ALIND

HE IS GONE ...

leaving us all sad and forlorn.

To us, he was much more than a respected chief.

In his death, we mourn the passing away

of a father, an elder brother,

a very dear friend.

May God Almighty give us the strength

to bear this great loss;

may He also grant us the wisdom

to conduct ourselves in a manner

he would have approved.

●

The death occurred on Oct. 18, 1958
of Mr. V. Seshasayee, Managing Director,
Seshasayee Bros. (Travancore) Private Limited,
Managing Agents of The Aluminium Industries Limited.

Messages

(Friends had sent touching messages of sympathy on learning the news of Sri V. Seshasayee's demise. A small selection is printed on this page).

New Delhi

I am very much pained to hear the news of the passing away of Shri V. Seshasayee. I send my deepest condolences to the members of the family. May his soul rest in peace.

K. C. REDDY,
Minister for Works, Housing and Supply, Government of India.

I recall with gratitude my own visit to Shri Seshasayee's institution in Tiruchirapalli in the beginning of my term of office in Madras, and I was much struck at the vigour and enterprise with which he contributed to the industrial development of the South. I am sure that the many concerns started by him would keep his memory green, and help in the fulfilment of his objectives.

In sorrow and in sympathy,

SRI PRAKASA,
Governor of Bombay.

Trivandrum

. . . an outstanding industrialist—in his death, the country has lost a pioneer in the field of industry, at a time when we need such personalities in numbers.

V. R. KRISHNA IYER,
Minister for Law.

Kodaikanal

It is a matter of personal grief to me. I had known him for several decades and we had a common bond in the late T. Desikachariar. He never sought the limelight and preferred to do his constructive work unostentatiously.

T. T. KRISHNAMACHARI.

CROYDON

DEEPLY REGRET TO LEARN OF DEMISE OF OUR DEAR FRIEND PLEASE CONVEY TO RELATIVES SINCERE SYMPATHY AND CONDOLENCES FROM SELF AND FAMILY.

CHARLES G. GORTON.

OOTACAMUND

DEEPLY GRIEVED SESHASAYEE WAS NOT ONLY A GREAT INDUSTRIALIST BUT A PERSON OF ORIGINAL IDEAS AND PATRIOTISM ALSO TRUE FRIEND AND COLLEAGUE.

C. P. RAMASWAMIER.

MADURAI

EXTREMELY SORRY LEARN DEMISE OF MR. SESHASAYEE ALLOW ME TO OFFER MEMBERS OF FAMILY MY HEARTFELT CONDOLENCES MR. SESHASAYEE AND HIS COUSIN LATE SENIOR SESHASAYEE WERE PIONEERS IN THE FIELD OF ELECTRICAL DEVELOPMENT AND INDUSTRY STOP GREAT SERVICES TO COUNTRY IN THE FIELD OF INDUSTRIAL DEVELOPMENT IN SOUTH INDIA WILL ALWAYS BE REMEMBERED WITH GRATITUDE.

RAJAH MUTHIAH CHETTIAR.

Trichur

. . . He was a pioneer in industrial enterprise and devoted himself over a period of years to its development in South India. The progress which has been made in recent years in the promotion of manufacturing industries in South India owes a great deal to Mr. Seshasayee's energy, judgment and vision. In his work as a pioneer in the industrial field, he had to take risks which few people in his time would have dared to face in the difficult conditions which prevailed then. In expressing my sense of the loss the country has sustained in his death, I wish to take the opportunity to pay my tribute to the success he achieved in the many fields in which he laboured and the contribution he thereby made to the economic development of the country.

JOHN MATTHAI.

NEW DELHI

HAVE LEARNT WITH PROFOUND SORROW VERY SAD DEMISE OF SESHASAYEE. MY WIFE AND I CONVEY OUR DEEPEST SYMPATHIES AND CONDOLENCES IN GREAT BEREAVEMENT AND LOSS.

PROFESSOR AND MRS. THACKER.

ALIND

JANUARY 1959

No. 15

Editor: R. PARTHASARATHY

THE PURPOSES OF THIS PUBLICATION ARE:

(i) *To record the accomplishments and achievements of our employees, their joys and sorrows so that our other friends like our customers, shareholders and neighbours may get to know our* family *better ;*

(ii) *To encourage in our employees pride in workmanship and the high quality of our products ;*

(iii) *To help create and sustain amongst them a spirit of friendliness ; and*

(iv) *To tell the story of our business and that of our customers and other friends so that mutual understandings and respect might be fostered.*

Mr. V. Seshasayee passes away

THE DEATH OCCURRED ON OCT. 18, 1958 OF Mr. V. Seshasayee, our beloved and respected chief. Of course, we knew that he had been critically ill for quite some months, but on several occasions in the past, he had staged such miraculous recoveries that we somehow deluded ourselves into thinking that once again he would pull through, and that for many long years to come, he would continue to remain with us. But, alas, an erratic and unkindly Fate ruled otherwise, leaving us sad and forlorn and like ship-wrecked mariners.

MEMOIR

Mr. V. Seshasayee was born at the village of Valadi, near Tiruchirapalli, in 1890. He had his early education at the St. Joseph's High School, Tiruchirapalli. Having lost his father very early in his life, Mr. Seshasayee had to shift for himself at an age when a boy would normally be at college ; so, after his Matriculation, along with his brother-in-law, Mr. R. Seshasayee, he started a small workshop in Tiruchi, the nucleus of the firm now known as Seshasayee Bros. Private Limited.

In those far-off days, only the city of Madras had electric supply. Electricity to smaller towns—leave alone villages—was ruled out as an uneconomic proposition. With the help and support of men like Sir C. P. Ramaswami Iyer, then Executive Council Member, Madras,—and Sir T. Desikachari, a prominent citizen of Tiruchirapalli, the Seshasayees first formed the Trichy-Srirangam Electric Supply Corporation Limited. Earlier, the firm had made a mark especially in the district of Ramnad by rectifying and commissioning a generating set, and by the electrification of temples at pilgrim centres like Tirupati, Madurai and Ramanathapuram and the palatial mansions of the Nagarathars at Devakottai, Karaikudi and Kanadukathan.

Mr. R. Seshasayee was largely at the machine end of the enterprise and Mr. V. Seshasayee at the business end.

In 1941, the three principal electrical undertakings — Trichy-Srirangam, East Tanjore and East Ramnad under the management of the Company — were amalgamated into one, under the name and style of the South Madras Electric Supply Corporation Limited. It will not be an exaggeration to say that Mr. V. Seshasayee's vision, foresight and enterprise have largely been responsible for the present robust supply system of the State of Madras.

Mr. V. Seshasayee unfurling the ALIND *flag at a function.*

Mr. Seshasayee (second from left) at the inauguration function of the Rod-rolling Mill.

then branches off into penstocks of 6 ft. 6 in. diameter. Of these four higher pressure pipelines one is blank-flanged for use at a later date and the other three pipes are connected to individual turbines at the power station.

The power house is located in the Ghat section of the main road from Cumbum to Thekkadi and is about 35 miles from Theni in Madurai District. The gross head from the surge tank is 1,270 feet. Initially three numbers 50,000 h.p. reaction turbines each directly coupled to 35,000 kW, 11 kV generators are being installed. The transformer yard is located by the side of the power station and the power generated will be stepped up to 110 kV by 42,000 kVA step-up transformers.

The power generated at Periyar will be fed into the Grid through Periyar-Theni-Madurai and Theni-Sembatti-Trichy 110 kV lines, a total length of 185 miles and Sembatti Karur and Sivaganga-Tanjore 66 kV lines, a total length of 136 miles. Sub-transmission lines and distribution lines have also been constructed for distribution of power. The station is linked with the existing Papanasam and Pykara hydro-systems at Madurai and tie with the Mettur system is established at Trichy. The existing substations at Madurai, Tiruchirapalli, Karur, Sembatti and Sivaganga are provided with adequate additional equipment to take in Periyar power. A new 110 kV substation has been constructed at Theni and new 66 kV substations at Pallapatti, Pudukottai and Karaikudi have been constructed. A few 33/11 kV substations for distribution purposes have also been constructed.

The Sharavathi Project

The river Sharavathi is, indeed, a 'miracle river' as Mr. S. K. Patil, Minister of Irrigation and Power, once described it. One of the smallest in the country—barely 82 miles in length—it starts off the Western Ghats, at a place called Ambu Mirtham, travels northward for 48 miles and then turns westward. The river has a fairly extensive catchment area, and during the monsoons, the rainfall is extremely heavy.

At Linganmukki (where the river turns in a westerly direction) a dam is being built. Pipes will take the water to a power house being built three miles below the Jog falls. This enormous drop nearly double that of the natural fall will produce power about eight times as much as what Mysore produces to-day.

The Sharavathi Project is estimated to cost Rs. 50 crores.

CIGRE

The seventeenth biennial meeting of the International Conference on Large Electric Systems (Conférence Internationale des Grands Réseaux Electriques), held in Paris recently, attracted a larger number of electrical engineers than ever before. They came from almost every country in the world, and for the first time papers were received from the People's Republic of China.

Perhaps the most interesting feature of this year's conference was the tendency seen in a number of countries to reassess the capabilities of existing power lines, to make greater use of the capital involved in them, and also of the increasingly rare wayleaves across which they have been built. For example, in the U.S.S.R. the Russian engineers have now found that they can obtain up to 15 per cent greater power transfer capacity by increasing the normal working voltage of the lines designed only a few years ago for 400 kV to a new Russian standard level of 500 kV. This important change has been achieved principally by so designing the essential parts of the system that the internal overvoltages are limited to 2.5 times the phase voltage, whereas the original design allowed for three times the phase voltage. This feature of power transmission design is one which is being followed closely in other countries, and the CIGRE occasion proved a welcome means of exchanging opinion on what amounts to the safety factor of the insulation of the lines, substations and other equipment. The Russian engineers freely communicated their experience in this respect to delegates from the western countries.

The limitation of overvoltages is closely linked with the question of provision against lightning. It was surprising to find that, whereas it had been thought in the past that lightning protection by means of overhead protective ground wires, lightning arresters and other devices, had progressed as far as possible, disturbing reports had come in from several countries showing that the incidence of lightning outages had been markedly greater with the best designed overhead lines than had been calculated or forecast. So far, no complete explanation has been made available, and it was decided that the appropriate study group of the conference should pursue this matter and should report to the next conference on possible explanations of the increase in lightning troubles.

There was a general trend towards the use of higher transmission voltages, not only to make greater use of the power transfer capacity available on a given line of route, but also to allow systems in various countries ultimately to link up one with another. The outstanding example here was the conversion by the French engineers of a line (from the hydro power developments on the river Rhône, at Genissiat, to Paris) from a double circuit 225 kV line to a single circuit 380 kV line; while almost parallel to this line, in Federal Germany there was commissioned, in March of this year, a line linking Hoheneck with Rommerskirchen, also at about 380 kV, with the possibility of linking at its southern end with Austria and Switzerland, and at its northern end with Holland and Belgium. These two lines, both of the order of 250 miles in length, could well form the backbone of a system linking the greater part of the industrial countries of western Europe: in any event, most of western Europe is already linked, if not by major bulk supply transmission lines, at least by high voltage feeders of varying capacity.

This question of radio interference was discussed at length at the conference.

One of the methods of avoiding radio interference and corona loss is to employ what are known as bundle conductors, in which each phase conductor consists of two, three, or even four conductors joined together by some form of spacer. This construction offers very severe mechanical problems to the designer. Overhead lines are still subject to vibration troubles of origins which are largely unknown. When a coating of ice, for example, is suddenly released from a long transmission line span, the resulting vibration may or may not build up into a serious condition, whereby the conductors may be damaged or may even bridge the gap between phases and flash-over, usually with disastrous consequences.

An American paper, presented to the conference by Mr. A. R. Hard, of the Industrial Research Division of the State College of Washington, was of special interest in this connection, because the most extensive series of experiments so far carried out anywhere in the world on conductor vibration was given in detail in his report. These tests were carried out both on actual lines on the Bonneville system and on laboratory spans, and a film shown in conjunction with the report illustrated graphically the extraordinary contortions to which conductors were subjected under various conditions of vibration. The paper and the discussion indicated that there is still much to be done, for example, on the design of types of spacers for extra-high voltage lines; and it was shown that in practically every country in which such lines are installed—Russia, Sweden, West Germany, Italy, France, Finland, Britain, the United States, and Australia—there had been space problems to a more or less serious degree. The conference performed a useful function by bringing together all the available information on these difficult mechanical problems.

"Hot Line" Repairs

Although interrupted current supply is usually no more than a nuisance to the householder, it often spells grave loss to the industrialist and other bulk consumers of electricity.

To prevent this occurring on several important transmission routes in India, double circuit lines have to be laid, so that, when one line is shut down for repairs, the other can keep up the flow. This has proved to be an expensive procedure.

To obviate these inconveniences and loss, the Government of India is currently introducing, with the co-operation of the United States Technical Co-operation Mission to India, the "hot line" maintenance system. This modern practice enables the maintenance staff to carry out repairs on "hot" or live high tension lines. Without discontinuing the supply of current, the workmen can replace insulators, or crossarms, tap on new connections, and even cut and splice by this process.

Specialized equipment, mostly "hot sticks," and knowhow constitute the crux of this revolutionary procedure.

At Bangalore and Ganguwal in the Punjab are established two training centres for hot-line maintenance work. At a cost of $293,000, the U.S. Technical Cooperation Mission has contributed two American instructors for two years and the requisite equipment for these training projects.

Conductor Lab. on Wheels

Alcan's Conductor Sales Development Group reasoned, late last year, that the best means of convincing electric utilities of the merits of aluminium conductor was an "on the spot" demonstration of installation techniques. The result is a Wire and Cable Demonstrator truck containing a wide range of types of aluminium conductor and fittings and suitably equipped to demonstrate how these should be installed in utility systems to achieve maximum efficiency and cost savings.

This unit, recently described as a "Conductor Laboratory on Wheels," has now started out on the first of a series of visits to utilities in all parts of the Country, staffed by Alcan conductor specialists.

All-aluminium substation

South Africa's first all-aluminium electrical substation has recently been completed at Richmond, Natal, where it serves as the junction between the main 88 kV transmission line and the 33 kV and 11 kV lines to Ixopo and Richmond. An interesting aspect of the installation is that it uses aluminium bus on prefabricated aluminium structures. The structures are built from standard 51 SWP aluminium angles, supplied by the Aluminium Company of South Africa (Pty.) Ltd. and fabricated by Power Steel Construction Company (Pty.) Ltd. of Johannesburg. The bus is made of 1 S-H aluminium tubing.

Aluminium is a logical and economical material for installations of this kind. Because a "shut-down" can be costly, power companies require long years of trouble-free service from their assemblies. Aluminium contributes readily to this end, providing direct and indirect savings during the erection and life of the station.

The world's best electrical conductors on a pound-for-pound basis, aluminium introduces the factor of economy early in the project. The light weight of the metal makes it possible to be assembled cheaply in the factory and reduces freight and site assembly costs. Once installed, its current-carrying capacity makes it efficient, while its corrosion resistance makes it economical by reducing maintenance costs. This is particularly important in climates where corrosion is aggressive. Under these circumstances the corrosion resistance of aluminium avoids the "shut-downs" frequently required to paint assemblies made of other materials.

In this South African installation, as in all similar installations, the strength, light weight, electrical conductivity and corrosion resistance of aluminium make it ideally suited to the purpose.

Metric system

The Metric System of weights and measures has come to be adopted in India from 1st Oct., 1958. This new system is simple, more practical and useful, as it involves thinking in terms of tens only.

Most of our present units do not stand for uniform, identical weights and measures throughout the country. For instance the unit *para* varies from region to region, in its intrinsic value; so are other units like maund, tola, etc.

This Metric System is not new to our country. Prof. J. B. S. Haldane points out that this new system is the natural development of ideas originally developed in India. It was India that imposed the decimal system of arithmetic on the world by her invention of the symbol for zero. As early as the *Yajur Veda*, our country had separate words for powers of ten up to at least a hundred million.

The switch-over to the Metric System no doubt imposes certain difficulties, but it has to be realized that its introduction at the present juncture will cause far less trouble than it would, if postponed to a future date when our industries would be far more developed.

Technical Notes

The Use of All-Aluminium Conductor on Transmission Lines

E. M. WRIGHT, FELLOW AIEE — E. G. LAMBERT, ASSOCIATE MEMBER AIEE

THOUGH THE USE OF ALL-ALUMINIUM conductors is not new, it seems logical at this conference to bring out its distinct advantages for use on transmission lines over all other types of conductor, when it is used for the proper purposes and under proper conditions.

The first recorded use of the all-aluminium conductor in the Pacific Gas and Electric Company system was in 1899. Several 60 kV lines built over 50 years ago with all-aluminium conductor are still in operation, most of them still operating with the original conductor, splices and fittings, in heavy-, medium-, and light-loading areas, as well as in heavy fog and salt-contaminated air. None of these conductors has given any appreciable trouble, except from comparatively few splices which were the original wedge-grip type without sealing compound. The old served splices have given practically no trouble. No investigations have been made as to the tensions in the older lines, but observations indicate that they are now fairly low. No armour rods or dampers were used previous to 1920 and none has since been added on the pin-type lines.

At present, out of over 12,000 miles of transmission circuit in the Company system there are approximately 2,900 circuit miles, or 7,300 tons, of all-aluminium conductor in use. By the end of 1960 it is expected that there will be approximately 3,600 miles, or 11,000 tons, of this type of conductor. The accumulation of all-aluminium conductor since 1900 is shown in Fig. 1. Fig. 2 shows the circuit miles installed, or proposed, in each 5-year period to 1960. Table I shows the sizes of conductors now in use on the earlier lines.

Approximately 275 circuit miles of odd sizes have been removed from the older lines between 1899 and 1911 owing to abandonment of the lines or increase in size of conductor. In the last few years, considerable quantities of 715,500-, 954,000-, and 113,000-circular mil (CM) all-aluminium conductor have been installed.

In general, the use of all-aluminium conductor has been confined to the light-loading area ; however, there is one installation of a 60 kV line in the California heavy-loading area which is of interest. Normally, steel-reinforced aluminium cable (ACSR) is used in the heavy-loading area, but during World War II, owing to the shortage of steel and copper, all-aluminium conductor was installed in a heavy-snow loading territory where snow depths during the winter are often over 15 feet. On this 28-mile single-circuit, pin-type, wood-pole line, starting at an elevation of 4,000 feet and ending at an elevation of 7,500 feet, the 336,400 CM all aluminium has given perfect service. The general span length is 260 feet but there are spans from 150 to 500 feet. The line was designed for California heavy-loading, ½-inch ice, 6 pound wind, zero degree Fahrenheit (F), with a normal tension of 16.7 per cent of ultimate at 60 F and a maximum tension of 50 per cent of ultimate. The Company is not planning the use of all-aluminium conductor in the heavy loading area although it should operate properly if designed for the expected loads.

All-aluminium has also been used in the California medium-loading areas which are assumed to be at ¼-inch ice, 6 pound wind, and zero F. The use here has been restricted to sizes of 4/0 and over, and on 60 kV wood-pole lines. Under medium-loading conditions the conductor is strung to a tension resulting in a final tension at maximum loading condition of 50 per cent of the ultimate conductor strength, and approximately 16 per cent for final normal (60 F) conditions. In designing all-aluminium conductor wood-pole transmission lines for these conditions, a ruling span of 600 feet is generally used. On long spans the conductor is normally strung to the ruling span tension. Stringing to these tensions for a span in excess of 2,000 feet still results in a safety factor of unity at maximum loading conditions. It is probably better practice, however, to dead-end and design the tension in these spans independently, maintaining a constant safety factor throughout the line, although no trouble has occurred where these long spans have been strung using the ruling span tensions.

The greatest use of all-aluminium on 60 to 70 kV lines has been in the light-loading district. The California light-loading district has for the maximum loading condition an 8-pound wind at 25 F, no ice.

(This article originally appeared in the *Proceedings of the Conference on Electrical Utilisation of Aluminium*, March 1955, and is reproduced in this issue of the CHRONICLE with grateful acknowledgments to the authors and the *American Institute of Electrical Engineers*. All-aluminium conductors have already been accepted as the logical material for low tension distribution in the country, and practically all States have already effected a hundred per cent switch-over to AAC from copper, because of technical and price advantages. The advantages of AAC for high voltage transmission lines do not, however, appear to be fully appreciated. In the present context, when there is difficulty in obtaining steel core wire from abroad, on account of foreign exchange shortage the possibility of using AAC for high voltage transmission lines should be of great interest to our transmission line engineers.)

Detailed studies have been made on the economics of all-aluminium on 60 kV lines in the light-loading district and it was found that without a doubt all-aluminium is more economical, with the same safety factors, than any other type of conductor. This study was made while conductor cost comparison was not as favourable to all-aluminium as it is now.

All-aluminium sizes from 2/0 up to 397–500 CM have been used on 60 kV pin-type and suspension-type lines. Normally the 60 kV lines are strung so that the final tension at maximum loading conditions is approximately 40 per cent of the ultimate strength of the conductor. The normal tension at 70 F under these conditions is approximately 18 per cent of the ultimate strength with a ruling span of 600 feet.

The use of all-aluminium conductor in sizes larger than 4/0 on pin-type insulators presents one problem which has not been entirely solved. Armour rods are installed at all support points, and the conductor is enlarged by the armour rod so much that the top, and particularly the side grooves, are not wide or deep enough to hold the conductor securely in place. The top groove has been enlarged recently by most insulator manufacturers, and it has been necessary to use the top groove, instead of the smaller side groove, for light angles to hold the armoured conductor in place. The clamps of the clamp-top insulators have also recently been enlarged, which may prove the solution for straight-line and light angles.

The use of all-aluminium on suspension-type construction presents more of a problem in that the lighter conductor swings farther under the same wind conditions than ACSR or copper. This generally requires longer crossarms, but because of the decreased vertical loads and, in general, decreased line tension, the same structure designed for the heavier conductors can be used, and it is often possible to install either a conductor of larger capacity on the same structure or to reduce guying on wood structures.

There has been some objection to the use of all-aluminium as well as ACSR conductor in areas near the coast where salt-contaminated fog

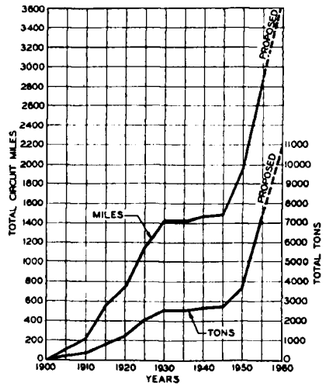


Fig. 1. Accumulated circuit miles and tons of all-aluminium conductor Pacific Gas and Electric Company transmission system.

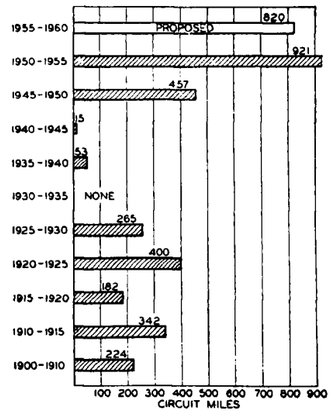


Fig. 2. Circuit miles of all-aluminium conductor installed in each 5-year period.

conditions prevail, but evidence has not been found to support this objection. There are samples of 350,000 CM all-aluminium conductor, one 19-strand installed in 1902, and one 7-strand installed in 1906. Initial operation of the two circuits of these conductors was at 60 kV. Portions of both circuits are still in operation at 60 kV, or 12 kV. The circuits were strung on wood poles with approximately 35 miles of each circuit adjacent to the west shore of San Francisco Bay where they were exposed to salt-contaminated fog as well as salt foam from salt-evaporating ponds. There has been some corrosion of these conductors, as evidenced by discolouration and the presence of salts of aluminium in the strand interstices, but careful examination discloses no measurable reduction of the cross section of the strands. This is not presented as proof that all forms of aluminium will perform equally well or that equally good performance will prevail under other conditions.

The use of all-aluminium conductor on 110 kV and 220 kV line has been limited entirely to the light-loading district. On the 110 kV wood-pole lines the conductor is strung as on 60 kV pole lines, i.e., the maximum final tension is approximately 40 per cent of the ultimate strength. On 110 kV tower lines all-aluminium conductor sizes 266,800, 336,400, and 397,500 CM are also strung so that the maximum final tension is approximately 40 per cent of the ultimate. The normal final tensions at 70 F are approximately 30 per cent of the ultimate with a ruling span of 1,000 feet.

The largest all-aluminium conductor used so far on 110 kV tower lines has been 715,500 CM. Approximately 40 circuit miles of this size have been strung. The lines are designed with a ruling span of 1,000 feet and strung so that the maximum final tension is 3,540 pounds, or 28 per cent of the ultimate. This results in a normal final tension at 70 F of 2,400 pounds, or 19 per cent of the ultimate. These percentages of the ultimate tension are considerably lower than those used on the

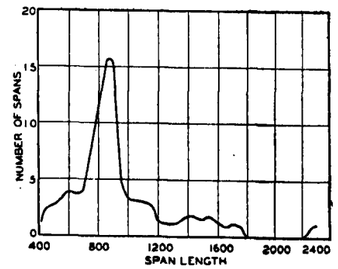


Fig. 3. Frequency of various span lengths, Morro Bay–San Luis Obispo, 110 kV tower line.

Table I. Conductor Sizes

Size MCM* or AWG†	Year First Used
3/0	1899
4/0	1899
2/0	1908
477	1908
350	1910
266.8	1923
397.5	1923
336.4	1924

* Thousand circular mils.

† American Wire Gauge.

Table II. Comparison of All-Aluminium and ACSR Conductors for 220-KV Transmission Lines.

	All-Aluminium				*ACSR*		
Size, thousand circular mils	795	954	1,113	1,272	795	954	1,113
Stranding	61	61	61	61	54/7	54/7	54/19
Ultimate strength, pounds	14,330	16,860	19,660	22,000	28,500	34,200	40,200
Copper equivalent, thousand circular mils	500	600	700	800	500	600	700
Maximum design tension, 25 F, 8-pound wind, zero-inches ice, pounds	6,375	7,500	7,500	7,500	7,500	7,500	7,500
Safety factor	2.25	2.25	2.62	2.93	3.8	4.56	5.36
Normal design tension, 70 F pounds	4,410	5,160	5,240	5,640	5,300	5,610	6,120
Sag in a 1,200-foot span, 130 F, feet	35.5	34.3	38.4	42.5	38.9	43.0	45.7
Weight per 1,000 feet, pounds	746.3	895.5	1,045	1,193	1,024	1,229	1,431
Cost of conductor, dollars per circuit mile	4,170	4,930	5,660	6,410	4,940	5,810	6,950

smaller aluminium conductors. The reason for this is that the 110-kV steel towers normally used are designed to withstand a maximum tension of 3,540 pounds. These steel towers were originally designed for use with all-aluminium and ACSR conductors up to a size of 397,500-CM, and for copper conductors up to 250,000-CM. When it was desired to install larger conductor sizes the same towers were used. The safety factor of the installed 715,500-CM all-aluminium conductors at maximum tension is therefore approximately 3.6, instead of the usual 2.5 as used on the smaller all-aluminium.

It has been possible to replace existing copper conductor, 3/0 in one case and 250,000-CM in another, with 715,500-CM all-aluminium (450,000-CM copper equivalent) on existing 110-kV twin-circuit tower lines without any changes whatever in the steel structures. This cannot always be done, as in rough country the difference in the coefficients of expansion, and wind loading between copper and aluminium lightens the weight on some suspension strings at low temperature to the point where changes in the structure or the use of dead ends, hold-down insulator strings, or weights may be required to take care of upstrains.

An example of the use of 715,500-CM all-aluminium conductor on 110-kV steel towers is the recently completed line from the new Morro Bay steam plant to San Luis Obispo, a distance of 16 miles. This line is in fairly rough country extending from the coast to approximately 10 miles inland. The line averages 5.6 towers per mile and the spans vary in length from 450 feet to a maximum of 2,280 feet ; see Fig. 3. Twisted tapered armour rods are used at all suspension points and 6-pound Stockbridge type dampers are installed at each end of each span with spacing and quantities according to the span length. All suspension and dead-end clamps are of the aluminium alloy type.

The highest voltage so far used in the Company transmission system is 220-kV, and it is in this voltage class that the savings in the use of all-aluminium conductor have, so far, been the greatest. All of the recent 220-kV lines in the light loading district were designed for the use of either 954,000-CM or 1,113,000-CM all-aluminium conductor. These sizes have been installed on twin-circuit steel towers at a maximum design tension of 7,500 pounds ; the tension being at 25 F with an 8-pound wind. The twin-circuit suspension type structures are designed for two broken wires and a 1,200-foot ruling span with this maximum tension, which is not too much for all-aluminium conductors from 954,000-CM and larger. In fact, it is possible to replace 500,000-CM copper, or 795,000-CM ACSR with 954,000-CM or 1,113,000-CM all-aluminium, gaining substantially in capacity without appreciably changing the stresses on the towers. It does not seem logical to install conductors having an ultimate strength of 28,000 pounds (795,000-CM ACSR) when the economical strength of the tower is for a maximum tension of 7,500 pounds in the conductor. Where loads to be carried require a conductor with a capacity larger than 500,000-CM copper equivalent, the all-aluminium becomes more favourable. Of course, the safety factors in the conductors are smaller with all aluminium thus used, but with proper protection with armour rods and Stockbridge dampers no trouble from vibration is expected. To sum up, where the strength of the aluminium is sufficient, it is felt that there is no need for the extra weight or the extra cost of steel.

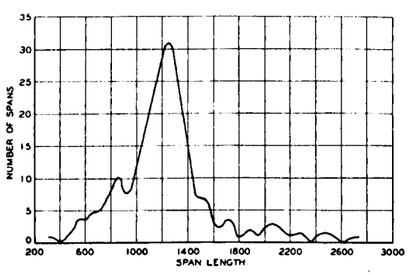


Fig. 4. Frequency of various span lengths, Morro Bay—Gates 220-kV tower line

Table II shows a comparison of ACSR and all-aluminium conductors in the sizes which are now being used or contemplated on 220-kV lines on the Company transmission system. This table is based on using the conductor on towers designed for a maximum conductor tension of 7,500 pounds, as previously mentioned. The advantage of dropping steel cost out of the conductor when the strength of the steel core is not required is apparent. The safety factors vary from 2.25 for 795,000-CM to 2.93 for 1,272,000-CM. The normal tension at 70 F range from 31 per cent of the ultimate strength for 795,000-CM to 25 per cent for 1,272,000 CM.

A distinct advantage in the use of all-aluminium conductor on 220-kV lines is in changing existing conductor to get more capacity. If 795,000-CM ACSR is replaced with 954,000-CM all-aluminium at the same sag, the safety factor shown in Table II will be increased from 2.25 to 2.55. A corresponding increase in safety factor can be obtained when substituting in other sizes. This, of course,

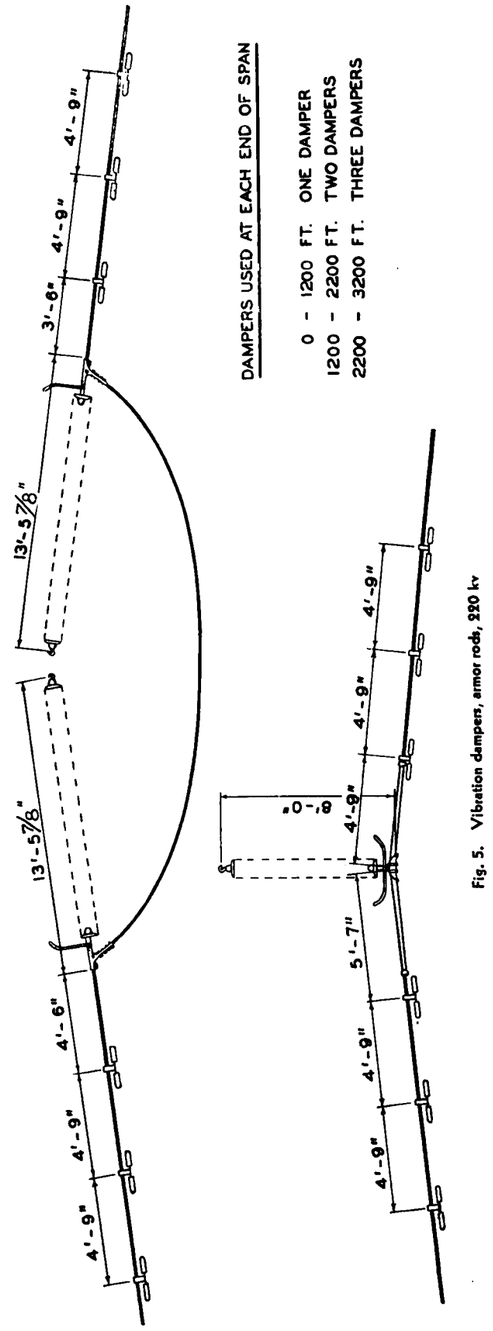


Fig. 5. Vibration dampers, armor rods, 220 kv

will stress the towers less longitudinally, and, in many cases will permit the use of existing towers that might otherwise be overstressed from the added wind and longitudinal load. Details have been worked out for changing 500,000-CM copper (the " rope-lay " type having considerable corona loss) to 954,000-CM all-aluminium (600,000-CM copper equivalent), or 1,113,000-CM all-aluminium (700,000-CM copper equivalent) on a 220-kV twin-circuit line built in 1921, for a net cost of approximately $4,300 and $5,200 respectively per circuit mile, including the cost of conductor. For this cost there are appreciable gain in capacity and reduction in corona losses.

A twin-circuit 220-kV tower line with one circuit strung has recently been completed from the Pittsburg steam plant, 30 miles northeast of the San Francisco Bay area, to Panoche Substation, in the San Joaquin Valley, a distance of 125 miles. For 95 miles this line is parallel to and 75 feet from another tower line of the same voltage and tower types built in 1947. The older line has two circuits of 795,000-CM ACSR (500,000-CM copper equivalent) ; the new circuit 1,113,000-CM all-aluminium (700,000-CM copper equivalent). In rough country the new steel towers cost approximately £2,400 per mile more than the towers in the older line. In fairly flat country the steel towers in the new line cost approximately the same as those in the old line. The additional cost for towers in rough country is partly because of the required use of dead-end structures to take care of upstrain under cold-weather and wind conditions. It was also required that the towers in the new line be set opposite the old towers, thus removing the flexibility of location which could easily eliminate some, if not all, of the dead-end structures. The use of hold-down insulator strings, or weights, would also reduce this difference of cost if this method had been used.

Another example of the use of 1,113,000-CM all-aluminium conductor is the recently completed 220-kV line from the Morro Bay steam plant to Gates Substation, a distance of approximately 70 miles. This line is in rough country as well as rolling foothills extending from

he Pacific Coast east to the San loaquin Valley. The line averages 4.2 towers per mile and the spans ary in length from 315 to a maximum of 2,800 feet ; see Fig. 4. Twisted tapered armour rods are used at all suspension points and 12-pound Stockbridge-type dampers are nstalled at each span with spacing nd quantities according to the span ength ; see Fig. 5. All suspension clamps are made of aluminium alloy nd all dead-end clamps are of the malleable iron-bolted type with aluminium alloy keeper pieces permitting all dead-end loops to be continuous, without bolted connections. Line splices are made with standard compression-type sleeves.

A further comparison of ACSR nd all-aluminium conductor will emphasize some additional points. The use of all-aluminium instead of ACSR of the same capacity is ustified not only from the first cost of the conductor itself, but also from he cost of material, labour, fittings, nd installation. On the all-luminium the compression-splicing sleeves cost less, can be installed in bout one-tenth of the time, and the centering of sleeve is not so critical. The cable and armour rods have less diameter, and in some cases take a smaller dead-end and suspension clamp. Vibration dampers are smaller and cost less. The conductor is lighter ; hence transportation and installation cost less.

The introduction of a single strand of steel in an aluminium conductor as a safety measure brings up a point not generally considered. In several cases in the company system the steel has actually been the offending member. In two cases where 4/0 ACSR was installed, falling trees or limbs stripped or partially stripped the aluminium strands, or damaged the conductor to the extent that the steel strand was carrying all or most of the current. These were in spans over canyons or otherwise not easily seen ; at least they were not discovered. At a later date, when the circuit was being used to carry heavier loads while other lines were out of service, the steel burned off, causing a failure in the circuit which was relied on to carry the load. Other failures occurred because of poor centering of the ACSR compression sleeve which caused the steel to carry so much current that burnt-downs were caused at times when extra load was put on the line.

In the design of a transmission line, it is questionable whether the conductor should have a larger safety factor than the structures when the structures are rigid steel. It is certainly not economical to pay for strength that is seldom if ever used. It can even be considered dangerous to have this extra strength which, if used, at some time might cause failure of steel structures or guys on wood-pole lines. This type of failure would cause longer outages and more costly repairs. The weakest link in a line should be the easiest and quickest to repair. If the mechanical loads developed in a conductor on a line do not exceed the designed structural strengths, taking into account the type of structure, there seems to be no need for a stronger conductor. The economical structure design should be the key to the problem.

All-aluminium conductor in light-loading areas has given good service so far and, with its homogeneous make-up, high elastic limit, and low cost both for conductor and material, it should be more economical than any other type. It has no dangerous disadvantages when used with the proper safety factors.

DISCUSSION

JORDAN LUMMIS (Southern California Edison Company, Los Angeles, Calif.) : This paper gives a very thorough and interesting discussion on the economics of all-aluminium conductors. The possibility of increasing the capacity of a steel-reinforced aluminium cable (ACSR) line by using all-aluminium conductor is something that should be considered in every case where the problem arises. The same solution probably can be used on many existing copper lines.

The authors' experience with all-aluminium lines exposed to contaminated atmosphere is very significant and should act as a dash of cold water in the face of current hysteria on the subject. On the other hand, as the authors carefully note, this does not prove " that all forms of aluminium will perform equally well " and it seems highly probable that uninhibited ACSR would not have given such satisfactory service because of interaction between the zinc on the core and the aluminium.

Southern California Edison Company's experience with all-aluminium conductor has been limited to about 100 circuit-miles of 4/0 on 66-kV and 33-kV wood-pole lines. These lines were installed before the days of improved relay operation and were burned down with nearly every fault. ACSR, on the other hand, seldom suffered damage to the steel under any fault conditions, with the result that incidental damage to supporting structures was uncommon. Most of these circuits have since been replaced with copper or ACSR conductors and although relay operation is vastly improved, there are lines in some portion of nearly every 66-kV network which may be damaged by flashover. Thus, all-aluminium appears more attractive on the 220-kV systems where clearing time is much faster.

The authors' experience of hazard arising from the steel core is quite contrary to the Edison Company's. In one case of ice loading up to 15-inch diameter on a line designed for 1/2 inch of ice, the steel core was all that prevented long sustained outage of an important 220-kV line in an area almost inaccessible to repair crews during the storm season. ACSR has held up conductors where the aluminium was annealed by forest fires. If the right kind of an airplane hits a line squarely enough it will chop apart any conductor, but cases where the core has minimized the damage are numerous. The following case history is typical: At 4-03 p.m. on June 24, 1951, a 220-kV line relayed. At 4-31 p.m. the line was tested and stayed in. At 5.52 p.m. a report was received that an airplane may have been the cause of the trouble and since the line was needed only for standby, it was de-energized pending determination of the trouble. At 7-38 p.m. it was found that a Cessna Model 140 had bumped into a 3,600-foot span of 605,000-cm ACSR 30 : 19, had stripped 28 strands of aluminium from the centre conductor for 2 feet 9 inches and all the aluminium from the west conductor or 11 inches. The line was repaired the next day during the off-peak period. The significant points are that this circuit remained mechanically stable until repair was made at a convenient time, meanwhile remaining available for emergency service as evidenced by the fact that it carried 250 amperes across the damage for 1 hour 21 minutes.

In the case of the Edison Company's system, it is apparent that the low initial cost of all-aluminium conductor will have to be weighed against the probability of more frequent and more serious mechanical damage.

Eduard Fritz, Jr. (Day & Zimmermann, Inc., Philadelphia, Pa.) : My former company, Penn Water of Holtwood, Pennsylvania, also have transmission lines constructed with all-aluminium cables. Their four all-aluminium circuits are of 300,000 cm., conductivity 19 strand, and operate at 70 kV, 25 cycle. The four circuits occupy two double-circuit tower lines on the same 100-foot R/W, each line being 40 miles long. The operating record of these lines has not been of a standard one could classify as better than tolerable.

The first pair of circuits were placed in operation in 1910 with towers on 500-foot average spans. There are many longer spans, the longest being 1,400 feet. Fifty feet away is the second double-circuit line, built in 1914 with its final circuit strung in 1917.

Over the years, these four circuits have experienced many burndowns from lightning, sleet, wind updrafts, kites, buzzards, and overheating at joints. Several 3-circuit outages have occurred as the free ends of the burned-off phase made contact with the adjacent circuits. Some of the troubles, as lightning flashovers, have been almost eliminated by improved shielding and adequate tower grounding, while other troubles, such as bird contacts, could be eliminated if greater tower clearances were provided. Many total interruptions result from the rapid fusing of the all-aluminium cables, as burndowns will occur under heavy load currents, even if fast relaying were provided.

Since 1914 sleet melting has been resorted to in an effort to prevent sleet formations. In spite of this, there have been four occasions since 1932 when burndowns have occurred, due to sleet, three when the circuits were reported clear of ice, and one before the de-icing could be started.

Now for the favourable part. The original cables were strung to 500-pound tension, which means that although the average span's tension, at heavy loading is 50 per cent of the ultimate, in the longer spans it should reach the cables so called elastic limit. Nevertheless, these circuits have never been resagged. If non-elastic creep has occurred, it is not noticeable.

In 1945 we measured slightly less d-c resistance for the entire line than if the cable were new, and a cable sample cut from the 1910 circuit, tested higher ultimate strength than the catalogued value. The lines are without armour rods or dampeners, yet no metal fatiguing has been discovered. There has been no depreciation in these conductors.

I wish to congratulate E. M. Wright, and E. G. Lambert for a very informative paper. Also, they have made an able case for the use of all-aluminium cables as compared to steel-reinforced aluminium cable (ACSR) and for lighter conductor tensions. I would, however, like to call attention to two characteristics of all-aluminium which will tend to offset the advantages which they have pointed out.

For lines of 110 kV and lower voltages, greater conductor clearances and spacings must be provided for all-aluminium line or burndowns will be all too frequent.

The coefficient of thermal expansion of all-aluminium is 0.0000128, for ACSR 24/7 stranding about 0.0000102. If a circuit is to be loaded near its thermal limit, assuming both lines have the same 60° sag, taller towers must be provided for all-aluminium lines or dangerous crossing clearances may result.

If the line is nearly straight, the sum of these two disadvantages may offset the saving in conductor cost and in the lighter weight corner structures.

If many line angles occur, all-aluminium lines can be cheaper, but will operate satisfactorily only if adequate clearances are provided and attention is paid to the salient features as described by the authors.

Where sleet is a problem, ACSR cables usually continue to function even if several aluminium strands are burned off, whereas sleet melting may be necessary for all-aluminium lines.

It is offered for your consideration, that for lines of prime security, there is greater opportunity for savings with the use of a conductor which rarely fails than through the use of the cheaper all-aluminium where provision for broken wires in the towers should be provided.

Mr. Rodee (Aluminium Company of America) : In addition to its engineering value, this paper has considerable historical interest. It referred to the first use of aluminium in 1899, which was among one of the first installations of aluminium conductors on overhead lines.

Since steel-reinforced aluminium cable (ACSR) was not developed until several years later, the question of making a choice between aluminium or between all-aluminium and ACSR did not exist at the time these early installations were made. And during the years that followed, ACSR to a very large extent replaced all-aluminium for use on overhead lines, and because of its higher strength, permitted the use of longer spans with intended savings in supporting structures. It brought out in this paper, however, that these economies can be fully realized only when it is possible to utilize the higher strength of ACSR. When faced with the problem of changing conductors on an existing line to obtain increased carrying capacity, the maximum advantage will be obtained by using a conductor with the highest possible ratio of current-carrying capacity to weight within the limitations of the strength of the existing structures.

In our all-aluminium conductor, or in some cases, ACSR with a small percentage of steel will usually be found to most nearly meet these requirements.

There is one question I would like to ask concerning the procedure used to install the all-aluminium conductors on these lines.

With the relatively high normal tensions mentioned in the paper, an appreciable amount of creep over a period of time may be expected. I would like to ask in what way provision was made to take care of this during stringing of the conductors or, stated another way, what allowance was made for the increase in sag resulting from this creep?

E. M. Wright and **E. G. Lambert** : In answer to Mr. Rodee, we compute initial tensions. We string with initial tensions and sags. We compute these tensions using the stress-strain curves which are furnished by the manufacturers. We assume in computing these tensions that the conductor will be loaded at maximum loading conditions, in our case an 8-pound wind, 25 F, for a period of 30 days. We do not prestress any of our all-aluminium, or for that matter, our ACSR.

I would like to say again that the main use of all-aluminium in our system has been in the light-loading area. The California light-loading area is really light loading. There is no snow loading. There is no ice loading. There is no sleet loading. There is very little lightning.

So you might say that the conditions are mainly ideal for the use of this type of conductor.

In the heavy-loading areas, we normally use ACSR except for the one case I mentioned before, and for a couple of other cases on short lines.

I want to take this opportunity of thanking those who made comments on the paper.

Our Family

We said welcome to ...

N. Satyanathan, Addl. Accountant.
P. Rajan, Asst. Engineer.
D. Sivasubramanyan, Asst. Engineer.
K. George
K. N. Sankaran Kutty Nair } Probationers.

They were married ...

K. Seetharaman, General Foreman, Inspection and Testing, with Miss Alamelu.

S. Ravindran Nair, Chargeman, Inspection, with Miss Prasanna.

P. A. Oommen, Clerk, Sales, with Miss Mary Kutty.

K. Thomas Muthalaly, Operator, Rod Mill, with Miss Thangamma.

M. Shahudeen Sahib, Jr. Operator, Wire Mill, with Miss Jameela Been.

G. Antony, Jr. Operator, Wire Mill, with Miss Floria.

V. Germias, Moulder, Foundry with Miss Stella.

F. Kamilon, Store Helper Lal with Miss Celine.

Miss Saloma, daughter of Mr. C. Joseph (Shipping) with Mr. J. George.

Joseph Zacharias, with Miss Mercy.

We said farewell to ...

P. K. Narayana Pillai, Head Guard.
T. Levebro, Clerk, Shipping.

Births ...

Walking on air these days are Gregory and his wife —they are the proud parents of twins! (boys). The event is another ALIND "first"—sort of!

Congratulations are also extended to the following members of the "family" on the additions announced:

M. N. Vasudevan Nair — a daughter; **P. Balakrishnan Nair** — a daughter; **B. B. Kaimal** — a daughter; **K. Nanoo Panicker** —a daughter; **A. P. Parameswaran Nair**—a daughter; **P. Sivasankaran Nair**—a daughter; **P. Rajagopal**—a son; **P. K. Varadharajan Pillai**—a son; **A. M. Gopalakrishnan Nair** — a son; **P. K. Kumaran Nair**—a daughter; **N. Thangappan Pillai**—a daughter; **G. Srinivasan Asari**—a son; **V. S. Menon** —a son; **C. G. Madhavan Pillai**—a daughter; **S. Kunjukrishna Pillai** — a son; and **S. Ibrahimkutty** — a daughter.

K. Seetharaman—Alamelu.

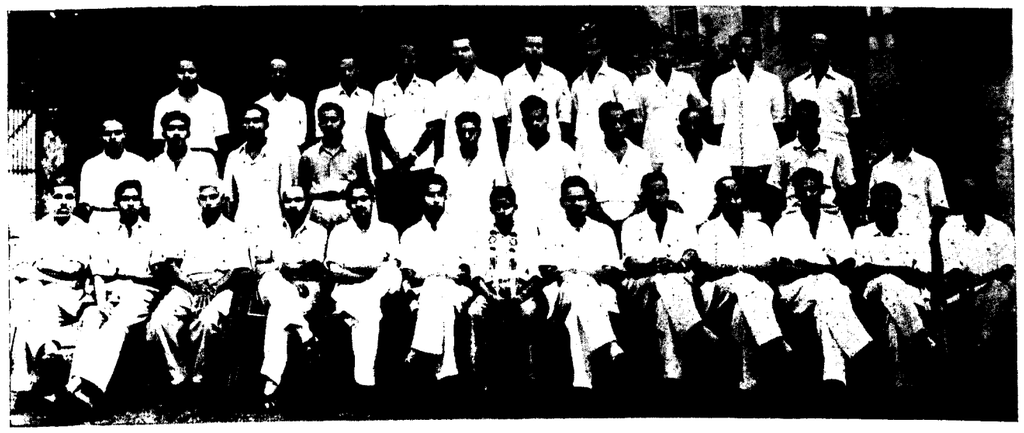
K. Thomas Muthalaly—Thangamma.

J. Zacharias—Mercy. Below: *Mr. and Mrs. B. Kunjamma Gopalakrishnan Nair; their wedding was reported in the last issue.*

Above:
Picture taken on the occasion of the visit of the Members of the Trivandrum Ladies Club to Kundara.

Centre:
With M. P. M. Pillai, our Bombay Representative, is Mr. Ernest Schuren (of RUSS Elektroofen Cologne, Germany) who is assisting us in erecting the furnace of our rod mill at Hirakud.

Below:
K. R. O. Nair, Asst. Engineer, Technical, was given a rousing send-off by Members of the ALIND Supervisory Study Group on his deputation to Hirakud. This picture shows him (centre) with Members.



Mr. P. N. Krishna Pillai, Personnel Manager, Indian Aluminium Company Limited, Calcutta (eighth from left) who initiated discussions at the Seminar held from 4th to 7th November together with members who participated in it.

Seminar on Long-Term Agreement

FROM 4TH TO 8TH NOVEMBER, A SEMINAR was held on the working of the long-term agreement entered into with employees by the company last year.

Mr. P. N. Krishna Pillai, Personnel Manager, Indian Aluminium Company Limited, Calcutta, who mediated in the negotiations resulting in the agreement sparked off the discussions. Among others, V. G. G. Nayar, S. Peer Mohammed, P. A. Ibrahim and V. O. Mathew participated in the discussions.

4th November : *General*

Mr. Krishna Pillai observed at the outset that the terms and conditions of the agreement should be studied carefully and implemented in the proper spirit. " Be sympathetic but firm in implementation, and keep an open mind to review the decisions once taken, if necessary ", he said.

5th November : *Grievance procedure*

Mr. Krishna Pillai said : " It is absolutely necessary that every employee should be given an opportunity to ventilate his grievance. Grievances may be fancied or real, but a factory should evolve its own procedure for handling them. It is important that grievances should be settled at the lowest level possible."

Continuing, he said that the four broad principles to be observed in settling a grievance were: (i) Building up confidence ; (ii) processing a grievance at the lowest level ; (iii) adopting an impartial and objective attitude ; and (iv) and having an open mind to review cases.

Concluding, he said : " I am glad that the procedure is working fairly satisfactory at ALIND."

6th November : *Communication*

Mr. Krishna Pillai said that the accepted and traditional channels of communication were : (i) House journal ; (ii) Notice Boards ; and (iii) Periodical conferences with section heads and departmental heads.

Discussions largely centred round induction. Mr. Pillai stressed the need for an Employee Handbook giving the history of the company, facilities provided by it and so on. (*Such a book for* ALIND *is now under preparation*).

7th November : *Discipline*

Mr. Krishna Pillai declared : " A worker is a part of society. He is not an industrial worker 90 per cent and a citizen 10 per cent. He is a citizen cent-per cent."

Continuing, he said line management and departmental people should be well-versed with the standing orders and rules of the company and that these rules should be enforced impartially.

8th November : *Employee attitude*

Mr. Krishna Pillai summed up: " It would be worthwhile to review if employee and union attitude to the industry and management has changed in any way after the signing of the agreement. The very fact that the employer and the employees as represented by the trade unions were able to sign a comprehensive, collective agreement reveals an attitude of mind which believes in progressive employer-employee harmony. It is not enough if we just sign an agreement and stipulate certain terms and conditions of employment and certain rights and obligation for the parties concerned. As the process is a continuing one, the same attitude has to go on indefinitely ".

Thoughts that occurred on top of the Administration Block

As aloft Alind's dizzy heights I stand,
And westwards gaze—the lake in calm majestie
Seems to stretch even unto the sea,
With scarce a sign of life in all the land.

It wasn't e'er thus, nay; in days of yore,
Wares from far off Cathay, Tyre and Sidon,
Did mingle with the pepper and spice of Kerala's own,
And echo her name in many a far-off shore.

A poorer race now people these shores—
Save in Alind where a loftier mould of men rise
Aye, with fire in their very pores,
And knowledge shining in their eyes—

They shall bear again the torch of Ind's new fame
And spread afar Alind's bright name!

J. FRANK MORRIS

J. Augustine.

P. M. Varghese Panicker.

N. Chellappan Pillai.

Alinders

Smooth Operator

A FORMER HAVILDAR IN THE INDIAN ARMY J. AUGUSTINE, Operator, Wire Mill, has been with ALIND for eight years now.

Volleyball, chess and photography are his chief off-work interests. As though to avenge himself on his cycle which once involved him in an accident causing a severe injury to his right leg, he went for, and won a prize in our slow cycle race, although which year it is, we are unable to recall.

A hard worker, he hopes he will go very far; so do we.

* * *

From Wireless to Wire Mill!

P. M. VARGHESE PANICKER, WIRE MILL, IS AN S.S.L.C. from M. G. D. High School. He also holds a certificate in Wireless telegraphy. For a brief spell, he worked as a fitter for AEI, Calcutta, at Rajahmundry.

Interested in all kinds of sports Varghese Panicker has knocked off prizes in Volleyball and Cross-country.

Such spare time as he has, he devotes to gardening and small-scale farming.

* * *

Nargis is his pin-up!

N. CHELLAPPAN PILLAI, JUNIOR, WIRE MILL IS AN S.S.L.C. from the local High School. He was engaged by us in May 1954.

Reading and writing are his principal off-duty pursuits. Basketball and Volleyball are his favourite games.

A single man still, Nargis is his movie pin-up!

He'd like to mind his own business!

K. VASU, JUNIOR OPERATOR, WIRE MILL, WAS WORKING for FACT Limited before coming to us in 1949.

An efficient employee, he would like to start a business of his own. He does not have any special interests to speak of. His favourite author is Changanpuzha Krishna Pillai, his movie hero—M. G. Ramachandran.

* * *

Local Product

A. SHAHUDEEN KUTTY, OPERATOR, WIRE MILL, HAS consistently been winning Efficiency Awards from 1954 onwards.

An S.S.L.C. of the local High School, Shahudeen did a brief stint as a clerk in the Sub-Registrar's office, before coming to us about four years ago.

His reading preferences are short stories and whodunits, although he is not attached to any particular author.

This Factory Day, Shahudeen Kutty walked away with an award for a suggestion he made for making our *proforma* Stranding Reports more comprehensive.

A devoted and conscientious employee—Shahudeen.

* * *

Life is for the living!

YET ANOTHER SLOW CYCLE PRIZE-WINNER, ELSEWHERE, IF not here, is S. GOPALAKRISHNAN NAIR, also of Wire Mill. An ESLC, he has also passed the Travancore-Cochin Survey Test with distinction. Before joining ALIND in 1955, he was with Parry & Co., Limited.

Gopalakrishnan likes books and pictures with a happy ending—not for him those tragedies and morbid plays. His ambition? In the evening of his life, he must be able to say, "I have lived."

As a member of the Productivity Council, he has received a merit certificate. He has, also, received a few suggestion awards.

Altogether, a gay, a happy-go-lucky, "work-hard-while-you-work, play-well-while-you-play" type.

K. Vasu.

A. Shahudeen Kutty.

K. Thomas Muthalaly.

A Great Gun !

THOMAS MUTHALALY, CHARGEMAN, ROD MILL, HAS ACTED so far in no fewer than 23 plays which we believe is quite a record even for an Alinder ! But amateur theatricals are not his only interest : shooting is another. A great gun, eh?

Muthalaly joined ALIND three years ago, and before coming to us, was working as a sales representative for a firm in Madras.

With Thomas Muthalaly, hard work is a positive passion. Indeed, he is as good off the stage, in his allotted role as a Chargeman, as he is on the stage as a villain or something !

* * *

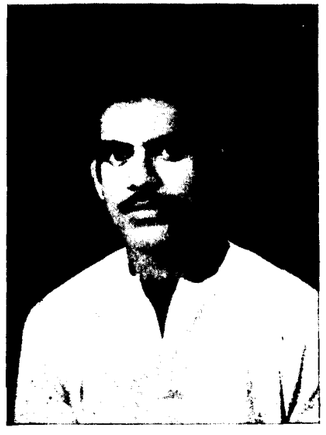
C. K. Koshy.

Hunting is his hobby

AN INTERMEDIATE-IN-ARTS, C. K. KOSHY, JUNIOR Operator, Rod Mill, joined ALIND in 1956. Hunting is his favourite hobby ; his other interests are car driving and rifle shooting. Very good in volleyball, his team were winners in the Club Day tourney, although they were only runners-up in Factory Day. Jumps and races are other sporting pursuits of which he is very fond. He also likes to see Hindi films, Dev Anand being his favourite actor.

An earnest and enthusiastic type—Koshy.

* * *



C. G. Krishnankutty Nair.

'If any thing is sacred, the human body is sacred!'

ANOTHER ROD MILL PERSONALITY WITH WHOM ALSO 'THE play is the thing,' (but of the sporting-field *genre*) is C. G. KRISHNANKUTTY NAIR.

He is interested in all games, and in the " Body Beautiful " contest held in 1956, he missed his meed of first prize for lack of a few inches of biceps or whatever it is by which male beauty is adjudged. But it is not muscle-building only he is after ; he cultivates his mind by reading the autobiographies of great men.

Being a nice and amiable type, Krishnankutty is a popular personality.

A would-be man of property

NOW FOR SOME REEL SHOP PERSONALITIES.

First, we will deal with PARAMU SIVARAMAN ASARI.

He came to ALIND back in 1949. He has studied only up to the fourth class, but still he has a fund of common sense. Not the outdoor type, only card games interest him.

' My ambition in life is to own land and property,' he says. A married man with two children, Banumathi is his favourite actress. Makes you think somewhat, doesn't it ?

* * *

... and a man of piety

N. RAGHAVAN ASARI, ALSO OF REEL SHOP, CAME TO ALIND in 1950. He has, also, studied only up to fourth class, but he is making up now with detective fiction ! Football and music are his other interests. Agriculture is another passion with him. A pious, God-fearing man, he wants to lead a good life.

* * *

He lives to eat !

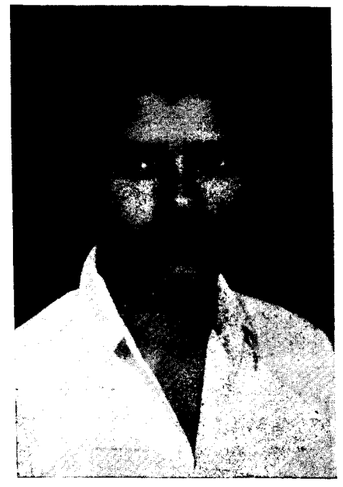
K. PAPPU PILLAI, REEL SHOP, PROVED THIS FACTORY Day that he could out-eat any other ALINDER. At our *iddly*-eating contest, he tucked in a quantity that should probably keep a brace of hippopotami going at least for a week !

But man does not live by *iddly* alone as the New Testament might have put it ; his other consuming passions are *dosais* and *vadas !*

A lorry driver in World War II, he joined ALIND in 1955.

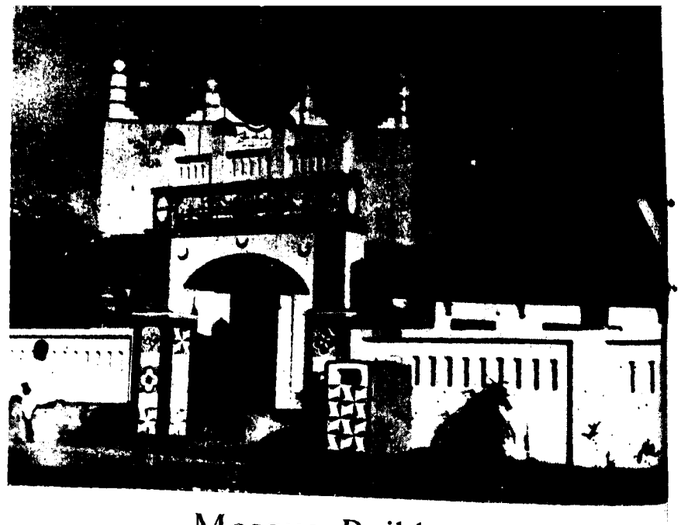
Father of six children, Pappu Pillai's ambition in life is to see his son well settled in life.

P. Sivaraman Asari.



N. Raghavan Asari.

K. Pappu Pillai.



The mosque that Ali Kunju built at Elampalliyoor.

M. Ali Kunju.

P. Balan Pillai.

M. Antony.

Mosque Builder

M. ALI KUNJU, DRIVER, SHOPPING, WAS AMONGST THE first few to join ALIND. He came to us as far back as 1947 ; and before that he was working for a firm in Quilon.

Of a pious and charitable disposition, he always reads religious books, has built a mosque at Elampalliyoor. Tug-of-war, shot put and volleyball are his sporting interests.

A loyal and devoted employee, the prosperity of the company is his constant concern.

* * *

He's of the smart set !

A FORMER DRILL MASTER IN THE STATE ARMED RESERVE Police, and a fine athlete, having to his credit prizes in events like hop-step-and-jump and pole-vault. P. BALAN PILLAI, Head Guard, sort of found his *meteir* at ALIND.

Balan is fond of books, too, and is often engrossed in the reading of epics. Yes, he likes pictures, too, but they should be of the devotional type. Smart and punctilious, he is a well-liked personality.

* * *

A much sought-after man

ASKED ABOUT THE MOST MEMORABLE EVENT IN HIS LIFE, M. Antony, General Office, answered that it was his marriage. Father of three children, he is a devoted family man.

An amateur gardener, he does not let allow the grass to grow under his feet !

Antony has been with us for a dozen years now.

As an employee, he is one of the finest men we have known. Quiet, quite efficient, well-behaved, and always ready to help, he is a much sought-after fellow at our Club; he is its attender and we seek him whenever we want to borrow a book from the library or a journal from the reading room.

ALIND Co-op.

THE ALIND EMPLOYEES' CO-OPERATIVE Society Limited was registered on September 9, 1957, with a strength of 183 members. Shares subscribed totalled 1,103, and amounted to Rs. 9,255. Present strength is 270 members, the number of shares has also registered an increase by 87, and the total capital has risen to Rs. 12,684.

The Society was officially declared open by V. G. G. Nayar on June 1, 1958, and the textiles section was inaugurated by Mrs. Vijaya G. Nayar in September.

The sales curve has been rising spectacularly month by month—starting on Rs. 7,403.23 in July and ending on Rs. 12,033.99 in October.

Committee Members are :

K. R. Sankaranarayanan (*Secretary*)—President (Nominated by the Company).

N. K. B. Nair (*Welfare Officer*)—*Vice-President.*

B. B. Kaimal (*Stores*)
N. Vasudevan (*Mechanical*)
S. Damodaran (*Shipping*)
K. K. Raman (*Welder*)
M. Philips (*Accounts*)
S. Krishnan (*Security*)
M. M. Haneefa (*Wire Mill*).

The Secretary of the Society is Mr. M. K. Gopalakrishnan Nair, a specialist in co-operative society work.

Supervisory Study Group Meetings

In the last issue of the CHRONICLE, we gave a *résumé* of the activities of SSG up to end of April. Meetings held since are :

Date.		Subject.	Speaker.
June 10	...	*Methods employed at Rolls-Royce Works.*	Mr. D. R. Richards, Chief Engineer, Harrison & Crosfield, Quilon.
July 22	...	*Production control*	S. Narayanan Nair, Asst. Works Manager.
September 3	...	*Job evaluation and merit rating.*	P. A. Ibrahim, Personnel Officer.
September 30	...	*Heat treatment of aluminium alloys.*	K. Seetharaman.
October 27	...	*Plastics in the Cable industry.*	Mr. B. Hangar, I.C.I. (Private) Limited.

We have *not* made a mess of it!

S. Narayanan Nayar, Assistant Works Manager, K. R. Oonnikrishnan Nair, Assistant Engineer (Technical), and now, P. Aravindakshan, Asst. Engineer, Sales Promotion, have all made a mess of it ! Don't get us wrong, they have been, in the order named, Secretaries of the Alind Mess !

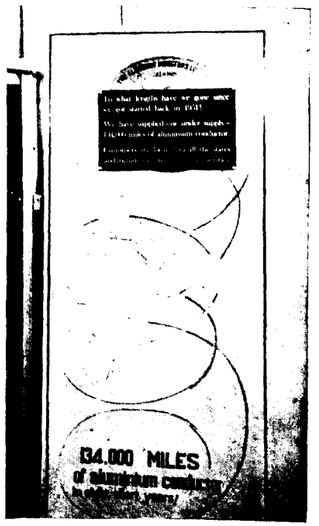
The Mess started with just four members in January 1957 ; to-day its strength is 40—a ten-fold increase.

Membership is open to all employees, and practically all dormitory occupants are now on its " rolls " .... also on its rice and curry !

Run by an elected body of a Secretary with an Executive Committee of four members—the courses of the Mess run smooth. The warden of the dormitories—S. Narayanan Nayar—is Committee Chairman and V. G. G. Nayar—President.

A general view of the stall.

Below : Some panels on display inside.



"INDIA 1958" EXHIBITION

OFFICIALLY OPENED BY SHRI JAWAHARLAL NEHRU, India's Prime Minister, on October 8, and still on and continuing to draw crowds "India 1958" exhibition, New Delhi, is a bold, and successful attempt, to unfold the story of India's scientific, technological and industrial progress since Independence. Spread over an area of about a million square feet, participants in the Exhibition included both the public and private sectors.

A feature of the Exhibition was that unlike in the Indian Industries Fair held three years ago, "India 1958" was organised industry-wise.

The major industries were divided in about a dozen different sections like heavy engineering industries, automobiles, mechanical and general engineering industries, industrial plant and machinery, chemicals, textiles, and ceramics and glass. State industrial enterprises took their place in their respective sections to which they belonged.

Still, as the number of pavilions and stalls was over 160, the total number of participants was several times bigger.

Indian Panorama

An integrated picture of India was presented in all its colourful aspects in the "Indian Panorama" put up by the Directorate of Advertising and Visual Publicity, Ministry of Information and Broadcasting. Spread over a huge area, the pavilion depicted the 'splendour that was Ind' in the past, and the spirit of endeavour and sense of purpose permeating the India of to-day.

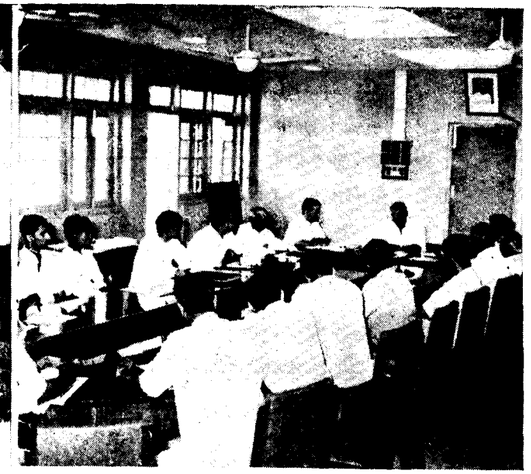
ALIND'S stall was small in size, but big in several other respects. For one thing, it was very well-located, and the gleaming aluminium structure could be seen for furlongs, if not miles, around.

Display inside told the story of the company's achievements over the years in photographs and charts and actual products.

A conductor sample sizes board, an accessories board and a "covered conductors" sample board gave an idea of ALIND'S manufacturing range.

The stall was erected under the supervision of N. K. B. Nair, our Welfare officer.

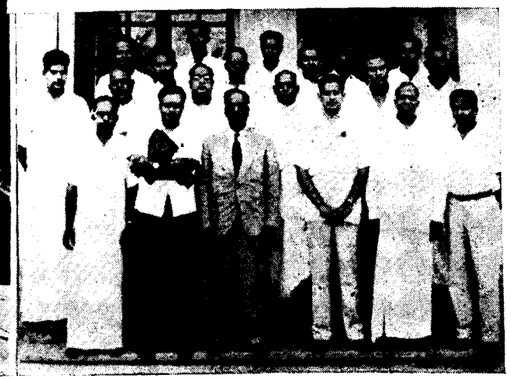
Dealer friends examining coils of covered conductors.



The seminar—Peer Mohammed, who initiated proceedings, is in centre.

Below : *Visitors at the CC plant.*

Below : *A "group" taken on the occasion.*



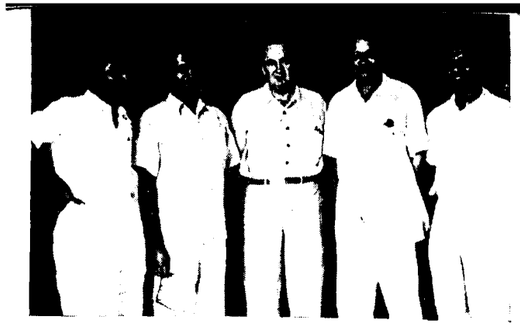
COVERED CONDUCTOR SEMINAR

Open House for Dealers

A SEMINAR ON COVERED CONDUCTORS —ALIND ALL-WEATHER and ALIND ER-AL-LITE—was held at Kundara on October 4, the apt "pupils" being our dealers of these products, with Works Manager S. Peer Mohammed acting as "Dean of the Faculty," and Assistant Engineers G. Narayana Pillai and P. Aravindakshan acting as "lecturers." The "students" subjected our staff to a barrage of questions, but our professors knew all the answers!

The visiting dealers were taken round our new Administration Block before breaking for lunch, and round the works after lunch. The impression we gathered was that they were very much satisfied with the methods of our manufacture and the care we took to ensure a high level of quality.

The idea of conducting an 'Open House' was commended by all the dealers and ALIND'S hospitality came in for much appreciative comment.



Mr. Vans Echols, Managing Director, Indaluco, (centre) at our Hirakud plant.

Mr. J. R. Staehlein (extreme left), of International Aluminium Co. together with senior staff of our Kundara Works.

Swamijis (i) Antaratmananda (ii) Sakrananda (iii) Siddhirathananda (iv) Hariharanananda.

WE PUT OUT THE 'WELCOME MAT' to a number of visitors in recent weeks. Pictures of a few visitors are given on this page.

Mr. S. R. K. Menon of Colombo, Mr. K. R. Padmanabha Pillai and Prof. N. Gopala Pillai.

Mr. Om Khosla (EMC)

Dr. B. D. Kalelkar, Senior Industrial Adviser (Engg.), Govt. of India.

Mr. J. Kalivoda of the German Trade Commn., Bombay and Mr. A. K. Thampy of Ruby Engg. Works, Madras.

. Rajagopal who received a big suggestion yard being congratulated by the Governor.

The following suggestions were, also, thrown in by dealer friends :

(*a*) Estimates issued by Government Departments for wiring contractors should also take care of ALIND covered conductors—we are to initiate steps to get CAC listed.

(*b*) Prices may be reworked to provide incentive to, and enable discrimination being shown to dealers and sub-dealers.

(*c*) Both the ends of wires (on coils as well as bobbins) should be sealed. This step would ensure that coils are not tampered with.

(*d*) Handling and storage of coils of wires will be easier if the inner dia. is reduced.

(*e*) Approval to be obtained from all Government Departments for using covered conductors.

(*f*) Bobbins should be used for packing both ALL-WEATHER and KER-AL-LITE. (*Steps have already been taken to carry out this suggestion*).

Good Suggestions pay off ...

Rs. 1,000 for a single idea

P. RAJAGOPAL, CHARGEMAN, MACHINE SHOP, WHO HAS ALREADY ONE BIG SUGGESTION award to his credit and several small ones, received on Factory Day at the hands of Dr. B. Ramakrishna Rao, Governor, Kerala State, an award of Rs. 1,000, the biggest amount ever paid by the Company for a suggestion. His rewarding brainwave related to the provision of an extension to the spindle shaft on the cheese yarn winding machine in our covered conductor plant.

Rajagopal also netted another preliminary award of Rs. 25/- for another suggestion which was a method for the continuous heat-treatment of conductor wire in the covered conductor plant. (Suggestions Nos. 235 and 250.)

Briefly, details of other awards are :

K. Thomas Kurien, Chargeman, Machine Shop ... ... Rs. 200/-
(*Desirability of fabricating boring cutters for making conductor accessories*).

R. Gopalakrishnan, Chargeman, Rod Mill ... ... Rs. 170/-

No. 233 ... (*A device to dispense with wastage of lubricating oil* (SHELL TALPA) *in the rod mill and to make the oil re-usable*) ... ... Rs. 100/- (Preliminary).

No. 262 ... (*A change of design in the tool for cleaning inductors in the rod mill (a bar only without the tool at the head-portion) to ensure longer service by the inductors : provision of a filter at the source which permits entry of water in the pipe-line for rod mill feeding*) ... Rs. 20/-

Nos. 276 & 297 (i) (*A method of preventing oil leakage in the dies on rolling stand in rod mill, through the interspace between the oil seals and spindles—by means of reducing the dia. of the hole on the graphite packing or by enlarging the size of the oil-seal*),

(ii) (*Economising on the use of the lubricating oil by allowing it to flow through the dies only intermittently instead of continuously, while casting goes on*) ... Rs. 50/- (Preliminary). Rs. 200/-

N. Sadanandan, Chargeman, Mechanical ... ...

No. 285 ... (*Use of polythene packing for hydraulic furnace jackeys in rod mill.*)

K. Thirumalae Rao, Stenographer ... ... Rs. 100/-

No. 265 ... (*Procedure for insuring goods against customers' orders against transit risks—method to simplify the work of originating separate invoices for insurance charges.*)

P. Bhaskaran Nair, Clerk, Sales Section ... ... Rs. 50/-

No. 290 ... (*A means to minimise percentage of scrap aluminium in wire mill during conductor manufacture.*)

P. Muraleedhara Menon, Covered Conductor Plant ... ... Rs. 50/-

No. 257 ... (*Method to economise on use of identification tape during manufacture of twin core All-weather conductors*) ... Rs. 15/-

No. 300 ... (*Cooling of All-Weather conductors can be done in a better manner by providing a fan—for cooling the wire immediately after the compounding process is over*) ... ... Rs. 15/-

No. 303 ... (*Using different colours for monogram engraved on covering of conductors of different ratings will avoid confusion while labelling*) ... ... Rs. 25/-

Suggestions received, so far	305
Total number recommended for awards:	126
Amount awarded	Rs. 4,320

A. Thobias, Machine Shop ... ... Rs. 50/-

No. 299 ... *(A method for salvaging good sections out of armour rod scrap, by welding together two good halves and thus making a full rod, instead of scrapping both the pieces)* ... ... Rs. 50

K. Thomas Muthalali, Chargeman, Rod Mill ... ... Rs. 15/-

No. 239 ... *(Method for proper ramming and lining of inductors)* ... Rs. 15/- (Preliminary)

O. Vidyadharan Asari, Reel Shop ... ... Rs. 25/-

No. 240 ... (i) *(Change of design in wooden reels to ensure better fastening of MS bushings, to avoid damage in transit);*
(ii) *(and a suggestion to use stronger discs for wooden reels to withstand hazards during transport.)*

N. Thankappan Pillai, Gang Leader, S. & H. ... ... Rs. 20/-

No. 241 ... *(Proper collection of scrap from armour rod lathe and better house-keeping in machine shop)* ... ... Rs. 20/-

No. 275 ... *(House-keeping in machine shop better method of storage of finished accessories)* ... ... Rs. 10/-

P. K. Narayana Pillai, Hd. Guard ... ... Rs. 10/-

No. 243 ... *(Provision of first aid facilities in cases of snake bites.)*

N. Govinda Pillai, Driver, Shipping ... ... Rs. 10/-

No. 248 ... *(Provision of facilities for drivers to undergo driving refresher course.)*

J. Mathews, Chargeman, Inspection ... ... Rs. 20/-

No. 251 ... (i) *(Joint consultation for promotion of quality control);*
(ii) *and (coating single steel core with compound before spooling)* ... ... Rs. 10/- each.

A. Rajan Philip, Rod Mill ... ... Rs. 25/-

No. 252 ... *(Method to reduce acute bends in the pipe covering the rod from the rolling stands to ensure safer passage of rods)* ... ... Rs. 15/-

No. 277 ... *(Necessity for providing a separate office room in rod mill)* ... ... Rs. 10/-

S. Krishnan, Guard ... ... Rs. 20/-

No. 255 ... *(Notifying Security staff with details of information about personnel whose admission to company premises has to be refused.)*

No. 271 ... *(Providing a gate below the bridge over the canal leading to Boat Basin)* ... ... Rs. 10/- each.

N. N. Unnithan, Guard ... ... Rs. 10/-

No. 256 ... *(Maintenance of fire extinguishers.)*

K. M. Yohannan, Gang Leader, S. & H. ... ... Rs. 10/-

No. 258 ... *(A method for salvaging compound spilled around machine.)*

C. K. Koshy, Rod Mill ... ... Rs. 25/-

No. 304 ... *(Re-using marinite pipes in rod mill.)*

C. Damodara Kurup, Wire Mill ... ... Rs. 10/-

No. 259 ... *(Re-using wooden forming dies on No. 5 and No. 6 stranders.)*

J. Isaac, Mechanical Maintenance ... ... Rs. 20/-

No. 272 ... *(Advantages in using MS chains instead of manilla ropes for loading spools.)*

K. Kunjan Pillai, Clerk, Stores ... ... Rs. 10/-

No. 273 ... *(Advance information to Security Section about materials sold in auction.)*

M. Yohannan Paniker, Guard ... ... Rs. 10/-

No. 281 ... *(Endorsement on passes relating to salvage materials disposed of.)*

A. Shahudinkutty, Wire Mill ... ... Rs. 10/-

No. 288 ... *(Revising pro-forma Stranding Reports with a view to making them more comprehensive.)*

Total : Rs. 2,110/-

Factory Day Sports

1,500 Entries; 200 Participants

This year's Factory Day Sports attracted a little over 1,500 entries—a 50-per cent increase on last year's total number. Participants also jumped up from a mere 107 last year to 200-odd this year—practically a cent-per cent increase. Tournaments held included matches for Badminton, Ring Tennis, Table Tennis, Football, Basketball, Volleyball, Chess and Caroms. K. Ramarajan who did a marvellous job as Tournaments Convener gave a *résumé* at the time of the giving away of the prizes. Ever since he became a proud parent, he has been rather partial to the obstetric metaphor ; for instance, his present report contained this gem:

> **" Alind is so prolific . . . bringing out a baby each year. Last year, it was the CC Plant, this year, it's the Administration Block."**

Other highlights of his report were :

(i) That Rajan Philip and Tommy Louie continued to remain respectively All-rounder and Champion ;

(ii) K. B. Pillai, for many years our badminton champion, had to yield the palm to P. M. Joseph ; and

(iii) K. Sitaraman had something to make a song and dance about to his bride—he is Table Tennis winner this year !

N. N. Iyer who presented a brief report on track events was full of physics—he called tug-of-war a ' paradox of dynamics,' took a pot-shot at Newton, and spoke of 2,000 foot-pounds of work being converted into potential energy on ' that taut rope '. He also talked of blood, sweat . . . and lime-juices ! A feature of this year's events was the contest held for *iddly*-eating, and to which N. N. Iyer made a pointed reference in his statement. He paid a well-deserved tribute to the eating prowess of Pappu Pillai who polished off twenty-three of the best (*sic !*) *sans* chutney, *sans* sambhar and, alas, *sans* water, too !

SPORTS :

metres :
Tommy Louie
Stephen D'Silva

metres :
1. N. Thomas Panicker
2. A. Rajan Philips

400 metres :
1. Tommy Louie
2. A. Rajan Nainan

Cross Country Race :
1. A. M. Mathew
2. A. Rajan Nainan

High Jump :
1. Tommy Louie
2. P. N. Abdul Aziz

Long Jump :
1. Tommy Louie
2. A. Rajan Philips

Hop, Step and Jump :
1. Tommy Louie
2. G. D. Rozario

Pole Vault :
1. A. M. Mathew
2. V. I. Thomman and Rajan Philips.

Sack Race :
1. Rajan Philips
2. P. M. Markose and V. Bhaskaran Nair.

Sat Melee :
1. P. M. Markose
2. C. G. Balakrishna Pillai

Three-legged Race :
1. Rajan Nainan and A. M. Mathew.
2. K. V. Lawrence and V. Bhaskaran Nair.

Slow Cycle Race :
1. P. Rajagopal
2. P. A. Oommen
3. K. M. Ebrahim

Putting the Shot :
1. Tommy Louie
2. O. C. Chacko

Veterans Race :
1. K. A. Sundaram
2. S. Sanku Asari
3. V. M. Abraham

Iddly Eating Competition :
1. K. Pappu Pillai
2. S. Sanku Asari

Obstacle Race :
1. N. Thomas Panicker
2. P. V. Jose

400 metres race : 1. Tommy Louie. 2. Rajan Nainan. 3. Thomas Panicker.

Veteran's race : 1. K. A. Sundar 2. S. Sanku As 3. V. M. Abrah

Putting the shot : a fine action picture of a participant.

200 metres : 1. Thomas Panicker. 2. Rajan Philips. 3. Shahul Hameed.

400 metres start.

Tug-of-war :
Wire Mill
vs.
Rod Mill

K. Ramarajan,
Tournaments Convener.

Rajan Philips, All-rounder being congratulated by Director B. V. D. Menon.

N. N. Iyer, who presented a report on track events.

FACTORY DAY SPORTS

PRIZE WINNERS

Tug-of-War : (Inter-sectional)

Winners : (Rod Mill)

M. Joseph ; N. Padmanabhan ; S. Kumaran ; K. V. Marshally ; K. Sreedharan Pillai ; R. Gopalakrishnan ; C. G. Krishnankutty Nair ; C. G. Balakrishna Pillai ; A. Rajan Philips ; C. K. Koshy ; K. Thomas Muthalaly and P. N. Abdul Aziz.

Runners-up : (Wire Mill)

Thomas Anthony ; A. K. Thirivikraman Nair ; G. J. F. Sandow ; T. P. George ; T. P. Kunjukoshy ; O. C. Chacko ; K. K. Varghese ; P. A. Joseph; R. Madhusoodanan Nair; C. G. Madhavan Pillai ; N. Bhaskaran Nair and M. A. Mathew.

Tug-of-War : (Teams by Lot)

Winners :

M. Joseph ; A. V. Thomas ; H. T. Surrao ; K. M. Yohannan ; A. Joseph ; P. Rajagopal ; K. Bhaskaran Pillai ; P. V. Jose ; V. Bhaskaran Nair ; K. G. Yattendran and R. Kochunanoo Asari.

Runners-up :

O. C. Chacko; V. Y. Pappan ; T. P. George ; P. M. Markose ; T. R. Raghunandhanan ; N. Thomas Paniker ; M. Raman Nair ; E. P. Radhakrishnan ; K. C. K. Krishnan ; C. G. Madhavan Pillai and M. Matten.

GAMES

Badminton : (*Singles*)

Winner—
P. M. Joseph.

Runner-up—
K. Bhaskaran Pillai.

Badminton : (*Open Doubles*)

Winners—
P. M. Joseph and K. Ramarajan.

Runners-up—
M. K. Varghese and T. K. Radhamonie.

Badminton : (*Fives*)

Winners—
P. K. Chandrasekar,
E. P. Radhakrishnan,
T. V. Ramachandran,
K. Kunjan Pillai,
P. Sivasankaran Nair, and
N. S. Velappan.

Runners-up—
K. R. Sankaranarayanan,
C. K. Koshy,
M. V. Johnson,
M. G. Sukumaran Nair,
M. A. Mathew, and
C. Gopinathan Nair.

Volleyball : (Sectional)

Winners :—
P. M. Joseph ; E. P. Radhakrishnan ; P. Sukumaran Nair ; P. Bhaskaran Nair ; K. R. Sankaranarayanan ; K. Ramachandran Nair ; N. Neelakanta Iyer and M. Philip.

Runners-up :—
C. K. Koshy; C. G. Krishnankutty Nair ; O. C. Chacko ; C. G. Balakrishna Pillai ; A. M. Mathew and G. K. Warrier.

Volleyball :

Winners—
P. M. Joseph,
P. Bhaskaran Nair,
C. G. Balakrishna Pillai,
C. N. C. Kaimal,
P. R. C. Nair,
K. M. Ebrahim,
N. S. Velappan, and
T. K. Ramakrishna Pillai.

Runners-up—
C. S. Kaladharan Pillai,
K. R. C. Nair,
K. R. Sankaranarayanan,
K. V. Lawrence,
P. Rajagopal,
N. Chellappan Pillai,
K. M. Yohannan, and
P. M. Varghese Panicker.

Football :

Winners—
Stephen D'Silva,
Cyril William Antony,
C. K. Koshy,
N. Satteesa Menon,
N. K. Menon,
K. S. K. Krishnan,
V. Bhaskaran Nair,
Kainikara,
A. K. Thirivikraman Nair,
P. K. Chandrasekar, and
K. N. Nair.

Runners-up—
Tommy Louie,
T. K. Radhamonie,
M. K. C. Pillai,
V. O. Mathew,
P. R. C. Nair,
P. Rajagopal,
N. N. Iyer,
K. Seetharaman,
T. K. Ramakrishna Pillai,
P. George, and
K. V. Lawrence.

Basketball :

Winners—
P. M. Joseph,
K. Bhaskaran Pillai,
P. George,
P. Sukumaran Nair,
P. M. Markose,
Kainikara,
N. Chellappan Pillai,
C. Gopinathan Nair,
A. Shahul Hameed, and
O. C. Chacko.

Runners-up—
T. V. Ramachandran,
G. D. Rozario,
M. K. C. Pillai,
R. Gopalakrishnan,
K. R. Sankaranarayanan,
M. Raman Nair,
A. Rajan Philip,
K. N. S. Prasad, and
M. R. C. Nair.

Ring Tennis : (*Singles*)

Winner—
P. Sukumaran Nair.

Runner-up—
T. R. Raghunandhanan.

Ring Tennis : (*Doubles*)

Winners—
P. Sukumaran Nair and T. R. Raghunandhanan.

Runners-up—
T. K. Radhamonie and T. V. Ramachandran.

Table Tennis : (*Singles*)

Winner—
K. Sitaraman.

Runner-up—
K. Bhaskaran Pillai.

Table Tennis : (*Doubles*) (Lot)

Winners—
P. M. Joseph and K. Ramarajan.

Runners-up—
G. K. Warrior and E. P. Radhakrishnan.

Table Tennis : (*Doubles Open*)

Winners—
P. K. Chandrasekaran and M. Sreenivasan.

Runners-up—
S. Narayanan Nair and K. R. Oonnikrishnan Nair.

Caroms : (*Singles*)

Winner—
P. G. Damodara Panicker.

Runner-up—
A. K. Thirivikraman Nair.

Caroms : (*Doubles*)

Winners—
A. Rajan Philip and P. G. Damodara Panicker.

Runners-up—
T. K. Radhamonie and A. K. Thirivikraman Nair.

Chess :

Winner—
A. K. Thirivikraman Nair.

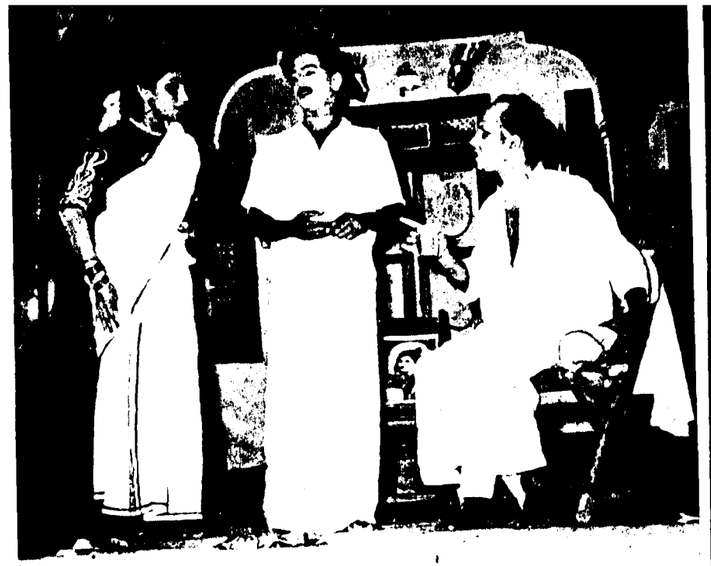
Runner-up—
P. Bhaskaran Nair.

Champion, Tommy Louie, receiving his cup from Director B. V. D. Menon.

Pictures at right top, bottom, and immediately above to right are scenes of the various plays staged on the two days.

Kaviyoor Revamma.

"Villupattu": Below: Rishimangalam Krishnan Nair.



ENTERTAINMENT

A varied programme of entertainment was gone through on the two days of celebration. On the first day we had music by the well-known playback artiste Kaviyoor Revamma and mimicry and monoacting by Rishimangalam Krishnan Nair—his was a hilarious one hour. On the second day, we had musical concerts by Sulochana and K. S. George, a play **Chilamboli** presented by Aryakala Nilayam, Alleppey, **Chanakyan**, another play presented by Alinders, a sketch by Alinders, and a dance recital by members of the Aryakala Nilayam.

K. S. George and party.

Dance recital by T. R. Omana.

Dr. B. Ramakrishna Rao.

NEW ADMINISTRATION BLOCK

declared open by State Governor

Factory Day 1958—grand gala function

WHAT DID FACTORY DAY 1958 HAVE which celebrations of previous years did not have ? Well, a brand-new Administration Block ! So, it was FACTORY DAY *plus* . . . with Governor Dr. B. Ramakrishna Rao to declare open the gleaming, new building.

Excepting that function this year was held in September instead of in April or May as has been the practice hitherto, FACTORY DAY 1958 was the sumptuous, gala affair of other years.

First we'll go into a panygeric about the building itself.

The Administration Block—the foundation stone for which was laid by Mr. V. Seshasayee in May 1956—features extensively 'light, strong and versatile' aluminium, and incorporates numerous engineering innovations. For designing this elegant building, the company had the counsel and guidance of Mr. J. C. Alexander, Government Architect, Kerala State.

The building is situated on a scenic site to the east of the works, overlooking lovely, palm-fringed *Lake Ashtamudi*. The topographical unevenness of the land has advantageously been exploited in the design and construction of the block and its premises : the first floor has direct, vehicular approach from roads leading from the main gate to the porch, while the ground floor has been provided with a similar approach by equally convenient roads.

Three floors

The building has three floors with a total working area of about 25,000 sq. ft. The ground floor is set apart for the Research Laboratory. The controlling equipment for the 100-line internal telephone communication system is also housed on this floor. Provided here, also, is a cellar for keeping confidential papers and documents.

The first floor houses the Registered Office, Accounts and General Office, Labour, Welfare and Personnel Sections, and Reception & Enquiry. Properly sectionalised by partition walls of teakwood frame and aluminium "stucco" sheets, the various offices have direct contact with, and access to, controlling officers. A strong room equipped with "Godrej" burglar-proof door is also located on the first floor.

The second floor houses the Board-*cum*-Conference Room, the office of the General Manager, Engineering and Sales Wings. There is also an "attached" library in the Board Room.

There are two staircases in the building, one at each end, and an electric lift near the western staircase. The machine-room for the lift and the water-tank are housed in the tower part raising sheer into the main roof. The outside staircase leads to the top of the tower, the look-out from which gives an enchanting view of the blue lake and the surrounding verdure. Lightning conductors specially fabricated out of aluminium sections and conductors are fitted up at the top of the tower and on the main roof.

The lighting system of the Conference Room was specially designed by Messrs. Philips (India) Limited in accordance with the latest scientific practice. Right above the conference table luminous panels shielded by aluminium louvres have been provided ; these are built into the ceiling so as to combine maximum visibility with minimum glare. Blending harmoniously with the general fluorescent lighting, there are incandescent lighting units provided with concentric louvres underneath.

Director B. V. D. Menon.

These lights can be switched on and off during picture shows and similar programmes.

Aluminium sections and sheets weighing about five tons have been used in the building and the entrance gates, in lightning conductors, in windows and partition walls, in step-edgings, hand-rails and balustrades and in the louvred shades.

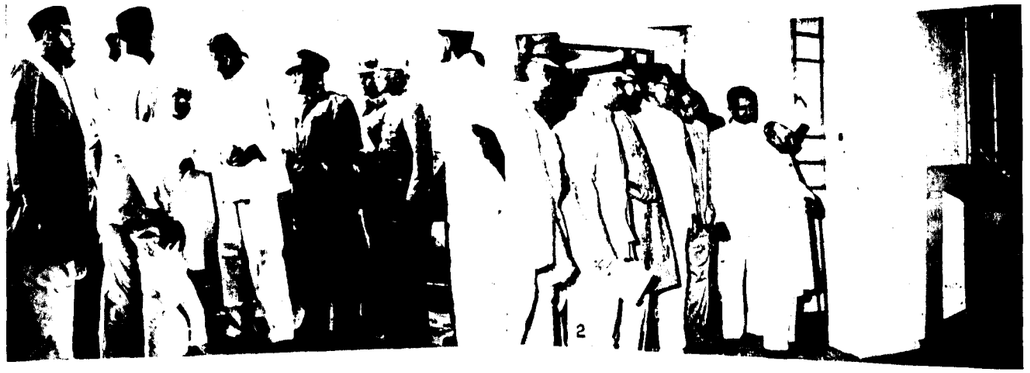
Accent on Aluminium

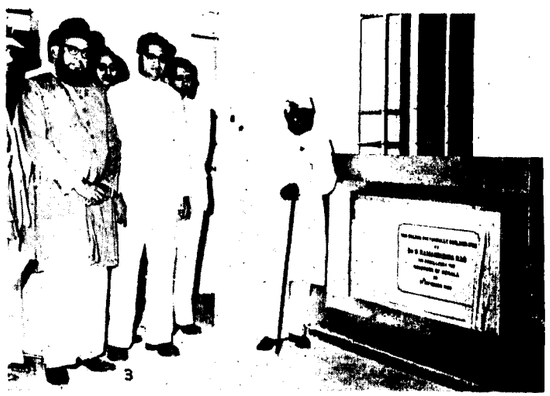
With its two guard-houses and gleaming aluminium gate and its bright company crest, the entrance proper is a truly magnificent structure. The top structure in concrete has name boards lettered in small lengths of aluminium conductor.

The entire power and light wiring inside the building and for street-lighting in the premises has been exclusively done with several thousand core-yards of—if you will pardon a "plug"—Alind covered aluminium conductors (ALIND 'KER-AL-LITE' and ALIND 'ALL-WEATHER.')

ALIND'S new Administration Block is thus a dynamic demonstration of the advantages of aluminium as a building material, and as an electrical conductor.

Requesting the Governor to declare open the new building, Director B. V. D. Menon said ;





(1) *Dr. B. Ramakrishna Rao, Governor of Kerala being received by V. G. G. Nayar, General Manager.*

(2) *The Governor being taken round the New Administration Block.*

(3) *The plaque announcing the official opening of the New Block.*

(4) *A group photo taken on the occasion.*

(5) and (6) *Sections of the huge gathering present on the occasion.*

"This is a memorable occasion for us in ALIND because the Governor of our State has graced this meeting with his presence and has kindly consented to declare open our new Administration Block. The designer of this modern building is Mr. J. C. Alexander, a distinguished architect-son of this soil, who has indeed immortalised his creative art in the edifices that rear their lovely heads throughout the length and breadth of this State.

Symbol of our hopes

Continuing, he said that the building symbolised the hopes and aspirations of the past decade and the shape of things to come in future years. "It is built out of the money earned through the toil of all the Alinders and represents the portions of our savings it has been possible to earmark for this purpose, after financing the almost continuous development and expansion programmes on which we have been engaged during the past several years, he added".

Stating that the company believed in providing the best amenities, for its employees the speaker declared that a spacious, utilitarian and aesthetic Administration Block was only in such tradition.

"True enough, we had to wait a little longer for this amenity to become a *fait accompli*, but the waiting has been well-worth it.

"It is indeed gratifying that this building is completed and ready for use this year, because an important milestone in the progress of collective bargaining and industrial harmony in the country was reached by the signing of the first long-term agreement between the management and employees of the company. The dedication of this building to our office workers is only in keeping with the other material benefits conferred on our employees through this long-term agreement," he concluded.

Declaring the new building open, the Governor said :

"I had an occasion to visit this factory last year and it was a pleasure to see that this national industry of our country is progressing on very satisfactory lines here at Kundara. To-day, again, I have the good

Mr. S. Narayanaswamy.

fortune of being called to declare open the new Administration Block which has been constructed most artistically and also at the same time very satisfactorily from a utilitarian point of view. This industry in our country is certainly new, and I must congratulate Sri V. Seshasayee and his colleagues for having had the imagination to start this industry in this part of the country."

Congratulating the company on the long-term agreement concluded with employees, Dr. Ramakrishna Rao observed that harmonious relationship between employer and employees yielded good results.

Concluding, the Governor said : "I have great pleasure in declaring open the new Administration Block, and I wish every progress and prosperity to this industry in our State."

Director Sri S. Narayanaswamy, who was as usual in brilliant form proposed a vote of thanks in felicitous terms. "Fourteen years ago", he said, "when I came to Kundara in the company of other promoters, what we saw was a pleasant, undulated country over-run by heavy vegetation with which it was not possible to associate the establishment of an industry. But an *entrepreneur* and a go-ahead Diwan Dr. C. P. Ramaswami Aiyer, an enterprising industrialist Mr. Seshasayee, and an enthusiastic and dynamic Chief Engineer Dr. K. P. P. Menon deliberately and jointly resolved to establish an aluminium cable factory in this picturesque spot. To-day, twelve years after the company was registered, ALIND cables are criss-crossing the hills and dales in the vast open spaces of India, transmitting large volumes and low voltage electrical energy from hydro-electric resources to distant centres and terminals in cities and villages.

Mr. Narayanaswamy declared further that the company had been a good employer and that it had been paying a dividend of 12½ per cent to its shareholders from the very outset—"nothing more, nothing less".

Dealing with employer-employee relations to which the Governor had made a passing reference in his speech Mr. Narayanaswamy said that he was reminded of a cartoon in PUNCH in which Mr. Clement Atlee, newly installed as Prime Minister in charge of a Labour Government, was depicted as being confronted by the British Trade Union Chief with this poser : "In your election speeches, you promised us more wages for less work. We on our part have put in less work, how about more wages ?"

"Your solicitude and kindness in performing this function has placed us in the company in profound debt", the speaker concluded.

Other features about the function that deserve to be mentioned in this story are : The Governor and party arrived as scheduled at 5 p.m. and were received by V. G. G. Nayar who introduced the Directors and Officers to the Governor. After a group photograph and tea, the Governor was taken round the Administration Block.

The meeting proper began with a welcome song beautifully rendered by Revamma, well-known play-back artiste.

A souvenir bearing the snappy title *Our new h.q.!* and dealing with the various features of Administration Block was distributed to the guests.

We also "capitalised" on the use of ALIND covered aluminium conductors in the building with the release of a press advertisement headed *This one is on the house*! to synchronise with the official opening of the building.

In brief, FACTORY DAY 1958 was a memorable occasion—indeed, we forgot our earlier chagrin that it was not as usual held in April or May!

P. K. Govindan Asari.

K. M. Yohanannan.

N. Vasudevan.

Some of the things they said!

(On the second day of celebrations, a number of employees spoke as usual. Points from some of the speeches are given below) :

P. K. Govindan Asari, Reel Shop

Casual Workers should be absorbed.

K. M. Yohanannan, Safety and Housekeeping

Unlike other companies, ALIND is actively canvassing orders so that works might be kept continuously engaged.

N. Vasudevan, Junior Mechanic

The Agreement must be worked both in letter and in spirit.

N. Kunjan Pillai, Stores

This is an occasion for celebration, not an opportunity for airing grievances.

V. Y. Pappan, Personnel

ALIND is an institution of which not only Kerala, but the whole of India, can be proud.

S. Narayanan Nair, Office

Differences? Yes, but these are lovers' tiffs!

K. N. Sankara Pillai, Die Shop

A primary school in the colony is a desideratum.

C. A. Antony, Junior Inspector

This is a good Company.

S. Ravindran, Accounts

My heartfelt felicitations to the management for making this field so fertile that the seeds of life and longings of all ALINDERS can grow in soothing peace and comfort. (*Don't ask us what all this means!*)

N. Govinda Pillai

Many happy returns of the day!

T. K. Krishnan, Assistant Secretary

There's no place like ALIND. In 1951, it was blankety blank lakhs ; in 1958 it is something something lakhs. (*With due deference to Krishnan, your scribe has no head for figures.*)

V. O. Mathew, Labour Officer

Supervisory staff are a link between top management and workers.

S. Peer Mohammed, Works Manager

We have so many things to our credit. . . our achievements are so stupendous . . .

K. N. Sankara Pillai.

C. A. Antony.

S. Ravindran.

N. Govinda Pillai.

T. K. Krishnan.

N. Kunjan Pillai.

V. Y. Pappan.

S. Narayanan Nair.

S. Peer Mohammed.

V. O. Mathew.

Our Friend
—The Customer

THE DELHI ELECTRICITY SUPPLY UNDERTAKING

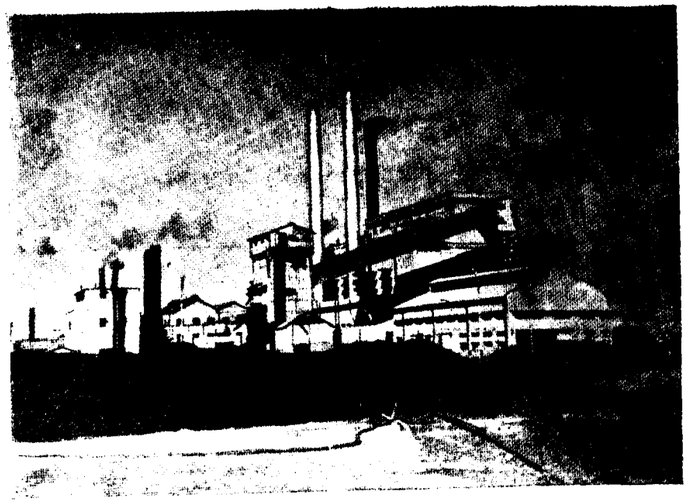
THE DELHI STATE ELECTRICITY BOARD or the Delhi Electricity Supply Undertaking, as it is now called, is one of our valued customers. The undertaking's generating operations are conducted from the two 'A' and 'B' Thermal Stations at Rajghat and the Diesel Station at Lahori Gate respectively.

The installed capacity of the generating plant at the 'A' Power Station at Rajghat at the time when it was taken over from the New Delhi Municipal Committee by the Delhi Central Electric Power Authority Ltd., on its formation in 1939 was 10,900 kW. The installed capacity was progressively increased to 24,900 kW by 1945. It was further augmented by installation of one 2,500 kW unit and another 5,000 kW unit in 1948 and 1951 respectively.

In 1952, a new and more modern station, known as 'B' Station with two 9,600 kW capacity turbo-alternator sets and necessary boiler plant was installed and commissioned.

The generating station at Lahori Gate consists of old diesel engines. The effective generating capacity of this station is limited to 2,000 kW, although the aggregate capacity of diesel electric units installed therein is of the order of 3,000 kW. In 1958, two Sulzer diesel sets of 500 kW capacity each removed from the Lahori Gate Power Station were reinstalled in Central Power House.

The aggregate installed capacity of the generating stations of the undertaking on 31st March, 1957, was 56,451 kW, the firm generating capacity being only 44,000 kW as against 40,000 kW last year. The increase of 4,000 kW was achieved by interconnecting the steam ranges of 'A' and 'B' stations of the undertaking thereby enabling the surplus steam in 'B' station to be utilised by 'A' Station, where the steam was short of the turbo-generating plant capacity. This work was completed in February, 1957.



Delhi Central Power Station.

The undertaking purchased two steam generating packet sets aggregating 4,000 kW capacity (derated capacity 3,000 kW) from the Ministry of Defence at Muradnagar at a cost of Rs. 20 lakhs. The installation of these sets at Chandrawal was completed during 1958.

Supply from Nangal Grid

The second instalment of 10,000 kW of supply from Nangal Grid was received in August 1956 raising the total supply received from Nangal system of the Punjab Government to 20,000 kW.

Augmentation Programme

Since independence, population in Delhi has been growing so rapidly that supply has not caught up with demand, resulting in persistent shortage of power. Accordingly, the undertaking had planned to meet this shortage by installing additional thermal plant capacity. However, in view of the possibilities of adequate supply of electricity being made available to Delhi from the Bhakra-Nangal Hydel system, the Government of India considered it advisable in national interest to restrict the installation of additional thermal plant capacity in Delhi to the absolute minimum.

To ascertain how far supplies from Bhakra-Nangal would meet the growing demands of Delhi in the future, a load survey of the Delhi State was carried out in 1955. The load survey indicated that there would be a shortage of power in Delhi from 1957 onwards.

To meet this shortage, the undertaking planned on an increase in generating capacity by 50,000 kW during the Second Five-Year Plan period as shown below :

(*a*) Diesel generating plants aggregating 20,000 kW at an estimated cost of Rs. 105 lakhs at the following three locations :

(i) 6,000 kW at Central Power House, Rajghat,

(ii) 6,000 kW at Lahori Gate, and

(iii) 8,000 kW at Kilokri.

(*b*) Steam Power Plant of 30,000 kW capacity at Rajghat at an estimated cost of Rs. 300 lakhs.

Item (i) above has been completed and items (ii) and (iii) are expected to be ready early this year. Specifications for the 30,000 kW Thermal Plant were under preparation at the close of 1958. This plant is being financed with the aid of the Technical Co-operation Mission, India of the International Co-operation Administration of the U.S.A. The 30,000 kW steam generating plant is expected to be commissioned by the middle of 1960.

Future Programme

The undertaking had negotiated with the Punjab Government for a supply of 40,000 kW of power from its Bhakra-Nangal system. However, on account of unprecedented increase in the demand for power for industrial and agricultural purposes in Punjab itself, it was not possible for the Punjab Government to supply the full requirement of 40,000 kW to Delhi from the Nangal generating system during the first Five-Year Plan period—namely, 1951-56. However, a supply of 20,000 kW was made available to Delhi during 1955-57, the first instalment of 10,000 kW in April 1955, and the second in August 1956.

With regard to the possibilities of further supplies from the Bhakra system, it may be possible for the Punjab Government to deliver an additional supply of 40,000 kW to Delhi on the commissioning of the left Bank Power House under construction installed on the Bhakra Dam sometime during the year 1961-62. In spite of the installation of the 20,000 kW Diesel plants by mid-1958, an acute shortage of power is still expected to continue in Delhi territory. Efforts are being made to move the Punjab Government to give a supply of 10,000 kW during 1959 out of the 40,000 kW referred to above.

As the chances of getting any more supplies either from the Bhakra-Nangal generating system of the Punjab Government or from any of the neighbouring systems, for example, U.P. are remote, the Undertaking has to depend entirely on its own sources to meet its requirements. So, it was decided to augment generating capacity to 100/120 mW at an approximate cost of Rs. 11 crores during the Third Five-Year Plan period.

Transmission

Primary Distribution

In 1958, construction was continued of the 36 miles of 75,000 kW capacity 33 kV double circuit overhead transmission line on fabricated steel structures for interconnecting the receiving station at Rohtak Road and the Central Power House at Rajghat, taken in hand during 1952. 14.36 miles of the lines were completed between (*a*) Rohtak Road to Ridge Valley—9.16 miles at a cost of Rs. 7.75 lakhs, and (*b*) Ridge Valley to Kilokri—5.2 miles at a cost of Rs. 4.5 lakhs.

Up to the end of the year 1956-57 construction of 23.12 miles of the 33 kV line was completed at a cost of Rs. 20.53 lakhs. The remaining portion of the line is expected to be completed during the year 1958-59.

Grid Substations

During 1958, the following three substations which are connected to the Nangal supply system were energised. Work on the fourth substation in Kilokri was 90 per cent completed.

Mr. T. N. Idnani, General Manager.

(*a*) **Civil Line Substations**

Although this substation which has an installed capacity of 10,000 kVA, was completed during 1955-56, it could not however be commissioned due to lack of adequate supply from Nangal. On the receipt of a second instalment of supply of 10,000 kW from Nangal in August 1956, this substation was energised.

(*b*) **Ridge Valley Substation**

This substation was originally designed for supplying 6,000 kVA. However, due to extensive building construction activities in the vicinity of this substation (Ashoka Hotel, Diplomatic Enclave and other residential colonies), this station has been planned to meet ultimately a demand of 20,000 kVA at an additional estimated cost of Rs. 2.5 lakhs which work would be taken in hand during 1958-59. Due to non-availability of supply, the installed transformer capacity of this substation has been kept down to 6,000 kVA for the present and the expenditure incurred on providing the present substation is Rs. 5.47 lakhs.

The capacity of this station will progressively be increased as and when supplies are available.

(*c*) **Azadpur**

This substation is designed for an installed capacity of 10,000 kVA at an estimated cost of Rs. 8 lakhs. Although the station has not been completed, for want of necessary transformers and switch-gear equipment, it has been commissioned with a 5,000 kVA transformer, at a cost of Rs. 5 lakhs, being urgently required to supply power to some important consumers, such as the All-India Radio transmitters at 9 and 13 miles of the G.T. Road and the North Delhi Sewage Works.

(*d*) **Kilokri**

The construction of this substation with a capacity of 6,000 kVA was taken in hand during November 1956, at an estimated cost of Rs. 5 lakhs. Work at an expenditure of Rs. 4.5 lakhs was completed at the close of 1958.

With the commissioning of the aforementioned 33 kV substations, the only 33 kV substation remaining to be commissioned is the 33 kV 20,000 kVA capacity (ultimate capacity 30,000 kVA) substation at the Central Power House location. The work on this substation was commenced in 1955-56, and has very nearly been completed. This substation will be commissioned as soon as more power is available for distribution on the commissioning of the diesel generating plants now being installed at the location.

Secondary Distribution

Low Voltage Supply

Low voltage distribution in the city of Delhi and surrounding suburban areas, other than New Delhi, Shahadra and Delhi Cantonment is

the responsibility of the Delhi Electricity Supply Undertaking. Recent unprecedented building activities in Delhi and consequent increase in load necessitated reinforcement and extension of the existing high tension and low tension distribution network.

Substations

The following seventeen new distribution substations were constructed during 1958.

Ajudhia Textile Mills	...	500 kVA
Rattan Industries	...	500 kVA
D.L.F. Industrial Area III		300 kVA
New Ram Nagar	...	300 kVA
Shakti Nagar	...	300 kVA
Arya Samaj Road	...	300 kVA
Kirori Mal College	...	300 kVA
Tilak Nagar No. 2	...	100 kVA
West End Talkies	...	100 kVA
Rajouri Gardens	...	100 kVA
Ashoka Park	...	100 kVA
Motia Khan	...	100 kVA
Hamdard Dawa Khana		100 kVA
Niranjan Talkies, Mehrauli	...	100 kVA
Mehrauli City	...	100 kVA
Petrol Pump	...	100 kVA
Krishan Nagar	...	50 kVA

In addition to the above, four high tension consumers, mentioned below installed their own transforming stations :—

Sewage Water Pumping Station	...	500 kVA
Nigambodh Pumping Station		2 × 225 kVA
India Wire and General Mills	...	400 kVA
Coronation Pillar	...	100 kVA

Also the capacity of the old substations was augmented to the extent of 825 kVA in A.C. Substations and 900 kW in D.C. Substations.

Extension and augmentation of mains

During 1958 16.8 miles and 11.9 miles of 11 kV overhead and underground cables lines, 21.4 miles of 6.6 kV and medium and low voltage overhead and 4.7 miles of underground cable distribution lines were laid at a cost of Rs. 15 lakhs.

A.C.-D.C. Conversion

With a view to standardising on the system of electricity distribution in Delhi, the Undertaking had decided five years ago to take steps for conversion of the D.C. supply system to A.C. In pursuance of this policy and to avoid heavy capital expenditure required for D.C. equipment for the growing demand, it was decided that A.C. lines should be provided along with D.C. lines wherever possible and the consumers encouraged to switch over to A.C. supply. During 1958, active steps were taken to carry out this decision.

Keeping in view the policy of early conversion from D.C. to A.C. system of supply, from January 1957 onwards, supply was not given on D.C. in areas where A.C. mains also were installed. But where A.C. mains did not exist but the voltage conditions on D.C. mains were found satisfactory, connections were given on D.C. provided the prospective consumers gave undertakings to the effect that as soon as A.C. mains were laid in the area, they would convert their electrical appliance into A.C. at their own cost.

The 220-kV conductor 37/.146" 'Sheep' ACSR carrying power to Delhi from Nangal and the full quantity of over 400 miles 37/102" 'Wolf' ACSR forming the 33-kV ring-mains round Delhi are Alind's contribution to the Undertaking's network.

In pursuance of this policy 2.81 miles of A.C. mains were laid in 9 D.C. localities at a cost of Rs. 1.19 lakhs.

The Delhi Electricity Supply Undertaking has a fine record of achievement to show. Here's wishing the Undertaking, its employees and consumers, uninterrupted happiness during 1959!

Progress Report on Hirakud Plant

ALIND HAS BEEN HAVING A CONtinuous expansion programme ever since it commenced production early in 1950, and by 1955, the company more than quadrupled its capacity in ACSR and plain aluminium conductor production at their Kundara plant. With the various power development and rural electrification schemes launched by the Central and all State Governments, the country's production capacity in conductor material has not been keeping pace, even though a few other manufacturing units have gone into production in recent years.

Meeting 'em half-way !

ALIND caters its products to the entire nation. With their production unit at one end of the country at Kundara, Kerala, customers north of the peninsula have to pay a very heavy freight, and hence it was that the company decided to meet them "half-way". Around this time India's largest aluminium smelter was also getting itself located at Hirakud and as aluminium looms large as a raw material in our conductor manufacture, ALIND also decided to locate its second plant at Hirakud.

How we went about the job

Having decided to locate the new factory at Hirakud, arrangements were finalised with foreign manufacturers for supply of machinery for the rod and wire mills. Designs for factory buildings were finalised and orders placed for all steel work with Messrs. Harrisons and Crosfield Limited, Quilon. The State Government of Orissa was contacted for leasing out to us a suitable site for constructing the new factory.

When these preliminaries were completed, a skeleton staff was drawn from the Kundara plant and deputed to Hirakud for constructing the new factory. Besides this writer, staff who have assisted in "Operation—Hirakud works" are:

J. F. Morris (in charge of construction—he has retired from ALIND, Kundara,); K. R. Oonnikrishnan Nair, Asst. Engineer, Technical; V. Paramoo, General Foreman, Mechanical; M. Aundi Pillai, Electrical Foreman; B. V. Ramanamurthy, Foreman; Joseph Zacharias —in charge of Stores; K. N. Gopinathan Nair, Office Manager; M. V. G. Menon, Representative at Bhubaneswar; T. V. Ramachandran, Supervisor, Electrical; M. G. Sukumaran Nair, Supervisor, Mechanical; M. P. Aravindakshan, Draughtsman; P. M. Joseph, Asst. Engineer, Technical; and N. Satheesa Menon, Accounts Assistant.

Arrangements were also made to give training to a few engineers from Orissa at the Kundara plant.

We arrived in Hirakud on 27th March 1957. On 30th March, the State Government gave us permission to occupy about forty-three acres of land adjoining the area where the Indian Aluminium Company Limited are constructing their 10,000-ton capacity aluminium smelter, overlooking the vast expanse of the left dyke of the Hirakud Dam.

On 24th April 1957, the first sod was turned after a simple ceremony in traditional Oriya style, and since then, construction activities have been going on in full swing.

First, about fifteen acres of land was levelled for the factory buildings and the storage yard. Retaining and boundary walls were then constructed ; soon afterwards broad surfaced-roadways and masonry drains. Street and yard lighting was then taken on hand and speedily enough, buildings for factory and raw materials storage were getting ready. Construction work on administrative offices, staff quarters and a dormitory to house about 50 staff members is now in progress.

Wire mill completed

Machinery for the new factory started arriving in Calcutta Port early in 1958. Heavy restrictions on railway bookings from Calcutta for destinations beyond Rourkela, forced us to make alternative arrangements for transport of all the machinery from Calcutta to Hirakud, by road. The first truck load was received here on 1st April 1958.

Foundations for the machinery in rod mill have been completed and erection of machinery is in progress.

Taking over the land and marking the boundary : K. N. Gopinathan Nair Office Manager, and a workman look on as R. K. Nair, Project Engineer, lifts a stone.

Erection of machinery in the wire mill was taken up in July and completed in November. The machinery comprises a battery of modern production units for drawing and stranding aluminium wires and other ancillary pieces of equipment. These were manufactured to our own specifications incorporating several features not ordinarily found in machines of conventional designs.

A modern indoor substation and rectifier station were completed in October.

Now . . . on regular production

On November 2nd, trial op tions on the wire drawing mac commenced, and this equipmen now on regular production. T runs on cable making machines in progress and before these l appear in print, ALIND'S sec plant will have delivered the firs many reels of conductor to help nation turn the wheels of indu and light millions of homes in v is essentially "rural" India.

—*R. K*

Levelling factory site : a procession of men workers balancing loads on their shoulders.

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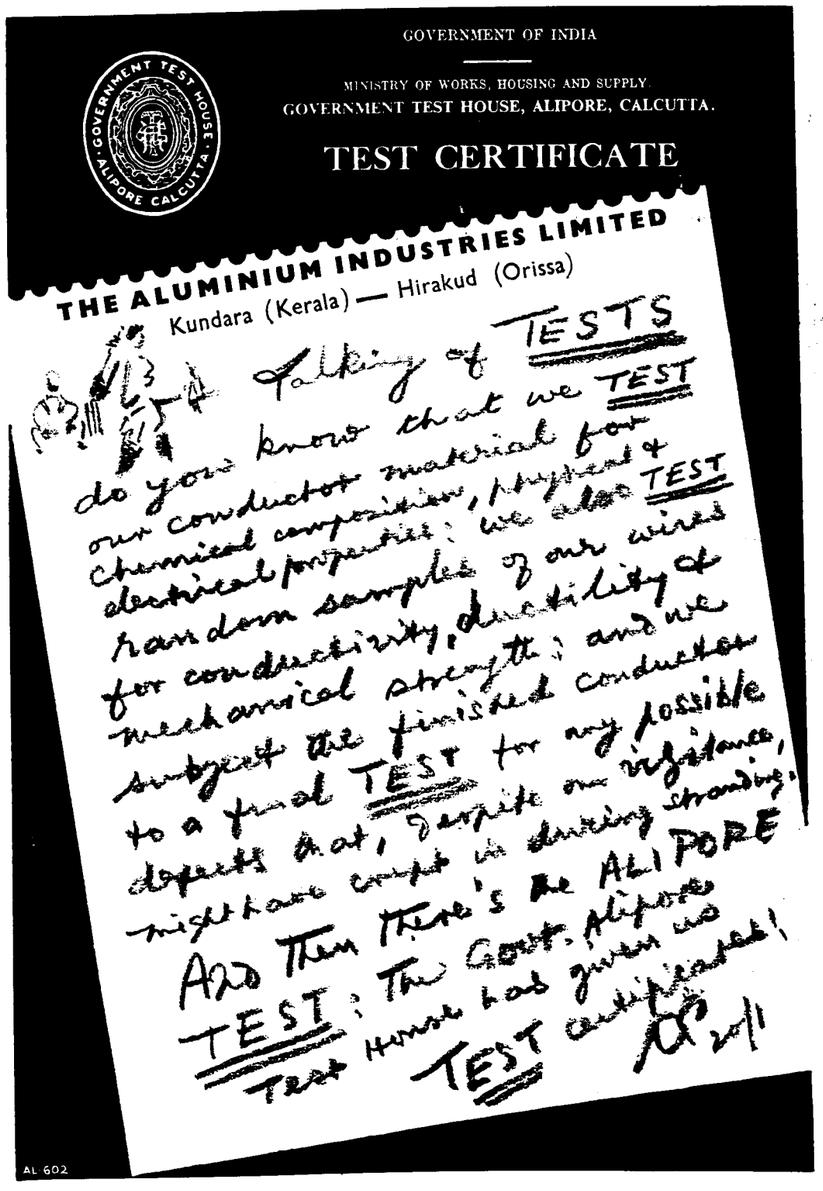
GOVERNMENT OF INDIA
MINISTRY OF WORKS, HOUSING AND SUPPLY
GOVERNMENT TEST HOUSE, ALIPORE, CALCUTTA.
TEST CERTIFICATE
THE ALUMINIUM INDUSTRIES LIMITED
Kundara (Kerala) — Hirakud (Orissa)
Talking of TESTS
do you know that we TEST
our conductor material for
chemical composition, physical &
electrical properties; we also TEST
random samples of our wires
for conductivity, ductility &
mechanical strength; and we
subject the finished conductor
to a final TEST for any possible
defects that, despite our vigilance,
might have crept in during stranding.
And Then There's the ALIPORE
TEST; The Govt. Aliport
Test House has given us
TEST anticipated!
AL 602