electrical Construction and Erection. He was with FACT's for a little under five years.

On February 21, 1950, Ramakrishnan Nair joined the Aluminium Industries, Limited, Kundara—of which, now, he is Works Superintendent. His responsibilities include all the various phases of production and maintenance, and all civil works.

For one who looks like a formidable combination of Ronald Colman and Robert Taylor with a bit of Clarke Gable thrown in for good measure, he has a strange hobby. Believe it or believe it not, it is knitting ! Ramakrishnan Nair has several attractive teapoy and tapestry pieces to his credit.

But what he weaves into the fabric of his life is work, more work, and still more work—for a change. He is

never more happy than when he digs out the "intestines" of electric motors. The coils fascinate him, and he winds them with the care, perhaps, worthy of a ball of wool !

Ramakrishnan Nair is, also, an enthusiastic amateur gardener. He can spell 'chrysanthemum' backwards, and can give you the plural of 'gladiolus' !

Caroms and Cards are his indoor favourites. At Caroms, especially, he is uncannily clever—he was our 1951 champion.

His favourite reading is fiction, and his favourite author Upton Sinclair. Obviously, V. G. G. Nayar's enthusiasm for this American writer has been infectious.

Late in 1952, Ramakrishnan Nair submitted an all-correct entry to the *Delhi Express* Square Words—D.1.—The prize amount was Rs. 50,000 but as eleven others had, also, sent in correct solutions, his share amount dwindled to a mere four thousand-odd. The greater part of this amount Ramakrishnan Nair has invested in Aluminium shares—a nice enough nest-egg—you'll all agree.

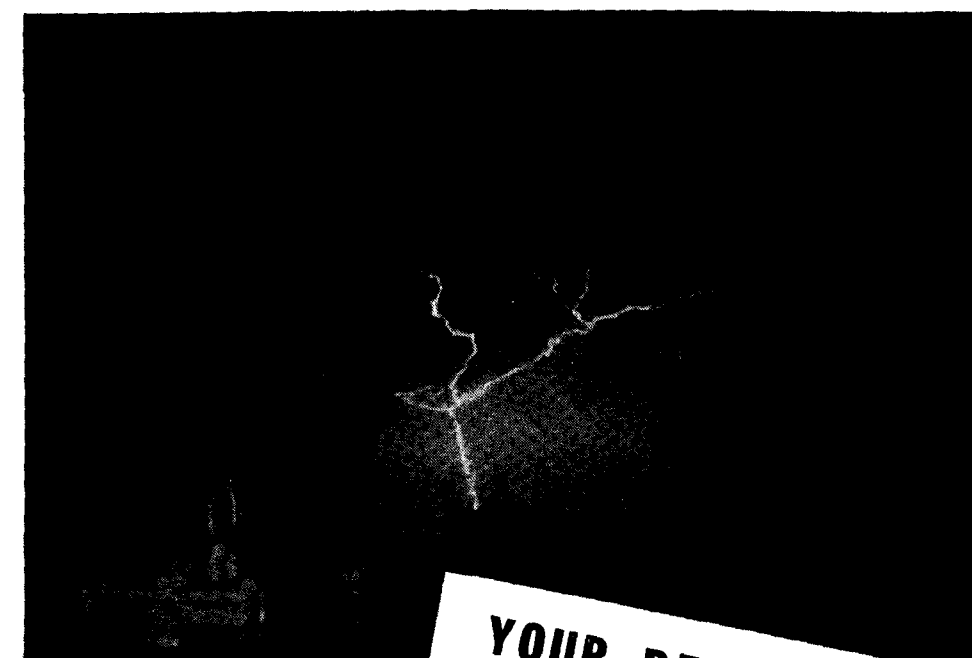
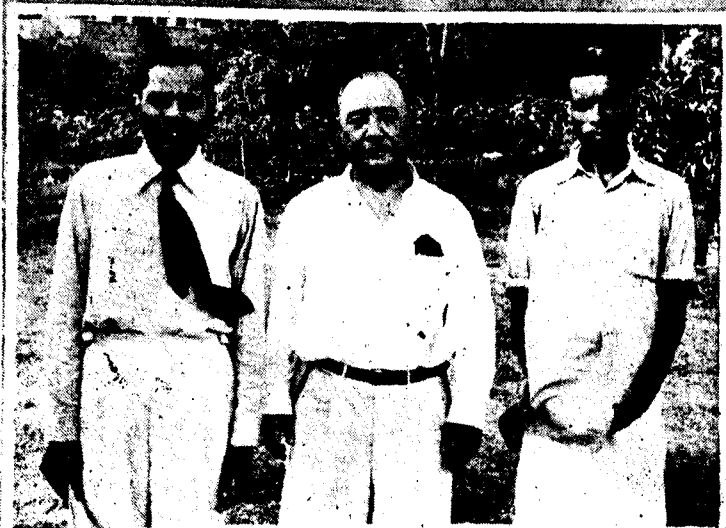
—R. P.



Welcome Visitors

IN RECENT months, it was our privilege to say 'Welcome' to a number of visitors. We are grateful to them for having found the time to call on us and we do hope that it will be possible for them to come again.

- (1) Mr. John Kuriyan (Chief Engineer, Bihar) and members of his family.
- (2) Mr. A. G. Senapathy (Our Bangalore Representative) with family. Mrs. Vijaya G. Nayar is fourth from left.
- (3) Dr. C. A. Mehta, Mr. Keizo Nishimura President, Furuhawa Electric Co., Ltd., Tokyo and Mr. T. Ramanathan, Metallurgist.
- (4) Mr. K. M. Chinnappa, Deputy Chief Electrical Engineer, Damodar Valley Corporation.
- (5) Mr. M. K. Roy, Asst. Divisional Engineer, Electricity Development, West Bengal.



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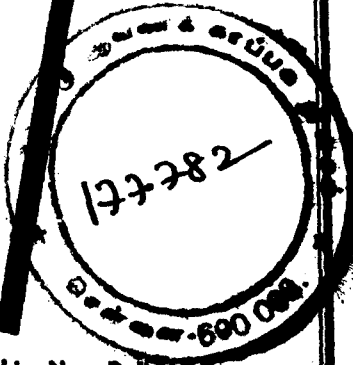
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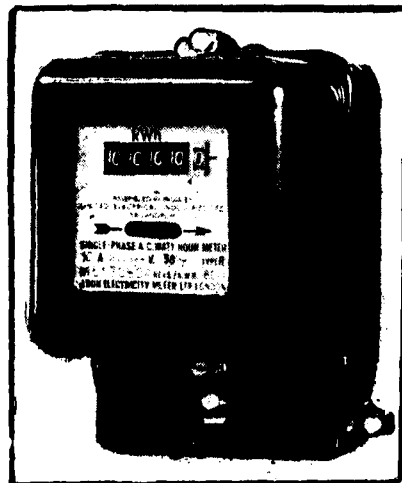
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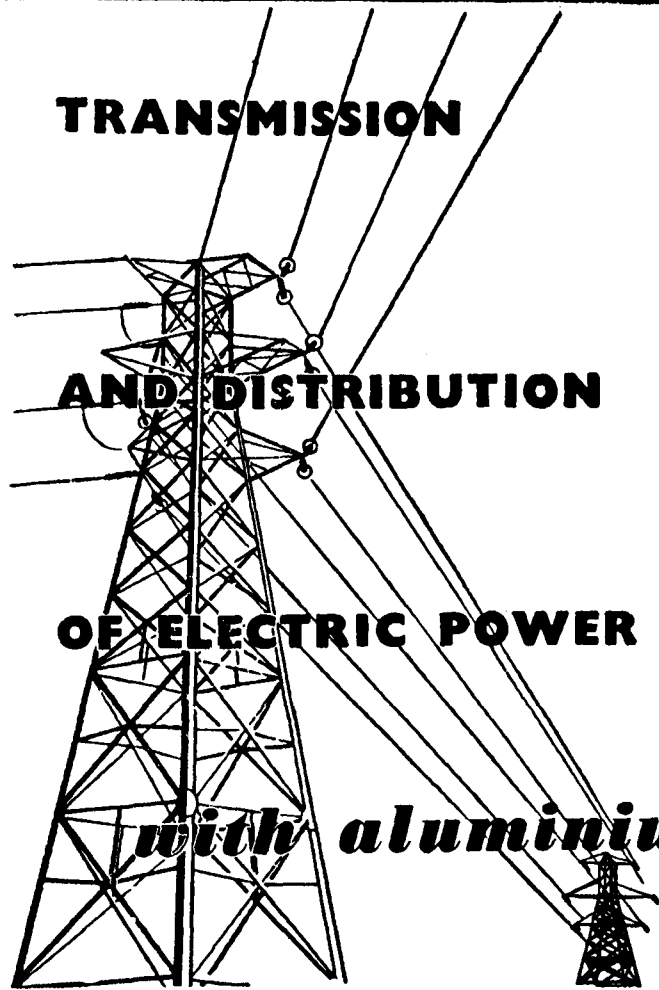
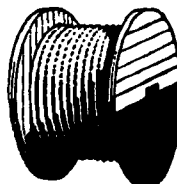
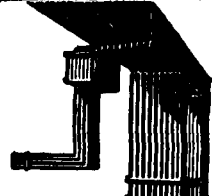
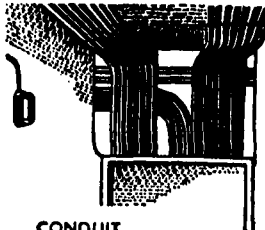
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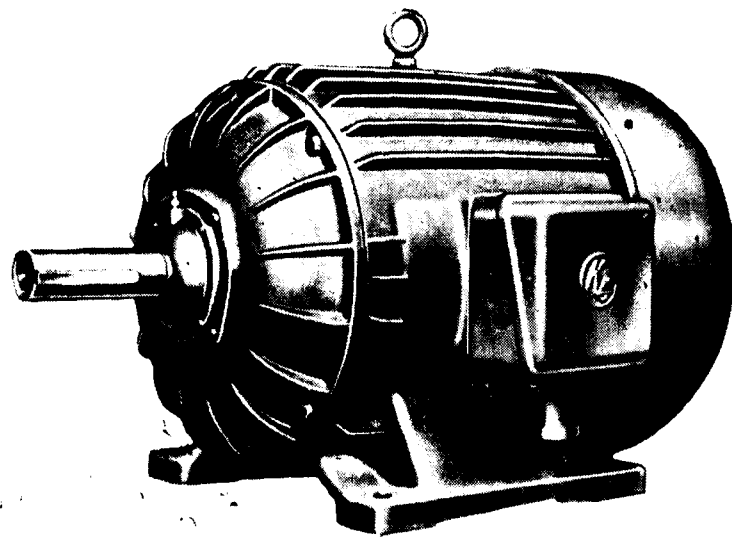


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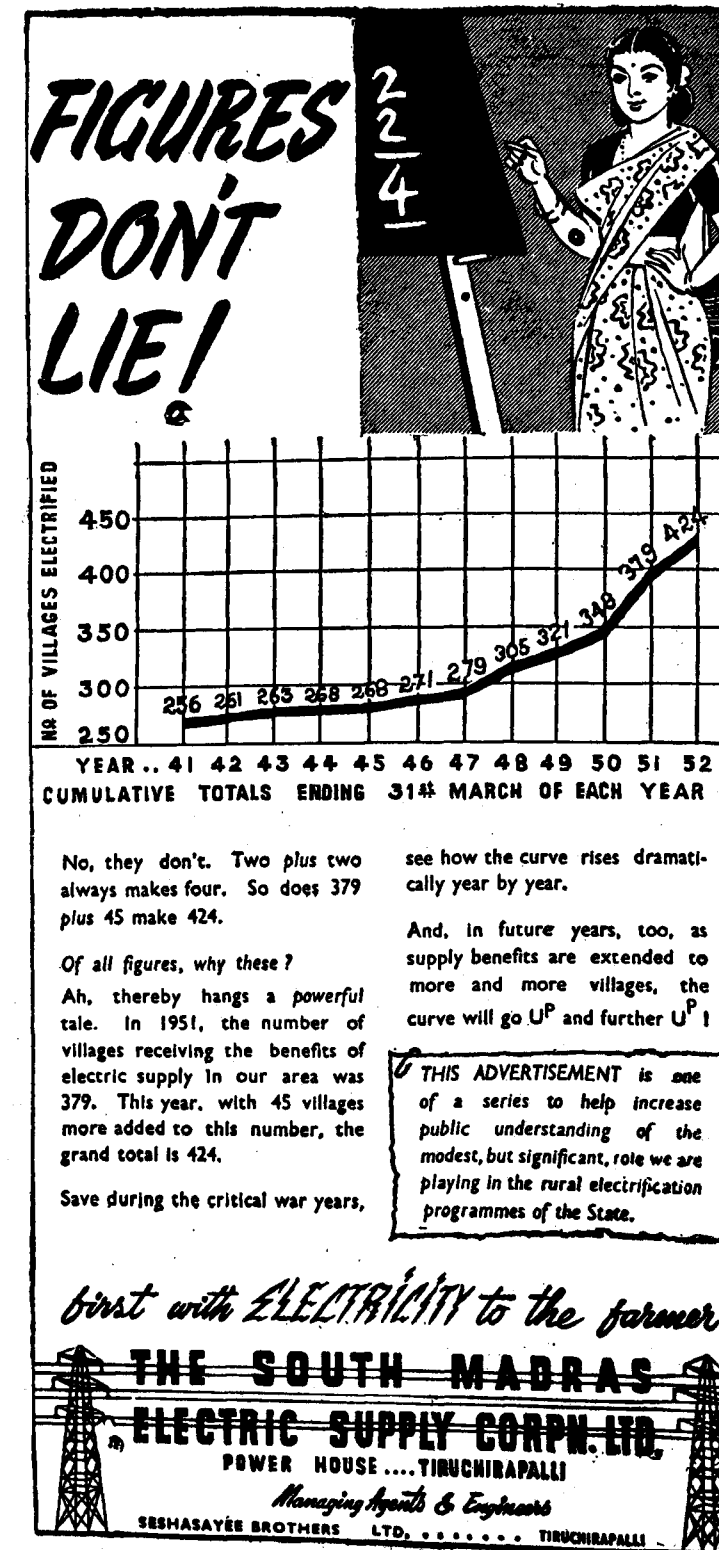
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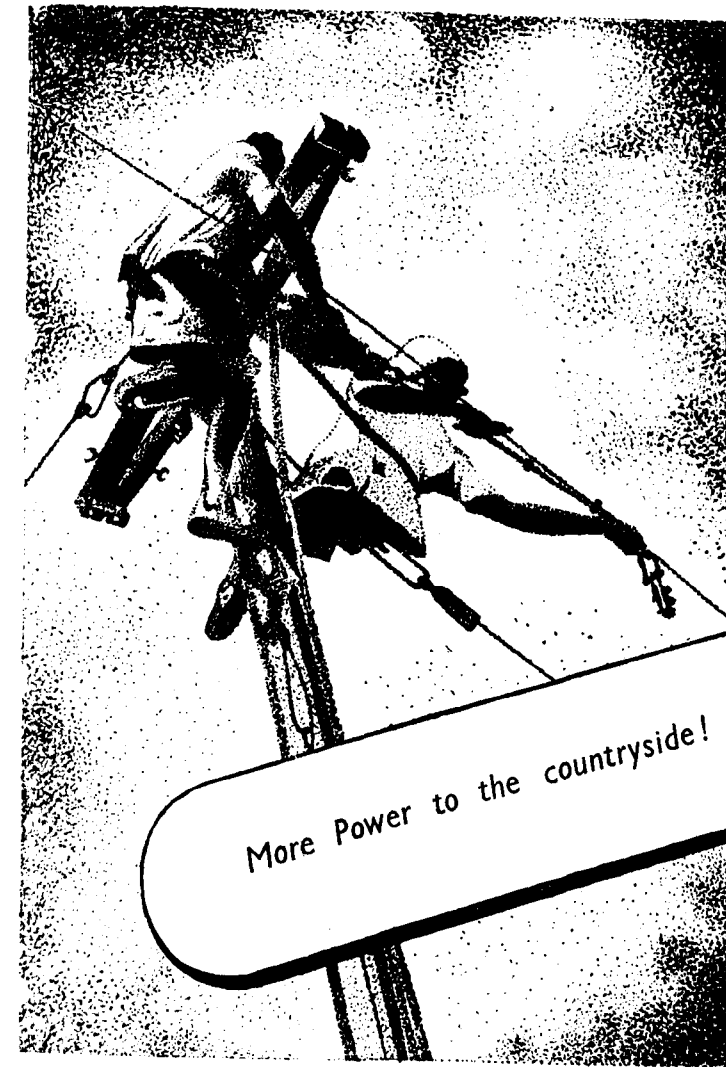
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