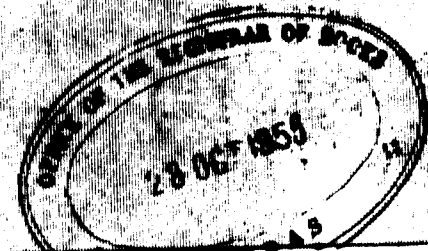


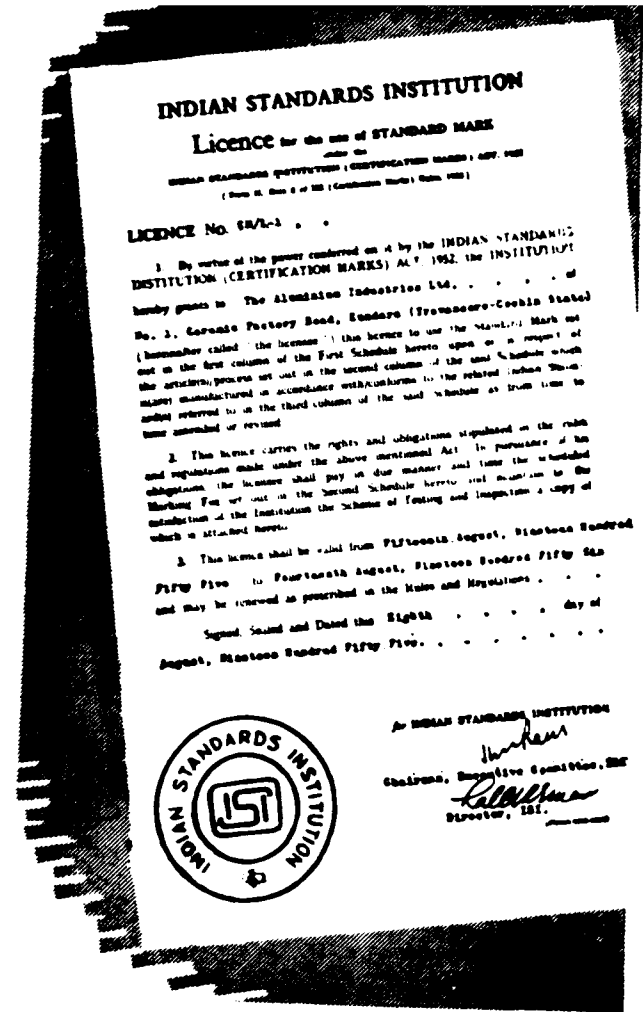
ROD ROLLING MILLS
Special

THE AL-IND *Chronicle*



JL
XB(EPH)0212,
N55-453A2
178644

news & developments



And when all the stages of the Machkund Project are completed and when the other projects envisaged in the Second Five-Year Plan, also, materialise, the State, to quote Dr. Rajendra Prasad again, "will have taken a big shift towards material prosperity".

On this memorable occasion, we would like to transmit our good wishes to the people of the Andhra State through the Government Electricity Department whom it is our privilege to count among our customers.

"COPPER supply again poses a problem" in the United States, according to *Wire and Wire Products*. "It looks like a one million ton domestic production year, but demand has been increasing and the supply dwindling" continues the journal. "The difficulty arises principally from strikes that shut down mines in South America and Africa. About 11,000 tons per month more copper is needed to maintain 1954 U.S. production levels. To offset this somewhat, the U.S. Government has banned the export of new copper and limited the export of scrap."

REYNOLDS NEW CABLE PLANT AT LISTERHILL

A recent issue of *Modern Metals* gives the story of the new aluminium wire and cable plant of Reynolds Metals Company at Listerhill, Alabama, housed in an aluminium building occupying over 200,000 square feet of floor space. It is stated that the plant contains some of the most modern high speed stranding and wire drawing equipment ever built.

In this modern facility huge coils of sheet each weighing five tons or more are rolled into a round rod and subsequently drawn into wire in all gauges, some as fine as a human hair. The first operation necessary for preparing these coils of aluminium sheet for rolling into redraw rod utilises a rotary shear type splitter. Slit coils are conveyed to the rolling mill storage area, and the next operation takes place in the rod rolling mill. Here,

roll stands and drives originally used to roll light gauge foil have been adapted with special rolls guides, controls, etc., to make an efficient and highly productive rod-rolling unit. They then proceed through a conveyORIZED annealing furnace where the desired temper is obtained. It is not uncommon for dies in continuous operation to produce several million pounds of finished wire before it is necessary to service them. This is attributed not only to the special drawing lubricant developed at Reynolds. Quality control is of major importance in the wire and cable plant. A sample is taken from each coil or spool of drawn wire to determine physical properties; in addition, each coil of spool is identified to enable plant personnel to trace its history through all operations from the time it was originally cast in ingot form.

GIANT REELS FOR ACSR

The Massena (N.Y.) works of Aluminium Company of America is currently shipping Expanded ACSR (aluminium conductor steel reinforced) on what are believed to be the largest reels ever used for aluminium cable in the United States. With each of these reels, it is possible to ship a 7,400-foot length of conductor. These reels greatly reduce the number of "set-up" needed in the field to string superhigh voltage lines under tension. Made by George Evans Corporation of Moline, Ill., these giant reels have an overall diameter of eight feet and a width of five feet. When fully loaded with Expanded ACSR, they weigh nine tons each.

UNDERWATER CABLE ACHIEVEMENT

A significant feat in cable engineering has just been completed in Canada near Rimouski, Quebec.

Four aluminium-armoured cables, designed and built by Canada Wire and Cable Limited, form a power link across the St. Lawrence River, 230 miles downstream from Quebec, connecting the Quebec Hydro plant at Manicougan Point on the north shore of the river to Les Boules on the South. Each cable is 32 miles long, of which 31½ miles are under water, sometimes to a depth of 1,200 feet. The 4½-inch-diameter cables are being laid, 4,000 feet apart by the British Government's cable ship, *Monarch*.

The over-all project provides facilities for the transfer of 100,000 h.p. across the St. Lawrence River. About 75,000 kW. at 69,000 volts can be transmitted. This power will be carried overland from Les Boules to the Copper Mines at Murdochville.

Canada Wire made the 128 miles of cable in its plant at Leaside, Ontario, and shipped it in 6,000-foot lengths to an armouring plant built specially for this job on the pier at Rimouski. The cable, before donning armour, consists of a half-inch-diameter conductor, covered with layers of oil-impregnated paper, Neoprene and a sheath of lead.

At the armouring plant the cable lengths were first spliced, then covered with jute and tar. Over this was twined the armour, 28 strands

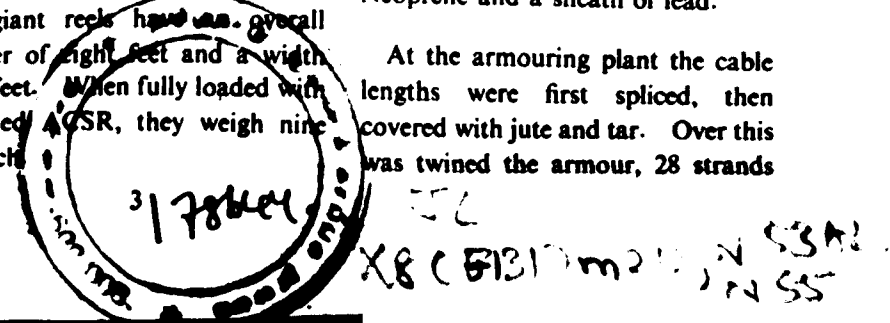
ALIND
THE ALIND
Chronicle
SEPTEMBER 1955

Editor: R. PARTHASARATHY

ICI CERTIFICATION

Lead given by Aluminium Industries in use of Standard Mark.

On other pages	
	PAGE
CONNECTORS AND CLAMPS	5
ALINDERS	12
EXCURSION TO ALWAYS	14
"LET US TALK ABOUT OUR SOCCER"	15
FACTORY DAY SPORTS	17
DRAMA	19 & 20
SUGGESTION AWARDS	21
EFFICIENCY AWARDS	22
ROD ROLLING MILL	23
WELCOME VISITORS	25 & 26
FACTORY DAY	27
OUR NEIGHBOURS—THE INDIAN ALUMINIUM CO., LTD., ALWAYS	28
OUR FRIEND THE CUSTOMER—GOVERNMENT ELECTRICITY DEPARTMENT, UTTAR PRADESH	30
BHARAT SEVAK SAMAJ	34



CONNECTORS AND CLAMPS*

of tough, corrosion-resistant aluminium alloy wire. More layers of jute and tar were applied and a final lime coating applied to prevent the cables from sticking together when coiled. The finished cable weighs about 18 pounds a foot.

As maintenance of the submerged sections is virtually impossible, the cable covering had to be made strong and highly resistant to corrosion.

LARGEST ALUMINIUM-WOUND TRANSFORMER EVER BUILT FOR KITIMAT

What is believed to be the world's biggest aluminium-wound transformer now under construction in the St. Catharines, Ontario, plant of the English Electric Company, will play a major role in the current expansion programme of the Kitimat, B.C. Smelter of Aluminium Company of Canada, says a news item in the April issue of *American Metal Market*.

The total length of the wire alone will be well over 42 miles and is expected to weigh approximately 11,000 pounds. The transformer itself, the largest ever built with aluminium windings, will transform 70,000 kVA from 275 kV to 13.2 kV.

The high voltage wire will be insulated with paper layers and the low voltage wire will have an extra-heavy coating of plastic material. Aluminium was selected for the winding on the giant new unit to provide an opportunity for a major electrical manufacturer to study both the design and economics of the light metal in a large power transformer.

LIGHTNING PROTECTION SYSTEMS

In recent years, the use of high-conductivity aluminium in lightning

conductor systems has increased greatly. This has been due to the recognition of the metal in government legislation concerning protection systems, particularly in North America, as well as acceptance by consumers.

Industrial and rural buildings are the main outlets for lightning conductor installations. Urban residential areas generally do not require the same level of protection because of the multiplicity of 'grounds' to earth provided by public utility and plumbing systems. However, there is clear statistical evidence of the need for adequate and up-to-date protection from lightning hazard. According to records of the Fire Underwriters of the United States, 37 per cent of all farm fires in 1947 were caused by lightning. This figure is higher than in Canada, where an average of 8.4 per cent of all fires on farm property between 1946 and 1950 in the Province of Ontario were caused by lightning. Far more significant, however, are the figures which show that over 98 per cent of all fires started by lightning in Ontario buildings were on properties without lightning protection.

Cause of Lightning Hazard: Lightning is the discharge of negative or positive charges of static electricity either between storm clouds, or between cloud and ground. Little danger is presented when discharges are from cloud to cloud, but when static pressure is sufficiently great to be attracted to static charges on the earth's surface, the uncontrolled release of electricity can cause great damage. On the ground, static charges concentrate at the extremities of high points, such as trees, mountain tops, tall structures, church steeples, chimneys, cornices and agricultural installations.

Lightning protection systems have two purposes. The first is to prevent the accumulation of excessive charges of static electricity in structures. As such charges concentrate at high points, the installation of pronged or single-pointed rods on the top of buildings helps to dissipate the charge into the atmosphere by gradual leakage. The second purpose is to provide a controlled passage to earth, should a discharge occur from clouds overhead.

Aluminium Logical Material: The sudden passage through the lightning protection system of thousands of amperes driven by millions of volts requires a conductor that offers very low resistance. The traditional conductor material is copper, which is usually lead sheathed to provide resistance to corrosion. However, for equal conductivity, aluminium is very much lighter and cheaper than copper conductor and also there is no need to provide a corrosion resistance sheathing. An aluminium protection system is therefore much lighter in weight than older systems—an important consideration in view of the frequent difficulty of installing such a system on tall structures, not to mention the lighter load on the structure itself. Therefore, an aluminium lightning protection system usually is available at a lower first cost than one made of other materials, and also may prove cheaper to install.

Aluminium products used in lightning protection systems include rod, strip, sheet, castings and cable. Various components that make up a lightning system include cable conductors, strap conductors, connectors and clamps, air terminals, air terminal supports, fasteners and grounding rods.

TECHNICAL problems involved in electric connectors for aluminium wire and cable are quite different from those encountered in connectors for copper conductors. There are several different ways to approach these problems, but it is essential that connectors for aluminium be specially designed for aluminium. Several problems arise which must be taken into account when aluminium is to be connected to copper. All these technical problems are related to the oxide film on the surface of aluminium, the contact pressures exerted by the connector, and the possibility of galvanic corrosion between dissimilar metals. An understanding of these various factors is essential to the intelligent design and use of connectors for aluminium.

Basically, the efficiency of any electrical contact is a function of the cleanliness of the contacting surfaces, the area of the contacting surfaces, and the pressure applied. The natural oxide film on the surface of aluminium is a problem because it is a good insulating material, and in certain types of service, it can seriously interfere with contact efficiency. It can be thought of as an unclean substance so far as electrical contact surfaces are concerned, although it is quite thin and invisible to the naked eye. This film is always present on aluminium surfaces exposed to the air.

The very best electrical connections require that the oxide film be removed or penetrated, and means provided to prevent its reformation on contact surfaces. The oxide film

* With grateful acknowledgments to Reynolds Metals Company, Louisville, Kentucky.

can best be removed by abrasion, and while a new film forms immediately if abrasion is done in the presence of air, it does not reach its ultimate thickness in a matter of seconds. It will grow rapidly for the first few minutes and will continue to grow slowly for several days before it reaches what might be considered a stable thickness.

A jointing compound applied just after abrading will protect the surface from further oxidation and prevent the formation of an oxide film thick enough to interfere seriously with most connections. To ensure complete elimination of the oxide film for the most extreme service conditions, apply the jointing compound prior to abrading so that the oxide film will be removed underneath the overlaying compound. The jointing compound prevents or retards reformation of the oxide film and so should not be removed before the connection is made.

Assuming that contacting surfaces are clean, it is theoretically possible to provide the same contact efficiency with high contact pressures and small contact areas as with low pressures and large areas. Because of factors like space and costs of materials, there is a natural tendency for connectors to be designed with the smallest possible contact area and the greatest possible contact pressure. This is true of connectors for both aluminium and copper conductors, but because copper conductors can withstand higher pressures than can aluminium conductors, a design of conductor that may be satisfactory for copper may be completely unsatisfactory for aluminium. In general, a satisfactory connector for aluminium will

exert about the same overall pressure as one satisfactory for copper, but will provide considerably more contact area and thus hold unit stresses to values the aluminium is capable of withstanding.

If a connector is made of a metal different from that of the conductors, the difference in the rates of expansion and contraction of the two metals with changes in temperature will cause contact pressures to vary with the temperature. For example, aluminium expands more than copper for a given change in temperature. If a connector made of copper is used on aluminium conductors and the temperature rises, the aluminium will try to expand more rapidly than the copper connector, but will be restrained by it. This restraint will result in higher pressures and stresses than originally applied. Unless the connector was carefully designed, the pressure exerted at the high temperature may become greater than what the aluminium connector can withstand, and it may creep or cold flow as a result. When the connector cools after this has happened, there will be less volume of aluminium under it than when originally installed, and the pressure will, therefore, be less. Such heat cycles can lead to progressive failure. The possibility of this type of failure is completely eliminated if connectors for aluminium conductors are made of aluminium.

Very often, aluminium conductors must be connected to copper conductors, and the possibility of galvanic corrosion must be forestalled. When two different metals are in contact with each other in the presence of moisture (hereafter referred to as the electrolyte), a small



Fig. 1
Standard type parallel groove clamp.

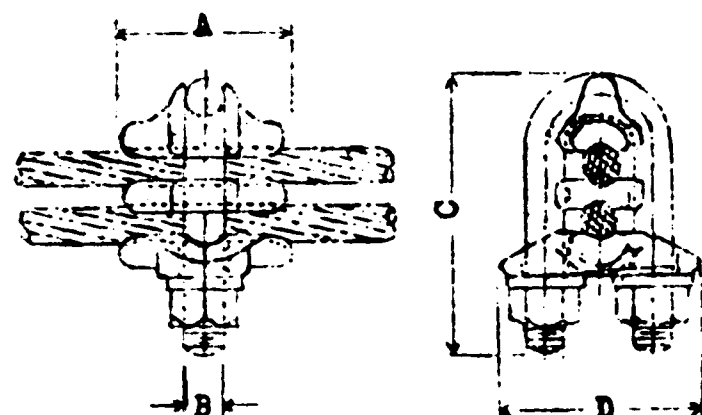


Fig. 3
U-Bolt type clamp.
FOR 6/1 ACSR

Cat. No.	Cable Diam. Inches		DIMENSIONS IN INCHES				Alum. Wt. per pair Pounds
	Min.	Max.	A	B	C	D	
D-11	.198	.250	1½	½	2½	1½	0.30
D-12	.250	.316	2	½	2½	2½	0.48
D-13	.316	.398	2½	½	3½	2½	0.76

NOTE: (1) Bolted clips are made of strong aluminium alloy.
(2) Catalogue number covers two complete clips.

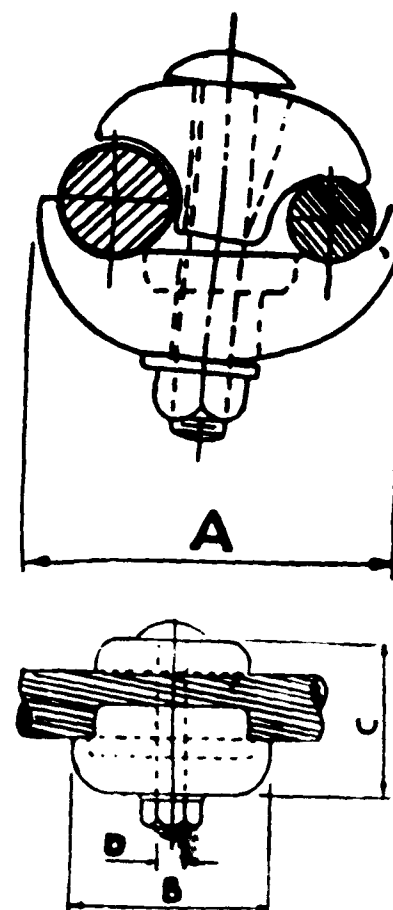


Fig. 2
Universal parallel groove clamps.

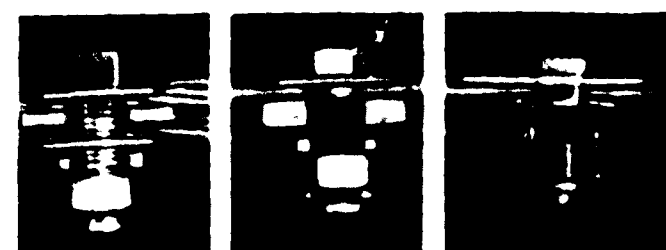


Fig. 4
Split-bolt connectors.

voltage is developed between them which causes a flow of electric current. The complete galvanic circuit for this flow of current is from one metal through the contacting surface to the other, and then through the electrolyte back to the first. As this current flows between the metals through the electrolyte, galvanic corrosion of one of the metals occurs. If equal areas of two metals are in contact with an electrolyte, the rate of corrosion will depend upon the magnitude of the galvanic current, and this in turn will depend upon the voltage and electrical resistance of the galvanic circuit. The voltage depends upon what the two metals are and upon the chemicals that may be present in the electrolyte. The electrical resistance of the circuit will depend upon these same factors and, in addition, upon the cleanliness of the metal surfaces, and the length of the path of the current through the electrolyte.

If all other factors are equal, the rate of galvanic attack will depend upon the voltage of the galvanic circuit, and the relative performance of different metals in contact with each other can be estimated by their position in the galvanic series of metals. Some of the metals most commonly encountered in electrical connections are shown below along with their corrosion potentials as measured in a sodium chloride solution using a calomel reference electrode:

Metal	Measured volts
Zinc	- 1.00
Aluminium	- .85
Cadmium	- .82
Mild Steel	- .67
Tin	- .49
Copper	- .20

When any of the above metals are coupled together in the presence of an electrolyte, the metal having the greatest negative voltage will be anodic to the other and will tend to corrode. It will be seen that the voltage difference between aluminium and copper is greater than that between any of

the other metals shown, and corrosion of aluminium can be expected to be more rapid when in contact with copper than when in contact with the others. Thus, if a connector is made of copper and plated with tin, cadmium, or zinc, the rate and severity of galvanic corrosion of aluminium will be reduced. The effectiveness of such platings is influenced by several other factors, however, such as type of exposures, and thickness, uniformity and density of paintings. The possibility of galvanic corrosion is completely eliminated, if connectors used to connect aluminium conductors to other aluminium conductors are made of aluminium.

The rate and effect of galvanic corrosion will also be influenced by area, mass and geometric relationships. If, in a copper-to-aluminium connection, the area of the aluminium exposed to the electrolyte is small in relation to the area of copper, the flow of current to the aluminium will be concentrated on the small area and thus accelerate corrosion of that area. Conversely, if the area of the aluminium is large in relation to that of the copper, the flow of current to the aluminium will be dispersed, and the rate of corrosion correspondingly decreased. Thus, if a copper-bodied connector is used on aluminium conductor and has areas exposed to the electrolyte which are large in relation to the area of aluminium, rapid corrosion of the aluminium conductor may occur.

On the other hand, if an aluminium-bodied connector is used on a copper conductor and has areas exposed to the electrolyte which are large in relation to the area of the copper, any corrosion of the aluminium connector body will occur over a larger area and at a slower rate. Also, because of the mass of the connector body such corrosion as may occur on it outside of contact

area is not likely to be harmful and is far less objectionable than corrosion of the conductor itself.

We recommend that a good jointing compound always be used on electrical connections to aluminium regardless of the metals involved. The jointing compound, when liberally applied, will fill all voids in contacting surfaces and all voids in the vicinity of contacting surfaces. By so doing, it excludes the entry of air and moisture and makes oxidation or corrosion impossible. There are several good jointing compounds on the market, all of which are grease type materials. The compounds must be chemically inert to the metals or other materials with which they come in contact. They must also have a consistency suitable for convenient application throughout the normal range or ambient temperatures, and they should not become fluid at anticipated operating temperatures. Some brands include zinc particles suspended in the compound, the purpose of which is to aid in breaking through the oxide film on the surface of the aluminium. Such particles also create friction which assists in developing mechanical pull-out strength. The length of time that a jointing compound will provide protection cannot be established except by experience, but when liberally applied they will last for many, many years under most service conditions.

Connectors may be required by various service conditions to carry anything from the very lightest currents to the full thermal ratings of the cables they connect. The heavier duty connectors will provide greater contact areas and more uniform pressures than those intended for light duty. The selection of the type of connector to be used will, therefore, be strongly influenced by the type of service anticipated. A light duty connector may perform satisfactorily where current densities

and operating temperatures are low, whereas an entirely different type of connector would be required where duty cycles are heavy and frequent and where operating temperatures are high. Also, precautions which may be necessary to forestall oxidation or galvanic corrosion will be different for different service environments.

The types of connectors in most common use are as follows :

1. PARALLEL-GROOVE CLAMPS :

- (a) Standard type
- (b) Universal type
- (c) 'U' Bolt type

2. SPLIT-BOLT TYPE :

3. COMPRESSION CONNECTORS :

- (a) Sleeve type
- (b) Open-sided Sleeve type

1. PARALLEL-GROOVE CLAMPS :

(a) Standard Type Parallel-Groove Clamps :

Standard type parallel-groove clamps consists of two aluminium alloy halves and two or more galvanized steel bolts. These clamps are designed for heavy duty service, and in order to provide maximum contact area, should have grooves of very nearly the same radius as the conductors.

(b) Universal Type Parallel-Groove Clamps :

The universal type of parallel-groove clamps consist of two aluminium alloy halves and one galvanized steel bolt. The grooves are designed to receive a range of conductor sizes and holes for the steel bolts are oversize to permit the two halves to seat themselves properly with various sizes of conductors. This type is *not* intended for heavy duty service.

(c) U-bolt type Parallel-Groove Clamps :

U-bolt type parallel-groove clamps are so designed that clamping grooves and conductors are encompassed by the U-bolts that apply the pressure. With the same torque used for tightening nuts on the bolts, one U-bolt in a U-bolt clamp will apply four times as much pressure to the individual conductors as will one machine bolt in a standard type clamp. When U-bolts are made of aluminium alloy, the possibility of creep resulting from temperature cycling is completely eliminated. This type of clamp will withstand the heaviest duty service of any of the parallel-groove clamps. Same clamps as are used for dead-ending can be applied.

2. SPLIT-BOLT TYPE CONNECTORS :

Split-bolt connectors, as the name implies, consist of a heavy shanked bolt which has been split down the centre to provide room for insertion of the conductors to be joined. Pressure is then applied by a nut which threads on to the bolt. Split-bolt connectors provide relatively small contact areas and high unit pressures. They have long been used satisfactorily with copper type connectors, but have a spotty record of performance with aluminium.

Parallel-groove clamps for connecting aluminium to copper have their grooves plated or metallised with tin. Clamps with copper inserts in the copper grooves can also be made available, but these are not recommended since they can prove troublesome. In the U.K., they use bi-metallic junctions—kept dry by an insulating washer. In any case, it is desirable that aluminium-copper contacts are kept moisture-free by embedding them in some durable grease.

Use of "Alcu" tapping is also recommended.

In this device, the copper side of the tapping contains a bell-mouthed tube of soft, high-purity aluminium with one end sealed and filled with high melting point grease, into which the copper conductor is inserted and clamped. As the bolt is tightened the soft aluminium tube bends down on to the copper conductor, thereby making a good electrical contact. Experience has shown that corrosion at the entrance to the aluminium tube occurs seldom, if ever, and even then, the tube and not the copper conductor, will suffer; also, the length of the tube ensures that any trouble will be obvious before the corrosion reaches the clamp. It is not advisable, however, to mount the clamp with the copper conductor entering above the aluminium line conductor.

3. COMPRESSION CONNECTORS :

(a) Sleeve type :

Sleeve type compression connectors are quite similar to compression joints except that the sleeves are made shorter because there is no requirement for the connector to withstand the full mechanical tension of the conductor. They are recognised as the most dependable form of electrical connector for aluminium-to-aluminium and for aluminium-to-copper connections. In either case, the sleeve should be made of aluminium.

(b) Open-sided sleeve type :

The open-sided sleeve of compression connector is essentially a heavy-walled tube, one side of which is open to permit it to be slipped over a conductor to make a 'running tap' without cutting the conductor. Installation is accomplished by slipping the connector over two parallel conductors and compressing with suitable type of tools. Since the two conductors are pressed together, this type of connector should not be used for aluminium-to-copper connections where there is any possibility of galvanic corrosion.

Our Family

We said welcome to ...

Probationers—K. A. Sundaram (Accountant), N. S. Menon (Assistant Accountant (Stores), J. F. Morris (Construction Foreman), B. C. Kaimal (Stenographer), Capt. G. K. Warrior (Personnel Section), K. Koyakutty (Driver), R. Damodaran (Guard), V. Kunjukrishna Pillai (Guard), J. K. Louis (Guard), G. Gregory (Guard), N. Janardanan Unnithan (Guard), P. Narayana Pillai (Guard) and P. K. Varadarajan Pillai (Office Attender).

Apprentices I—V. Hariharan Nair (Mechanical Section), K. C. Ramachandran (Works), S. Shahul Hameed (Accounts), M. Shanmuga Das (Rolling Mill), T. K. Radhamonie (Rolling Mill) and T. V. Ramachandran (Electrical Section).

Apprentices II—K. Lakshmanan Nair (Shipping Section), K. Nanoo Asari (Mechanical Section), S. Ravindran (Accounts Section), N. Ramachandran Tampi (Planning Section), R. Sandaresan Nair (Mechanical Section), M. I. Thomas (Rolling Mill), Tommy Louie (Rolling Mill), Thomas Muthalaly (Rolling Mill), V. G. Kadamampalli (Electrical Section), M. A. Mathew (Cable Mill), K. I. Jacob (Cable Mill), V. Madhavan Nair (Mechanical Maintenance), M. Pushkaran (Mechanical Maintenance), C. G. Krishnakutty Nair (Rolling Mill), Abdul Majeed (Cable Mill), S. Gopalakrishnan Nair (Cable Mill), Stephen D'Silva (Rolling Mill), C. G. Madhavan Pillai (Rolling Mill), P. G. Koshy Muthalaly (Mechanical Section), S. Gregory (Rolling Mill), K. G. Sankara Pillai (Mechanical Section) and C. G. Balakrishna Pillai (Rolling Mill).

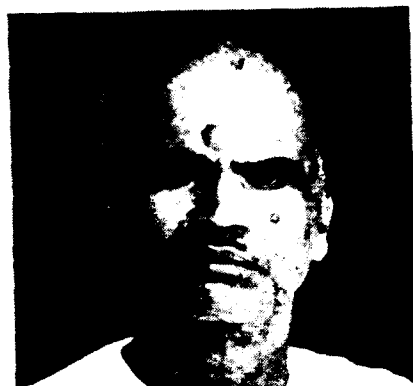
Piece-Rate Workers—P. Balakrishna Pillai, G. Chellappan Pillai, P. Chandrasekhara Pillai, N. Kesava Pillai, P. N. Bhaskaran Pillai, S. Sankara Pillai and P. Sanku Pillai (Moving and Handling), P. G. Chellappan Pillai and M. M. Ramachandran Pillai (Reel Shop).

Births*

To the wife of :

V. Kunjukunja, Mech. Maint., a daughter; P. Bhaskaran Pillai, Shipping, a daughter; K. V. Kuttan, Reel Packing, a daughter; E. K. Nanoo Asari, Reel packing, a daughter; A. Joseph, Inspection, a daughter; N. Gopalan, Mech. Maint., a son; M. Meera Sahib, Reel Shop, a daughter; P. K. Raghavan Pillai, Reel Shop, a son; Vidhyadharan Asari, Reel Shop, a son; M. Thankappa Asari, Reel Shop, a daughter; Edwin Fernandez, Mech. Maint., a son; G. Padmanabhan Asari, Reel Shop, a son; K. Prabhakaran Asari, Reel Shop, a son; A. P. Chellappan Asari, Reel Shop, a daughter; P. Sankaran, Reel Shop, a son; N. Kumaran Asari, Reel Shop, a son; V. P. Chellappan Asari, Reel Shop, a daughter; R. Neelakantan Asari, Reel Shop, a son; A. T. George Panicker, Personal Clerk to Works Suptd., a son; N. Krishna Pillai, Moving and Handling, a daughter; P. Raghavan Pillai, Guest House, a daughter; O. C. Checko, Chargeman, a son; K. K. Thomas, Chargeman, a son; T. M. Souri, Chargeman, a daughter; P. Balan Pillai, Watch & Ward, a son; N. Velayudhan Pillai, Watch & Ward, a daughter, Capt. G. K. Warrior, Personnel Section, a son.

* During January-June.



P. N. Velu Pillai.



Stephen Fernandez.



V. Padmanabhan Asari.

We said farewell to . . .

On May 22, three of our employees retired on reaching the age of superannuation.

(1) P. N. Velu Pillai, Store Clerk :

Mr. Velu Pillai joined us in 1951 after he had retired as a Preventive Officer of the Travancore-Cochin State. He is one of those people who cannot obviously take to "slipper'd pantaloons'd" ease ; so he has now joined the Social Welfare project in which his daughter is already employed. We wish him many long years of a happy and useful life.

(2) Stephen Fernandez, Civil Works Supervisor : Mr. Fernandez has been with us since the early days of the company. Although he has formally left the organisation, he is in a sense still with us, as a contractor executing minor construction jobs. Edwin, the second boy of Fernandez, is with us in our Mechanical Maintenance Section.

Our best wishes go to Mr. Fernandez in his new role as an independent operator.

(3) V. Padmanabhan Asari, Reel Shop : The third employee to retire was Mr. V. Padmanabhan Asari, Blacksmith. He has also been with us since the very beginning.

Padmanabhan Asari continues to stay in the Colony, now with his son Shanmugham, also a blacksmith in our employ. The "on - the - anvil" tradition is, therefore, perpetuated.

We wish Padmanabhan Asari a long and happy retired life.

Thomas Johnson—Resigned.

K. V. Pillai—Left : On expiry of his training period in the Personnel Section.

Electrical Development Council

As we go to press we learn with pleasure that Mr. V. G. G. Nayar, General Manager, has been appointed a member of the Development Council for Heavy Electrical Industries, Shri N. N. Iengar, Technical Director, Tata Hydro-Electric Company, Bombay, is the Chairman of the Council.

The Development Council for Heavy Electrical Industries will have to consider the formulation of proposals for the following industries :—

- (a) Electric Motors ;
- (b) Transformers ;
- (c) Switchgear ; and
- (d) Other machinery and equipment connected with the transmission and distribution of electrical energy.



★

They were married

OUR congratulations and good wishes go to all our newly-weds. Recent marriages of employees include those of :

1. K. Madhavan Nair, Operator, Cable Mill, with Miss Gomathy Amma.
2. A. V. Thomas, Operator, Cable Mill, with Miss Ammukutty.
3. K. Bhaskara Pillai, Lab. Attender, with Miss G. Bhageerathy Amma.
4. P. Sivaraman Asari, Carpenter, Reel Shop, with Miss K. Lakshmikutty Amma.
5. B. C. Kaimal, Stenographer, with Miss Amminikutty.
6. C. Yohannan, Machine Shop, with Miss P. Marykutty.
7. V. K. B. Unnithan, Cable Mill, with Miss Sarojam.
8. C. A. Antony, Inspection Section, with Miss Margarette.
9. A. Kumaraswami Pillai, Driver, with Miss Saraswathy.

★

- (1) Mr. A. V. Thomas and his bride, Miss Ammukutty.
- (2) Mr. C. A. Antony and his bride, Miss Margarette.
- (3) Mr. B. C. Kaimal and his bride Miss Amminikutty.



K. K. Thomas.

An Alinder whom we presented to a large audience of Engineers without his knowledge was charge-man K. K. Thomas. We put on view a life-size cut-out of his at our stand in the Institution of Engineers (India) Exhibition at Hyderabad.

While still a lad at school, Thomas took part in the country's Freedom Struggle, joining the Congress in the early days.

Prior to joining our Company in 1950, Thomas had first been with the Central Travancore Engineering Workshop, Trivandrum, for a year (1939), then with the Hindustan Aircraft, Bangalore for five years (1940—1945) and later with Fertilisers & Chemicals (Travancore) Ltd., Alwaye, for another five years, first in the plant and for a year on dredger assembly.

Football and Hindi pictures are the two great interests of Thomas.

Rather quiet, Thomas is an able hand.

• • • • •

N. Stenselaves.

An outstanding performer in our Reel Shop with several Efficiency



N. Stenselaves.

Awards to his credit is N. Stenselaves, Reel Maker. As we have seen him saw, (our grammar is perfect) but you a'int seen him saw, (it's atrocious now) may we present him through the columns of this journal ?

Stenselaves joined us in 1952. Prior to coming to us, he was engaged in boat-making.

For one who is not to the manner born—that is, he does not belong to

Alinders

the *Asari* or carpenter community—his professional skill is amazing. For instance, in 1955, he beat his nearest rival by a margin of 848 points. Between him and the last award winner, the difference is even more steep—it is 1,363 points.

Stenselaves was not born with a silver spoon in his mouth; for aught we know, it might have been a wooden ladle! Even in childhood, woodwork would appear to have held some kind of strange fascination



N. P. Pillay.

for him. It seems that he was never more happy than when he had a hammer and chisel to play with.

In his off-moments, Stenselaves relaxes with a harmonium, and let us hope, as much to the delight of his neighbour as to himself! Not the one to miss the keys for the wood, eh? His interest in music is not that of a dilettante; he was in a professional band before he found his metier in reel-making.

But he is certainly not one to blow his own trumpet; he is, to mix a metaphor, a shrinking, modest violet.

• • • • •

N. P. Pillay.

Formerly Vice-President of the Employees' Association and now Secretary of our Union, N. P. Pillay has for some years now been devoted to the cause of Trade Unionism

Taking his secondary school certificate from the Baranikkavu English High School in 1939, Pillay served in the Army from 1940 to 1944. After taking his discharge in 1945, he joined the Travancore State

(Contd. on page 13)



S. Kumaran.

Another member of the family whom we would like to present to readers is S. Kumaran, Junior Moulder. He has been with us from 1946, onwards. A local man, the company provided him with an opportunity for making good.

What has moulding to do with medicine? Excepting that penicillin is extracted from a mould, *Penicillin notatum*, we do not know of any connection between the two. In any case, the books that interest Kumaran most are those that deal with the Ayurveda branch of medicine!

(Contd. from page 12)

Public Works Department, but left it in 1946. During 1947-48, he was (like several of our other employees) working for the Fertilisers and Chemicals (Travancore) Limited, Alwaye, and joined us in the latter half of 1948.

Pillay is a habitual wearer of *khadi*. Political news interests him more than other items. At school, he used to play football and volleyball, but nowadays he seldom finds the time for games.

Prone to be reserved, he seldom speaks unless spoken to.

OUR ASSISTANT ACCOUNTANT, FINANCE



V. R. VAIDYANATHAN.

BREATHES there the man with soul so dead who never smiled ever so slyly, ever so subtly, at the sight of a cheque made out in his name? His soul should be even deadlier still if he did not floodlight whatever place he was filling at the moment with a broad Joe E. Brown-grin, as he beheld a cheque made out in his favour by V. R. Vaidyanathan, our Assistant Accountant, Finance. He writes such a beautiful hand. This exquisite calligraphy is a heritage from his school and college days. In fact, for two years in succession, he was the recipient of the award for good penmanship at the Sydenham College of Commerce and Economics, Bombay, from which he took his B.Com. degree.

Vaidyanathan has also other academic achievements to his credit. He stood first in his College in I.Com. with the highest aggregate of marks, was awarded the Sir Ibrahim Rahimtoola Commerce Scholarship for two years, and he scored distinction marks in Advanced Accounting and Auditing in his B.Com. final.

Vaidyanathan joined us in July 1948, after service of a year or so with the Fertilisers and Chemicals, Travancore, Limited. From 1938 to 1946, he was in service with two banking institutions in Bombay.

Cricket interests Vaidyanathan tremendously although he has never played the game at school or College. Volleyball, Football and Table Tennis are the other games that interest him and which he has played at one time or another in his life.

P. G. Wodehouse and G. K. Chesterton are his favourite authors. He is also passionately devoted to all books and journals dealing with accountancy and auditing.

Vaidyanathan believes that all young men who aspire to be accountants should specialise at least in one branch of study like Statistics or Cost Control.

Inclined to be reserved, Vaidyanathan is the quiet and efficient type, the "wedded-to-my profession" sort.

Excursion to Alwaye

by T. K. Krishnan

ON May Day, a party of 35 members of the Alind "family" drawn from practically all the sections of the factory set out for Alwaye on a sight-seeing *cum* educational tour in a specially chartered bus. It "took off" at 8.15 a.m., with Mr. V. G. G. Nayar, our General Manager and President of the Recreation Club, being present on the scene to wave us good-bye.

As on the trip to Papanasam, I had the honour of leading the party.

We stopped for a brief while first at Kayankulam, and later at Alleppey at which place we had our breakfast. We reached Palluruthy around half-past eleven. Here we were met by Mr. P. Doraiswamy of the South India Corporation, Limited, and a Representative of Messrs. Achuthan Pillai Company, our clearing and forwarding agents, who took us straight to the offices of the South India Corporation. Mr. Achuthan Pillai and Mr. K.T. PL. Ramaswami Chettiar were there to bid us welcome. After treating us to light refreshments, they showed us round the works of the Corporation, consisting, in the main, of an up-to-date workshop, plant and machinery for the manufacture of mosaic tiles, facilities for steel fabrication and timber saw mills.

Later, we were presented to Mr. S. V. N. Nachiappa Chettiar,

Managing Director, who gave us each a tin of toffee.

At half-past one, we proceeded to the Woodlands Hotel, Ernakulam, where excellent arrangements had already been made by our hosts for our lunch.

After tea in the evening, our port of call was Cochin harbour. Mr. Achuthan Pillai, who had made previous arrangements for an inspection tour of the harbour, showed us round. We, also, went aboard a ship—S.S. *Sabarmathi*, a mixed (passenger-cum-cargo) ship.

From the harbour, we crossed over in a motor launch to Mattancherry on a visit to the office of Mr. Achuthan Pillai. Light refreshments, again. (By God, the soft drinks that we had

taken that day would have been enough to float a ship of the size of S.S. *Sabarmathi*!) And then back to Ernakulam for a good dinner at Woodlands... and so to bed.

On May 2, we made for Eloor, scene of several recent industrial developments. First, we went round the plant of the Travancore-Cochin Chemicals, Limited, producers of rayon-grade caustic soda, and then that of the Fertilisers and Chemicals (Travancore) Limited. These morning visits over, we were treated to a fine luncheon by Mr. B. V. D. Menon, Director. In the afternoon, we went to see the reduction works of the Indian Aluminium Company Limited.

On May 3, we "did" two more factories—The Travancore Rayons Limited and the Ogale Glass Works Limited.

We returned to Kundara the same day reaching the place at 11 p.m.

A melancholy foot-note to this otherwise most enjoyable round of visits is that Mr. S. V. N. Nachiappa Chettiar, Managing Director, South India Corporation, Limited, died suddenly of heart failure on May 8.



The Excursion Bus : Standing in the doorway is Mr. T. K. Krishnan.



The Excursionists.



I. C. Cheriyan, Captain (Factory) and P. A. Ibrahim, Captain (Office).

II. Factory Team—
L to R. Abraham P. Jacob, K. Narayana Iyer, C. Cherian, Tommy Louie, M. K. Varughese, R. Gopalakrishnan, K. S. Kalyanakrishnan, C. S. Kaladharan Pillai.

III. L to R. P. A. Ibrahim, P. Bhas-karan Nair, V. O. Mathew, T. R. Raghunandhanan, P. Sukumaran Nair, K. Ramachandran Nair, M. Philip.

Let us talk about our Soccer

by "Muddled Oaf"

ABOUT a year-and-a-half back, we set our football rolling in Kundara. The game had not been played here so far chiefly for two reasons :—

(1) Lack of a playing field (2) Lack of a sufficient number of players.

Luckily, for us local footballers, around this time, arrived in Kundara an Oxford rugger "blue"—Mr. M. H. Fowler, Manager of Peirce Leslie. His enthusiasm for football knew no bounds, and when he found in his own company a small company of devotees of the game, he promptly set about organising a team.

With little or no practice and a prolonged period of inactivity however we plucked up sufficient courage to form a "sevens" is one of those unsolved mysteries. But, we did form one, and did play a few matches against a relatively stronger P. & L. side. The results of the first two matches were, indeed, most gratifying. If we did not win, we did not lose either. Both games were drawn. The results of our subsequent encounters with P. & L. are, however, nothing much to write home lyrically about. Match after match we were routed, but then P. & L. have a foot-

ball field of their own and their players get daily practice. (Our own field is getting ready and will soon be available for practice and play.)

In November 1954, a combined AL-IND and P. & L. team played against a team of Harrisons and Crosfield, Quilon. The match was played on their grounds, and they won it by three goals to one. Although we were defeated in this match, we were certainly not disgraced. Indeed, the final result went very much against the game's trend, particularly after half-time. Included in the H. & C. team were some of the best players in the state, belonging to such well-known clubs as the Leaguers and the Inter-town champions.

On our side, Fowler and K. V. Samuel (both of P. & L.) and P. A. Ibrahim, C. Cheriyan and M. Philip were quite good in their respective positions, but in R. J. Pope of H. & C., our team had rather a tough proposition to tackle. Often playing a sixth forward from left, and resuming his position as left-half, he left our players very often guessing. He co-ordinated beautifully with Aziz, their centre forward and schemer, and our defenders, excepting for Samuel and Philip, could seldom dispossess them. C. S. Kaladharan,

our goal-keeper, who had not had much practice, gallantly tried to ward off the attacks, but his efforts proved to be of no avail.

The first goal was scored by H. & C. ten minutes after the game started. Pope advanced from the left and our defenders could do nothing to check this progress. He lobbed the ball nicely into the goal area, and Aziz, their centre-forward, collected it, dribbled for a while, all the time looking, in the direction of his own goal, but suddenly and swiftly shot in, taking Kaladharan, our custodian completely by surprise. Thereafter, we tried very hard for an equaliser—in fact, Ramachandran our outside left, tested the H. & C. goalie twice at close range, but Dastagir proved to be more than a match for him. After half time, it looked as though our side were getting the equaliser, but H. & C. scored another goal, and yet another, in quick succession.

In February 1955, Tommy Louie, an outstanding athlete, and one of the best goal-keepers in the State, joined us.

The Factory Day Tournaments of 1955 afforded us an opportunity for not only valuable practice, but also for assigning correct positions to

individual players. (Stephen D'Silva and K. Sulaiman who joined us in May proved to be additional assets to our football club.)

With this wealth of football talent at our disposal, we thought we could face the H. & C. side, formidable as it was. In the match we played against them at their pitch, on May 26, we avenged our former defeat at their hands, though by the slim margin of one goal (3-2).

Right from the kick-off, scientific football was witnessed.

Our players displayed in this match much better understanding and co-ordination than had been the case hitherto. For one thing, the correct players were in the correct positions, enabling the veterans in the side translate ideas into action.

Five minutes after commencement, collecting a long pass from D'Silva, our left back, Sulaiman, inside left sped fast and effected a terrific shot. The H. & C. goalie, Dastagir, dived in to the right to save, but the ball bounced back. Sulaiman rushed in and scored amidst cheers.

Our opponents pressed us hard thereafter. Their efforts bore fruit when, in the twentieth minute, Aziz,

their centre forward, taking advantage of a melee in the goal area, scored at close range.

At half-time the score stood 1 all. On resumption, the H. & C. defenders had a tough time of it, particularly, their custodian—Ramachandran, our inside left, with his nice lobbs to the centre was a regular thorn in their side.

In the seventh minute, taking a pass from Samuel, centre half, Sulaiman cleverly dodged the H. & C. defenders, and sent the ball to Ibrahim, centre forward, who stopping it with admirable control, scored the second goal for his side.

Our elation was, however, short-lived as soon afterwards H. & C. equalised. Play was mostly mid-field. D'Silva, Samuel, Radhamonie and Philip, our defenders, changed their manoeuvres to suit the movements of the "enemy", often intercepting the ball successfully, right in the centre.

Shortly afterwards, however, Sulaiman scored for our side the third deciding goal. Samuel, our centrehalf, ballooned the ball. Ibrahim headed it back to Augustine, inside right, who headed it in turn to let it fall between Sulaiman and

Ibrahim in the goal area. A melee followed, and Sulaiman on bended knees scored the winning goal, heading the ball right in.

This essay will hardly be complete without a reference to the gallant goal-keeping of Tommy Louie. He always anticipated intelligently and judged correctly, everytime his defending ability was put to the test.

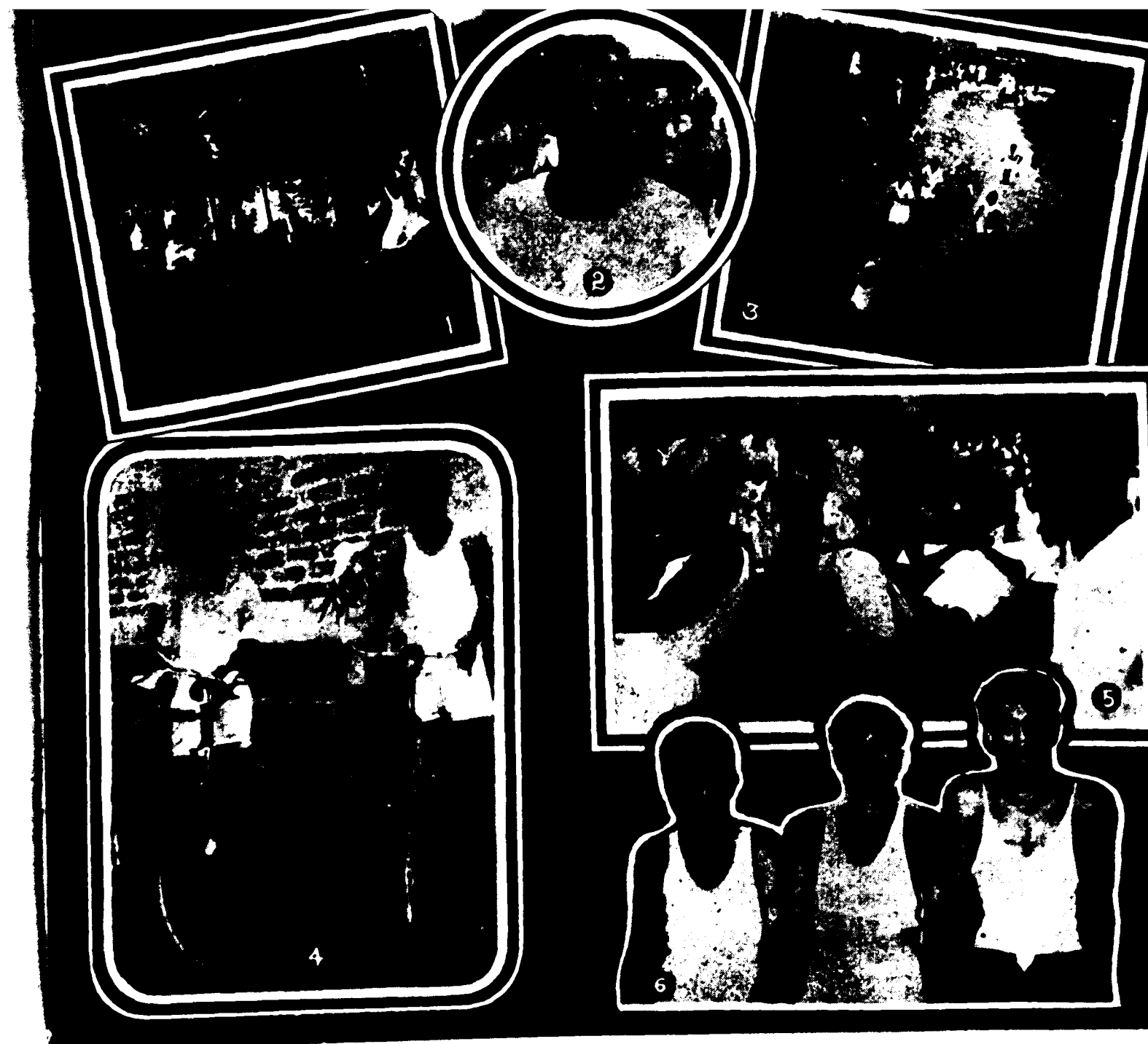
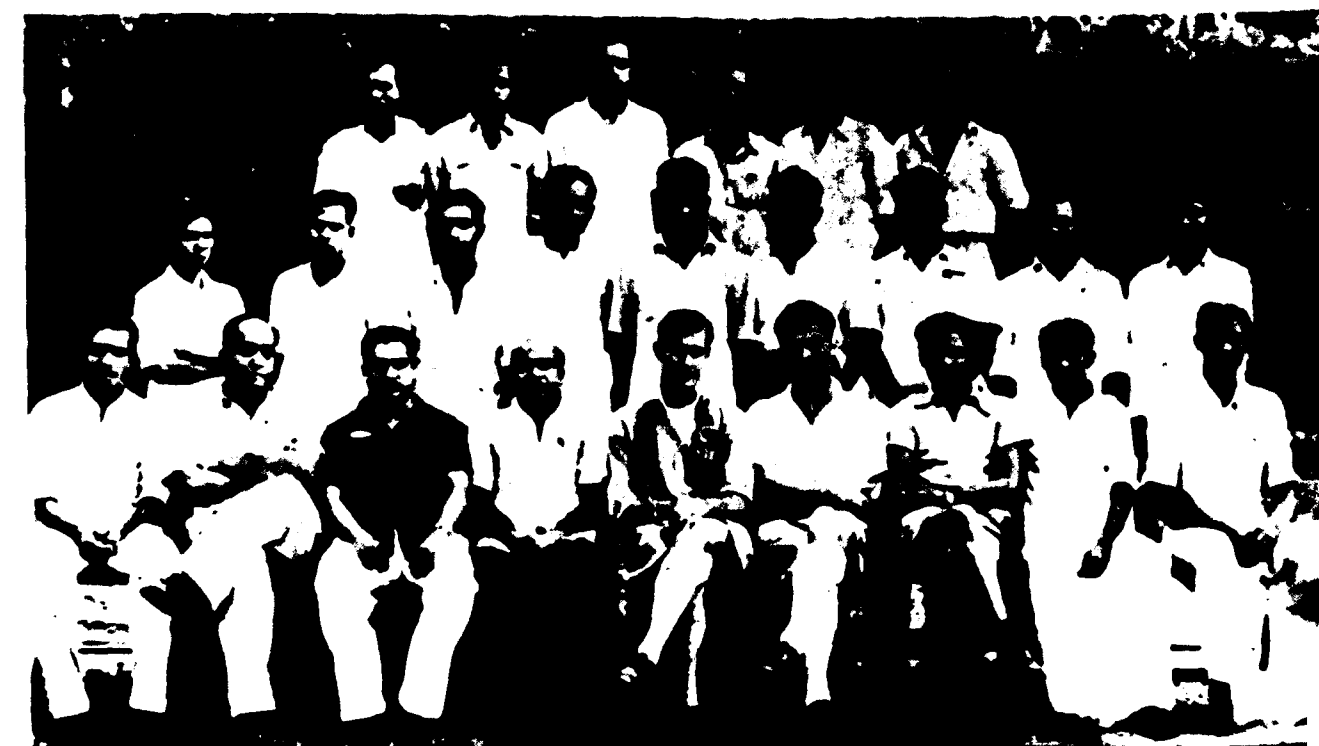
To Mr. P. A. Ibrahim, our Personnel Officer, the Football Club owes a good deal. It was he who organised our team practically from scratch. A keen player himself, he is set on raising the Alind Football standard.

Some days after our historic victory over H. & C. we got ourselves affiliated to the Travancore-Cochin State Football Association. We would like to end on this happy note but there is a bit of not-so-good news coming. Mr. Fowler left us in June to join the Cochin Office of P. & L. To him and his company, we will for ever be grateful for the facilities that they placed at our disposal. We got up a party at the Guest House on June 10 to say 'au revoir' to him. We will miss Fowler in Kundara and we hope that he too will miss us sometimes!

Sitting L. to R. Stephen D'Silva, K. R. Sankaranarayanan, K. Ramakrishnan Nair, P. A. Ibrahim, M. H. Fowler, R. J. Tucker (New Manager, P & L.), M. C. Joseph (Asst. Manager, P & L.), C. Cherian, Tommy Louie.

Second Row: J. Augustine, N. N. Iyer, Thomas Kurian, C. S. K. Pillai, V. O. Mathew, T. K. Radhamanie, M. K. Varughese (Secretary, Al-Ind. Recreation Club), M. Philip, P. Bhaskaran Nair.

Third Row: S. Gopala Pillai, K. Narayana Iyer, M. K. Chandrasekhara Pillai, P. Raghavan Pillai, Abraham, P. Jacob and O. C. Chacko.



- (1) Tommy Louie breasting the tape in the 220 yards race. (2) K. Govinda Pillai, winner in the Seniors race. (3) Cross-country race—the last lap. (4) Thomas Kurien and P. Rajagopalan, 1st prize winners in Slowcycle. (5) Tug-of-War—Mech. Maintenance—in action. (6) Cross Country Race—Reading from L. to R. P. Ramachandra Nair (III), M. A. Mathew (II) and N. Thomas Panicker (I).

Factory Day Sports

ON the next page, we give the names of successful participants in the various matches and tournaments of Factory Day. Several newcomers to the family have turned out to be excellent sportsmen. In fact, this year's champion is a newcomer—Tommy Louie.

To all present prize-winners, our hearty congratulations; to all potential winners, our very best wishes!

PRIZE-WINNERS

FACTORY DAY SPORTS

Games

Badminton : (Fives) :

Winners—K. R. C. Nair, O. C. Chacko, C. S. K. Pillai, M. Sreenivasan and K. Seetharaman.

Runners-up—M. Philip, P. R. C. Nair, K. R. C. Nair, P. Sukumaran Nair and K. T. Rao.

Badminton : (Doubles) :

Winners—K. Bhaskara Pillai and M. Sreenivasan.

Runners-up—O. C. Chacko and N. N. Iyer.

Badminton : (Doubles—Teams selected by lots) :

Winners—P. Bhaskaran Nair and C. Cherian.

Runners-up—K. R. Sankaranarayanan and K. T. Rao.

Badminton : (Singles) :

Winner—P. Bhaskaran Nair.

Runner-up—O. C. Chacko.

Table Tennis : (Singles) :

Winner—K. Seetharaman.

Runner-up—M. Philip.

Table Tennis : (Doubles open) :

Winners—P. Bhaskaran Nair and K. Bhaskara Pillai.

Runners-up—K. Narayana Iyer and P. Mathen.

Ring Tennis : (Singles) :

Winner—T. R. Raghunandan.

Runner-up—P. Bhaskaran Nair.

Ring Tennis : (Doubles by lots) :

Winners—M. V. John and P. A. Ibrahim.

Runners-up—V. G. G. Nayar and K. V. Lawrence.

Ring Tennis : (Open Doubles) :

Winners—C. S. Kaladharan Pillai and M. Philip.

Runners-up—O. C. Chacko and K. Bhaskara Pillai.

Caroms : (Singles) :

Winner—K. S. K. Krishnan.

Runner-up—N. N. Iyer.

Caroms : (Doubles by lot) :

Winners—K. Seetharaman and E. P. Radhakrishnan.

Runners-up—K. Narayana Iyer and V. Paramoo.

Caroms : (Open Doubles) :

Winners—O. C. Chacko and K. Bhaskaran Pillai.

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

Volley Ball : (By lots) :

Winners—C. S. K. Pillai, K. R. C. Nair, K. S. K. Krishnan, K. Narayana Iyer, K. V. Marshallly, G. Kesava Nair, K. K. Varghese and A. M. John.

Runners-up—M. V. John, P. Bhaskaran Nair, K. R. Sankaranarayanan, K. R. Balakrishna Pillai, P. R. C. Nair, P. Madhava Menon, Abraham P. Jacob, and A. V. Thomas.

Sports Events

Long Jump :

Tommy Louie—I.

V. M. Thomas—II.

High Jump :

Tommy Louie—I.

E. P. Radhakrishnan—II.

Hop, Step and Jump :

Tommy Louie—I.

G. D. Rozario—II.

Pole Vault :

K. C. Ramachandran—I.

N. N. Iyer—II.

100 Yds. Dash :

Tommy Louie—I.

N. Thomas Paniker—II.

200 Yds. Race :

N. Thomas Paniker—I.

Tommy Louie—II.

440 Yds. Race :

Thomas Muthalaly—I.

N. Thomas Paniker—II.

Shot Put :

O. C. Chacko—I.

Tommy Louie—II.

Cross-Country Race :

N. Thomas Paniker—I.

M. A. Mathew—II.

P. R. C. Nair—III.

Sack Race :

K. V. Lawrence—I.

K. G. Yatheendran—II.

Slow Cycle Race :

P. Rajagopal—I.

Thomas Kurian—II.

Three-Legged Race :

K. V. Lawrence and

V. Bhaskaran Nair.

Tug-of-War :

Winners—Mechanical Maintenance & Shipping, R. Meeran Sahib, M. Alikunju, P. Antony, P. N. Sivasankara Pillai, G. V. Nair, K. Nanoo, K. Kunju and E. Nataraja Pillai.

Runners-up—S. Damodaran, S. Ravindran, S. Bhaskaran Nair, E. P. Radhakrishnan, V. O. Mathew, P. Sukumaran Nair, N. N. Iyer and P. A. Ibrahim.

Relay Race : (400 Yards)

Winners—P. R. C. Nair, R. Gopalakrishnan, M. V. John and M. A. Mathew.

Drama :

P. A. Ibrahim, Kunjan Pillai and C. S. K. Pillai.

Running Race : (Seniors) :

Winners—K. Govinda Pillai—I.

T. A. Narayanan Nair—II.



ENTERTAINMENT

ON Factory Day, this year, Alind Juniors put on boards some scenes from the Ramayana, the connected sequence being *Sita Apakaran*.

A chariot brings Ravana, King of Lanka, and Maricha, his uncle, to Rama's abode in the forest. He had previously been primed with an eye-witness's account of Sita's matchless beauty by Surpanaka, his sister, and whose own dishonest love the two brothers had spurned. Maricha assumes the form of a golden deer and disports himself in front of the hermitage. On seeing this attractive animal, Sita insists on having it.

Sebastian, brother-in-law of M. V. John.	Lakshmana.
Aravandan, brother-in-law of V. G. G. Nayar.	Ravana.
Vijayakumari, Daughter of Chellappan Pillai.	Surpanaka.
Lala Varughese, Son of M. K. Varughese.	Hanuman.
Gopi, Son of P. N. Velu Pillai.	Vibhishanan.
Lala Thomas, Son of K. K. Thomas.	Maricha.

The deceptive deer is not, however, easily to be caught. It lures on Rama in an exhausting chase, and Rama, losing his patience, speeds an arrow at it. Maricha drops down dead crying aloud, "Oh! Sita, Oh! Lakshmana," thus making it appear that it was Rama who was in distress.

Lakshmana is persuaded much against his wishes by Sita to rush to her lord's rescue.

At this moment, Ravana disguised as an ascetic in ochre-coloured robes, comes to the hermitage. "Favour my suit," he begs. Sita places a blade of grass between herself and Ravana and reprimands him with words of withering scorn. Ravana then orders a group of Rakshasis to surround Sita and take her to Lanka. She is to be kept in solitary confinement until she relents. Ravana's order is obeyed and Sita soon finds herself in the Asoka gardens.

This is the outline of the story staged. The children enacted their various roles with an aplomb that grown-ups would often find difficult to achieve. Ganesan, son of K. R. Sankaranarayanan, Secretary, made an impressive Rama and Leela Kumari, daughter of K. Chellappan Pillai, quite an attractive Sita. All the children acted with an understanding far beyond their years.

The sets and costumes, decor and make-up were up to the usual high Alind Standard.

(1) Rama and Sita—Ganesan and Leela Kumari. (2) The complete cast. (3) Lakshmana (Sebastian), Rama and Sita.



"Akavum Puravum"

THE Factory Day play staged this year was a piece called *Akavum Puravum*—"The world within and without." A notable feature of the drama was that Director B. V. D. Menon, took time off his duties and distractions to take on a small, featured role, and what is even more important, returned a little gem of a performance.

1, 2 and 3. Some scenes from the play—"Akavum Puravum."
(4) All the Alind players with Mr. V. G. G. Nayar, General Manager.

Extraordinarily good in treatment, dialogue and direction, the play was a credit to all concerned with its presentation.

The story concerns itself largely with the doings, rather the mental conflict, of one Vikrama Pillai, an invalid who comes to Trivandrum for treatment, his charming wife

Sarojam, and Dr Divakara Menon, the doctor who treats this patient. Vikrama Pillai is assailed by doubts about the fidelity of his wife, suspects her of an affair with the doctor, is insanely jealous and is often delirious with rage. But the doctor is a gentleman to his fingertips, and in a memorable scene,

he proves to the hilt his own and Sarojam's innocence.

Woven into the fabric of this plot are the threads of a subsidiary love story provided by Sudhakaran, the doctor's assistant, and Jayanti, the doctor's niece, a high-spirited, pranks-loving, little minx.

The loose ends of the drama are all tied up neatly into the traditional Hindu matrimonial knot at play's end.

All the players showed and maintained a high level of excellence. As Divakara Menon, P. A. Ibrahim gave an outstanding performance, a quiet dignity characterising his acting throughout. He was positively superb in his role. An equally convincing portrayal came from C. S. Kaladharan Pillai as Vikraman Pillai, the invalid. His was a difficult character to render—any slight miscalculation or error of judgement on his part would have landed him dangerously near over-acting, but he showed remarkable restraint and displayed just the quantum of emotion demanded by each situation.

As Jayanti, the niece of the doctor, K. Kunjan Pillai played his part with the verve and ebullience that the role demanded. All three richly deserved the awards made to them.

N. Neelakanta Iyer, as Pachu Pillai, uncle of the love-sick swain Sudhakaran, got out of his character all the laughs that the playwright had provided. Thomas Muthalali (Kunju Sankara Pillai) was another actor to raise a laugh every time he put in an appearance. The delicate role of Sarojam was sustained ably enough by P. Sivasankaran Nair.

Congratulations to S. Damodaram, convener, for the success of the play.

Suggestion Awards

IN the two years that our Suggestion Scheme has been in operation, the company has paid about Rs. 600/- for 19 suggestions accepted, out of a total of 80 submitted.

Interest in the scheme continues to be as lively as in the first few weeks of the mooted of the Scheme. To those who have not yet availed of the opportunity of making suggestions, we have only this to say—which is, apart from the prospect of earning a cash award, participation in the Scheme helps clear the head . . . of ideas. Here is, therefore, a channel for all your wonderful brainwaves. Shakespeare certainly had our Suggestion Scheme in mind when he wrote : "There is a tide in the affairs of men, which, taken at the flood leads on to fortune." Now, scan the names of all those Alinders whose suggestions won for them a cash award in 1954-55.

(1) P. Ramachandran Nair, Stenographer, Rs. 15/-. He had a suggestion whereby irregularities in the maintenance of canteen records relating to food served to employees could be prevented.

(2) B. B. Kaimal, Raw Materials, Rs. 15/-. How better to stencil the company's name and address, cable size, etc., was his suggestion.

(3) G. V. Nayar, chargehand, Rs. 25/-. "Start a new automobile section and reap the benefits thereof."

(4) C. A. Antony, Junior Inspector. How to take and list samples from wire drawn—for better quality control in the wire drawing section.

(5) M. N. Vasudevan Nair, Chargeman, Rs. 10/-. He suggested the adoption of a cable tap trunking (busbar) system in the cable mill and machine shop. Incidentally Vasudevan Nair is a prolific producer of suggestions and this award is his sixth.

(6) P. N. Sivasankara Pillai, Mechanical Maintenance—Rs. 25/-. "Replace steel rope by aluminium tape for the crane hooks used in the loading of spools on the 7-wire Strander."

(7) N. Raghavan, Mechanical Maintenance, Rs. 15/-. "Use ball bearing steel roller in wire drawing."

(8) N. Sadasanandan, Chargeman, Mechanical Maintenance, Rs. 150/-. His suggestion was that steel shafts and bushes (Instead of safety plates) should be used on the 7-wire strander. The resultant savings would be considerable.

(9) Thomas Muthalali, Rolling Mill, Rs. 10/-. "Provide a pillar post box in our premises."

(10) N. N. Unnikrishnan, Guard, Rs. 10/-. He suggested the shifting of the guard post to a more elevated place and changing the position of the siren switch to the Time Office.

(11) P. K. Parthasarathy, Shipping, Rs. 15/-. How (better) the cards for steel scrap can be kept.

(12) G. V. Nayar, chargehand, Rs. 10/-. "Re-organise the tool crib and provide separate tool boxes for the different sections."

Efficiency Awards

GIVEN here are the names of winners of Efficiency Awards in 1954-55. As mentioned elsewhere, Mr. V. Seshasayee gave away the awards on Factory Day.

Cable Mill

11-Wire drawing :

1. N. Chellappan Pillai	... 69 lines	'A' Cup
2. G. Sreedharan	... 60 ..	'B' ..
3. G. D. Rozario	... 60 ..	'B' ..
4. M. Subrahmania Pillai	8 Records	'B' ..

36-Wire drawing :

1. G. Varugese	... 64 lines	'A' Cup
2. K. K. Thomas	... 62 ..	'B' ..

7-Wire Strander—No. 1 :

1. F. C. Mercanda	... 59 lines	'A' Cup
2. A. Shahudeen Kutty	... 59 ..	'A' ..
3. A. R. Gopalan Nair	... 58 ..	'B' ..
4. A. K. Madhavan Nair	... 58 ..	'B' ..
5. P. K. Kumaran	... 57 ..	'B' ..

7-Wire Strander—No. 2 :

D. J. Augustine	... 60 lines	'A' Cup
-----------------	--------------	---------

7-Wire Strander—No. 3 :

1. N. Narayana Pillai	... 60 lines	'A' Cup
2. M. Mohamed Haneeba	57 ..	'B' ..
3. K. N. Gopala Pillai	... 57 ..	'B' ..

Reel Shop

1. N. Stenselaves	... 5559 Points.	'A' Cup
2. K. Sreedharan Asari	... 4711 ..	'A' ..
3. P. Janardanan Asari	... 4638 ..	'B' ..
4. S. Sreedharan Asari	... 4403 ..	'B' ..
5. S. Sanku Asari	... 4390 ..	'B' ..
6. P. Kuttappan	... 4196 ..	'B' ..

Foundry

1. S. Kumaran		'A' Cup
2. N. Padmanabhan		'A' ..

Machine Shop

1. C. Yohanan		'A' Cup
2. S. N. Kumaraswami Pillai		'A' ..
3. M. J. Lopez		'B' ..



TOMMY LOUIE, Rolling Mill, is our newest ALIND champion. Tall and spare, he joined us early this year, straight from school. A native of Quilon, Tommy studied at the local St. Aloysius's English High School. In Inter-School sports, it would appear, he took a prominent part and had won several prizes. He is, also, a good football player, and a member of a well-known club in the State—the Young Challengers. Like all true sportsmen, he is extremely modest. As is only to be expected of an athlete like him, he is keenly interested in all journals devoted to sport. In particular he is very fond of *Sport and Pastime*.

Factory Day, 1955

100 metres	I
220 metres	II
Long Jump	I
Hop, Step and Jump	I
High Jump	I
Shot Put	II

our new rod rolling mill

Inauguration by Chief Minister

ON May 12, our new mill for the continuous casting and rolling of re-draw rod was formally declared open by Mr. Panampilli Govinda Menon, Chief Minister, Travancore-Cochin State. A large and distinguished gathering of officials and prominent citizens of the locality and outsiders was present. It would be labouring a truism to say that the whole colony appeared to have put on a festive air, but it must be stated at the same time that gaiety was tempered by a sense of drama. The guests knew that they were about to witness the formal opening of a significant new production facility, the only one of its kind in the whole of the Asian continent. For the first time in the country, electrolytic, conductor-grade, aluminium rods were to be produced on a mill employing a revolutionary process, so our guests would pardon us, if our glow of achievement was showing!

Before we continue with the rest of the story, we will tell you as briefly as possible what this rod mill is. As its name implies, it is a mill for rolling rods. Molten aluminium is first fed in a constant stream at an automatically controlled temperature into a rim cavity on a slowly revolving wheel. The metal solidifies as the wheel passes through a water pan, and the resulting triangular bar is rolled into a 3/8-inch diameter rod in one operation, to the later drawn into wire and finally to be stranded into cable.

We talked earlier of drama, so we can, justifiably enough, employ the familiar, flash-back technique of the screen.

The setting is a parlour in a swank hotel in Zurich. Time—One November morning in 1953. *Dramatis Personae*—An Indian Company Director and an Indian V.I.P.—in fact, a Minister from a State. As the curtain rises, so to speak, you find the two engaged in earnest conversation. The Company Director is observed to be confiding in his compatriot about an important order he was placing in Europe. And the V.I.P. nods benign approval.

The names of the "characters" can now be disclosed. The Company Director was none other than our own B. V. D. Menon, and the Minister none other than Panampilli, our chief guest for the rod rolling mill function.

Mr. "B.V.D." gave us this "beyond-the-headlines" story in the speech in which he requested Mr. Govinda Menon to declare the mill open. He spoke in chaste Malayalam without the slightest trace of any English whatever, spoke beautifully, and translated difficult phrases like "continuous casting", "rolling", etc., into such lively language as to leave many a pundit in the audience dumbfounded with wonder.

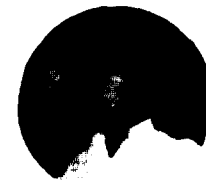
Declaring the mill open, the Chief Minister said that the big step forward which the company was taking



Mr. K. C. Chacko.



Dr. P. K. Sukumaran.



Mr. T. K. Divakaran.



Mr. N. C. Kumaran.



Mr. N. Sreekantan Nair.



Mr. Panampilli Govinda Menon,
Chief Minister.

for producing aluminium rods, an essential raw material in aluminium cable manufacture, was of historic significance.

The Chief Minister further said that the country was now embarking on a great adventure—the mammoth, Second Five-Year Plan, in which over Rs. 6,000 crores would be spent. A comprehensive plan, it would embrace many aspects of the life of the people.

Continuing, Mr. Govinda Menon observed that if as was now being increasingly realised the wider use of electricity was vital, it followed that the country should have heavy, basic industries as well as small-scale industries to utilise the power that would be produced under the country's hydro-electric schemes. For the transmission and distribution of electricity, the cables that the company was manufacturing were necessary.



Mr. K. Ramakrishnan Nair, Works Superintendent, in the centre. Him and his men credit for the speedy erection and commissioning of the Rod Mill largely goes. Others in the group are Mr. P. R. Panicker Madras Office, Mr. V. G. G. Nayar, General Manager, Mr. B. V. D. (fourth from left), Director, and Mr. N. C. Kumaran, Executive Engineer, Andhra Government Electricity Dept.

Referring to criticisms about planning, Mr. Govinda Menon said that it had now been recognised by all, including the critics, that the First Five-Year Plan was a huge success. The plan had succeeded in raising national wealth by about 15 per cent. It had solved the food and cloth problems of the country and had in several other ways benefited the nation.

Felicitatory speeches were made by a number of other guests.

Mr. K. C. Chacko, Joint Director of Industries and Commerce, said that even as Ford was responsible for the transformation of the American industrial pattern, the House of Seshasayees was transforming the pattern of life in the whole of South India, especially, Travancore-Cochin. In an area of 45 to 50 acres they were witnessing a spectacular revolution, he added. Here was a factory which was setting up

records for speedy development the matter of total output and in the introduction of new techniques.

Mr. Chacko concluded with these words: "In the years to come, I am sure that this industry would prove to be a source of inspiration to other concerns."

Dr. P. K. Sukumaran, M.L.A. who spoke next observed that because of factors like lightness, high conductivity and cheapness, aluminium was fast replacing copper. Kundara was the nerve centre of the aluminium cable industry in the country, he added. The need for developing cottage industries side by side with basic industries was also touched upon by this speaker.

Mr. N. C. Kumaran, Executive Engineer, Electrical and Mechanical, Andhra Government Electricity Department, conveyed his good wishes as a customer for the successful working of the company.



Section of the audience at the Rolling Mill inauguration ceremony.

T. K. Divakaran, R.S.P., then traced the causes of the industrial backwardness of a country. He explained how Aluminium Industries had successfully surmounted the traditional obstacles.

Mr. N. Sreekantan Nair, M.P., was yet another guest to offer his felicitations.

Employee speakers included: Miss Grace Mathews, C. A. Antony and V. O. Mathew. The last speaker in particular was in fine form and spoke about the significance of the new installation from the employee's view-point.

Mr. V. Seshasayee proposed a vote of thanks.

"Accessories" to the fact of the rod mill presentation also deserve to be recounted in this article.

The inauguration consisted in the Chief Minister pressing a switch and an illuminated flow-sheet coming into its own, on the rostrum. A decorated shamiana lent tone and atmosphere to the proceedings.

An illustrated, 8-page booklet with the title "Continuous Rod

Rolling Mill" had been prepared for distribution as a souvenir. This brochure besides containing messages from Mr. V. Seshasayee and Mr. B. V. D. Menon—the former to his "fellow-workers" and the latter to customers, gave an account of the process and introduced the people responsible for the erection and the commissioning of the mill.

A near half-page advertisement headlined, "the die was cast at dawn," (see last cover) appeared in all the three principal English dailies of Madras and several Malayalam papers in the State on May 12, the day of inauguration of the rod mill. Several papers, and among them the *Hindu*, the *Indian Express* and the *Mail*, brought out supplements. In fact, press coverage of the inauguration was all that could be hoped for.

To all our employees who willingly gave of their private time for days on end for making this function the grand success that it was, and to all the guests who responded to our invitation and the other guests who sent us messages, we would like to render through the columns of this journal our grateful thanks.

WELCOME VISITORS

TO all those off who took time for a visit to our works and offices go our grateful thanks. On the next page, we give the names and pictures of some recent visitors. Some of them were good enough to leave their "impressions" in our Visitors' Book. Here are a few excerpts:

Wrote Mr. Lahiri:

I was most agreeably surprised to find this factory doing so well at such a far away place. I also feel that the management deserve to be congratulated on the efficient manner in which they have been running it.

Mr. Cameron's impressions are at once most interesting and flattering. This is what he wrote:

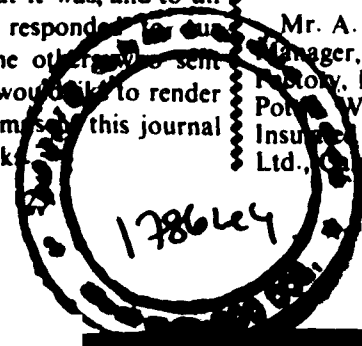
As I have followed the progress of this enterprise since it was a gleam in the promoter's eyes, it has given me the greatest of pleasure at last to have had an opportunity to visit the works. I was most impressed at what I saw—particularly in those directions which are pioneering new fabricating techniques. May ALIND continue to grow and prosper as the largest consumers and fabricators of aluminium in India.

A fine tribute, also, came from Mr. Basil James of Reynolds Aluminium.

From little aluminium acorns this big ACSR tree has grown! This example of imaginative private enterprise in India is particularly heartening to us in Reynolds who also came up the hard way. Good luck and prosperity to Mr. V.G.G. Nayar and his fine crew.

Other visitors in recent months (but whose pictures have not been available for inclusion in this issue) are:

Mr. A. V. Raghavachari, General Manager, Government Electricity Board, Bangalore and Mr. S. R. C. P. Works Manager, National Insurance Cable Company, India Ltd., Calcutta.



Welcome Visitors



(1) Mrs. Menon and Dr. E. S. R. Menon, Director of Public Health, T. C. State; (2) Mr. B. A. Lahiri (with hat in hand), Security Adviser, Railway Board with Mr. C. C. Rugson, Assistant Security Officer, Southern Railway, Madras (immediately behind him) Mrs. Lahiri (third from left) and other members of their family; (3) Dr. D. V. Karmakar, Dy. Director (Marks), Indian Standards Institution, Mr. K. N. Radhakrishnan, Executive Engineer, Rural Electrification, Madras and Mr. N. C. Kumaran, Executive Engineer, Andhra Government Electricity

Department; (4) Mr. S. N. Ramachandra Rao, Superintending Engineer, Pykara Electricity System, Coimbatore, and Mrs. Rao; (5) Mrs. Lakshmi Mazumdar, Vice-Chairman, Small Savings Scheme, Mrs. Vijaya G. Nayar and Mrs. Leela Damodara Menon; (6) Mr. S. S. Narayanan, Works Manager, Indian Aluminium Company Limited, Alupuram, Alwaye, Mr. J. W. Cameron of the Calcutta office of the same company and Mr. E. P. Howell of Northern Aluminium Limited; (7) Mr. Basil James of Reynolds Metals Company, New York.



Mr. V. Seshasayee and Mr. V. G. G. Nayar.

ALTHOUGH we might sound a wee bit like a Hollywood movie Moghul talking about his latest screen offering, the fact, nevertheless, remains that our Factory Day this year was the finest celebration ever. A two-day, carnival affair like last year, we threw in, for good measure, the ceremony of the formal opening of our new rod rolling mill.

The two days of celebrations were May 11 and May 12. The first day was devoted exclusively to the Factory Day function, and the second day to the Rod Rolling Mill inauguration.

We will deal here with the Factory Day.

Celebrations officially commenced with flag hoisting by Mr. V. Seshasayee at 8-30 a.m. Lunch was served around at 12-30 p.m. This year cooking was left in the hands of virtuosos, so all that Alinders had to do was to polish off their plates. Shortly afterwards were staged the finals of certain remaining sports items like Tug-of-war, Slow Cycle Race and Sack Race.

In the evening we had our usual "Tea" and "Group".

Mr. V. Seshasayee presiding, our meeting commenced at 6-30 p.m.

Mr. V. G. G. Nayar told the gathering that it was a completely informal affair and that employees could come forward and state frankly whatever they wished to say.

First to accept this invitation was Mr. K. Ramakrishna Pillai, Guard. He said that cordial co-operation between management and employees was the key to the success of an industrial undertaking, and that such co-operation was responsible for their own success.

FIFTH FACTORY DAY

Mr. S. Ravindran, Accounts, the next speaker, said that the progress of a nation largely depended upon the efforts put in by its industrial workers.

Mr. C. A. Antony, Junior Inspector who followed this speaker, said that employees should never fight shy of fighting for their rights and for the redressal of their grievances.

Mr. T. K. Krishnan, Assistant Accountant, Costing, observed that industrial progress was hardly possible without co-operation between labour and management and that Alind employees were fortunate in having a wise, sympathetic and enlightened management.

Mr. Vasudevan suggested that promotions should be given to existing hands instead of recruitment being made from outside.

A revision of pay scales was suggested by Mr. M. P. Mammen, the next speaker.

Miss Grace Mathews, Stenographer, said that the watchword of employees should be the progress of the industry in which they served and which gave them their daily bread.

Mr. P. K. Parthasarathy, Shipping, then read out a poem that he had composed for the occasion.

Winding up the proceedings, Mr. Seshasayee said that he was very happy to note the friendly relation that existed at present between workers and employers in the industry. The essential thing, however, was that employees should realise that co-operation between them and management was a continuous process (something like our new rod rolling mill!) and that any interruption in the process would spell grief for the parties concerned, to the industry and the nation.

Mr. B. V. D. Menon, Director, observed that differences between management and employees could be settled by mutual consultations. He added that a meeting like the one that had been arranged that day, a meeting where workers could meet management and air their views was something novel, something unique, in the annals of any

industry. This step if it meant nothing else, Mr. Menon said, demonstrated the anxiety of the management to ascertain the employee slant on the company.

Mr. Seshasayee then gave away the Efficiency Awards to workers.



K. Ramakrishna Pillai.



S. Ravindran.



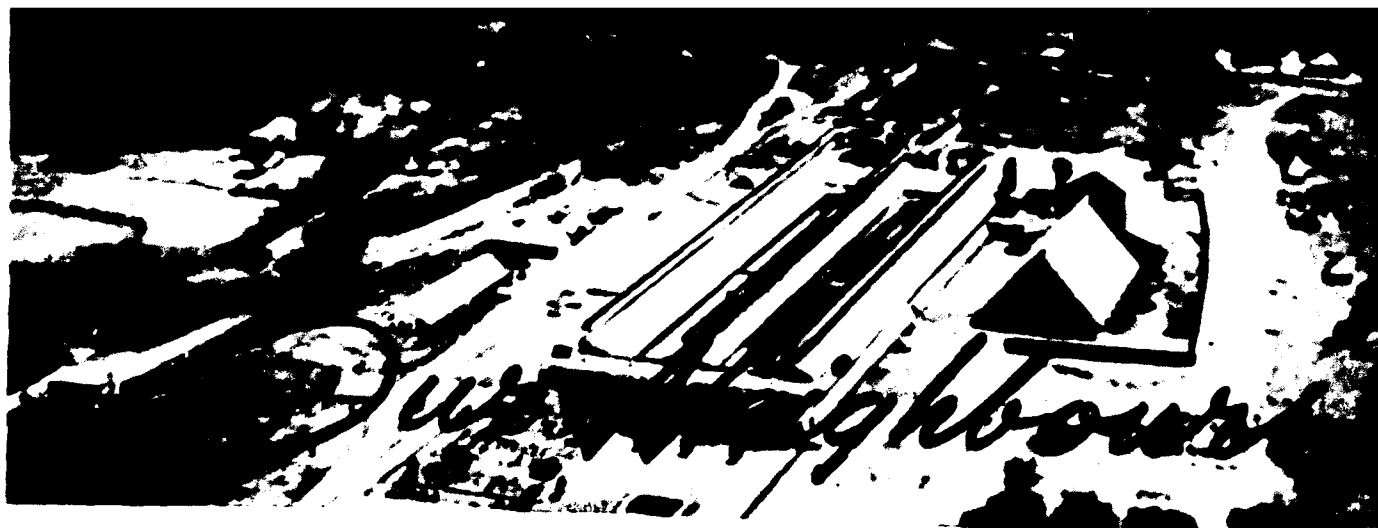
M. P. Mammen.



Miss Grace Mathews.



Vasudevan.



THE INDIAN ALUMINIUM COMPANY LIMITED, ALWAYE

IT is only in the fitness of things that in an issue dedicated to the commissioning of our new rod rolling mill, we present (really misrepresent!) as our good neighbours the Indian Aluminium Company Limited, Alwaye. Like Tiperrary in the old song, it is really "a long, long way" to Alwaye, but we are within an ingot's throw of Indian Aluminium—that is if they would care to cast the ingots into the *ralloms* or barges bound for Kundara! The physical gulf between us and our neighbours is bridged to an extent by the river Periyar, the State canal system and the Lake Ashtamudi, that sprawling expanse of water on whose scenic shores stands our own plant. The appositeness of a consideration of the activities of the Indian Aluminium Company in this issue is established in this manner—namely, that the raw material requirements of our rod mill—conductor-grade ingots—will be met by the Alwaye reduction works—to the extent that its capacity permits.

RAMIFIED BUSINESS

The Indian Aluminium Company Limited (formerly known as the Aluminium Production Company of India) is connected with the world famous "Aluminium Limited" of Montreal, which owns 70 per cent of the two-crore-rupee subs-

cribed capital of the company. The interests of this company consist of mining of bauxite in the Lohardaga region of Bihar, the processing of the bauxite ore to alumina at the Alumina plant at Muri, Bihar, the electrolytic reduction of alumina to aluminium metal at Alupuram, Alwaye, Travancore-Cochin State, the rolling of aluminium metals to sheets and circles at Belur, West Bengal, and the manufacture of aluminium powder and paste at Kalwa, Bombay. The company commenced its operations in 1941 with the fabrication of imported aluminium ingots to sheets and circles at Belur. In 1943, production of aluminium from imported alumina was started at Alupuram. Production of alumina from indigenous bauxite was started in 1948 at Muri.

REDUCTION PLANT

First, we will give the Alwaye reduction works, the familiar, once-over; the proper sequence will be Bagru (where bauxite is mined) then Muri (where this bauxite is converted into alumina) and lastly Alupuram (where this alumina is turned into ingots) but Alwaye gets top-billing in our consideration by reason of its neighbourhood.

At Alupuram, four miles from Alwaye and eighteen miles from

Cochin, the smelter or the reduction plant of the company is located. The plant was constructed for a rated capacity of 2,500 tons of metal per annum with easy expansion up to 5,000 tons per annum upon availability of power. Mainly due to seasonal power shortages, the full-rated capacity of the plant was not realised. In June 1954, the expansion of capacity to 5,000 tons per annum was completed, but due to power shortages the plant could not—until early this year—be operated to capacity.

The works consist of four rooms containing a total of 96 pots or reduction cells, designed to operate at 25,000 amperes. Each cell consists of a steel box lined with carbon which serves as a cathode and also holds the "bath". Dipping into the bath is the single Soderberg electrode which serves as the anode. The bath is chiefly cryolite, $3\text{NaF} \cdot \text{AlF}_3$ in which the alumina (received from the company's works at Muri) is dissolved. The cells are connected in electrical series and power is supplied to each cell at 5 to 6 volts, the DC power being derived from mercury-arc rectifiers.

To start the cell in operation, the anode is lowered until it touches the carbon bottom of the bath and powdered cryolite is packed around

it. When the current is switched on, sufficient heat is generated to melt the cryolite and the anode is gradually raised, more cryolite being added until the cell is filled to the correct height. Calcined alumina is then introduced and dissolved in the cryolite. Vigorous electrolytic action takes place, aluminium being deposited at the bottom of the cell. Alumina and fresh Soderberg paste are added intermittently and the metal is tapped out every third day. The metal so collected is charged to a holding furnace and finally cast into ingots or rolling slabs.

A Soderberg paste plant manufactures the paste from petroleum coke and soft pitch and also prepares the carbon paste required for lining the cells.

BAUXITE

Now let us get back to consider the first two activities of the company—bauxite mining and alumina making. Indian Aluminium holds in the district of Ranchi, Bihar, five mining leases comprising in all an estimated reserve of 6.4 million tons of bauxite. On the hill-top of Bagru, six miles from the Lohardaga Railway Station, and a little over 300 miles from Calcutta, the company has its offices and works. Bauxite is mined by open quarrying. This, in brief, consists of stripping the earth which is usually three feet deep, then stripping the overburden and laterite. Below this overburden, bauxite is generally found in the ore body in an almost homogeneous solid mass roughly 20 feet deep. Normally, about two tons of overburden will have to be removed for every single ton of bauxite. Mining consists of drilling holes of 1.5 in. dia. and 1 to 20 feet depth as required, and blasting. An aerial ropeway from Bagru unloads the bauxite at Lohardaga where arrangements exist for direct loading from the ropeway to rail wagons.

Production is controlled chiefly by the alumina plant's consumption. The consumption of raw bauxite per ton of alumina is 2.5 tons and at Muri's rated capacity of 10,000 tons per annum, bauxite production will be of the order of 25,000 tons per year.

ALUMINA

The company's alumina plant is located at Muri Junction 235 miles by road from Calcutta and 40 miles from Ranchi. It has its own thermal station which meets all its requirements of steam and power. Although it is constructed for a rated capacity of 10,000 tons of alumina per year, with easy expansion up to 40,000 tons, till recently the maximum capacity utilised did not exceed 5,000 tons alumina per year, so as to correspond to the smelter capacity of 2,500 tons of metal at Alwaye. (We learn that the alumina plant is now however being run to its full 10,000 tons capacity.)

The plant uses the Bayer process which consists of crushing the bauxite to half inch size, grinding to 90 to 100 mesh in a ball mill, digesting with a liquor of 400-500 g/l NaOH as $\text{Na}_2\text{O} \cdot 3\text{H}_2\text{O}$ at 180 deg.C. thus precipitating impurities like silica, iron, titania, etc. The residue is separated by filtration. The clear liquor is mixed with a freshly prepared slurry of alumina hydrate and the mixed slurry is agitated for 50 hours till alumina hydrate is precipitated. The hydrate is separated, the liquor being returned after evaporation to original concentration for further digestion. The hydrate is washed to remove excess caustic and then calcined, using oil as fuel, in a rotary kiln, and finally bagged for transport to the smelter.



The cell room.

SHEET ROLLING

Indian Aluminium has also a modern fabricating plant and rolling mill at Belur, on the outskirts of Calcutta, which converts ingot into sheet commodities for the metal working trades. In 1945, the plant added the equipment necessary for the production of strong alloy sheets. A flash annealer was added in 1949 increasing the annual plant capacity to 4,200 tons of sheets and circles. A further expansion raising the capacity to 7,000 tons per annum on common alloy products was undertaken and completed in August 1954.

It was in 1954, again, that the plant successfully produced aircraft sheets.

POWDER AND PASTE

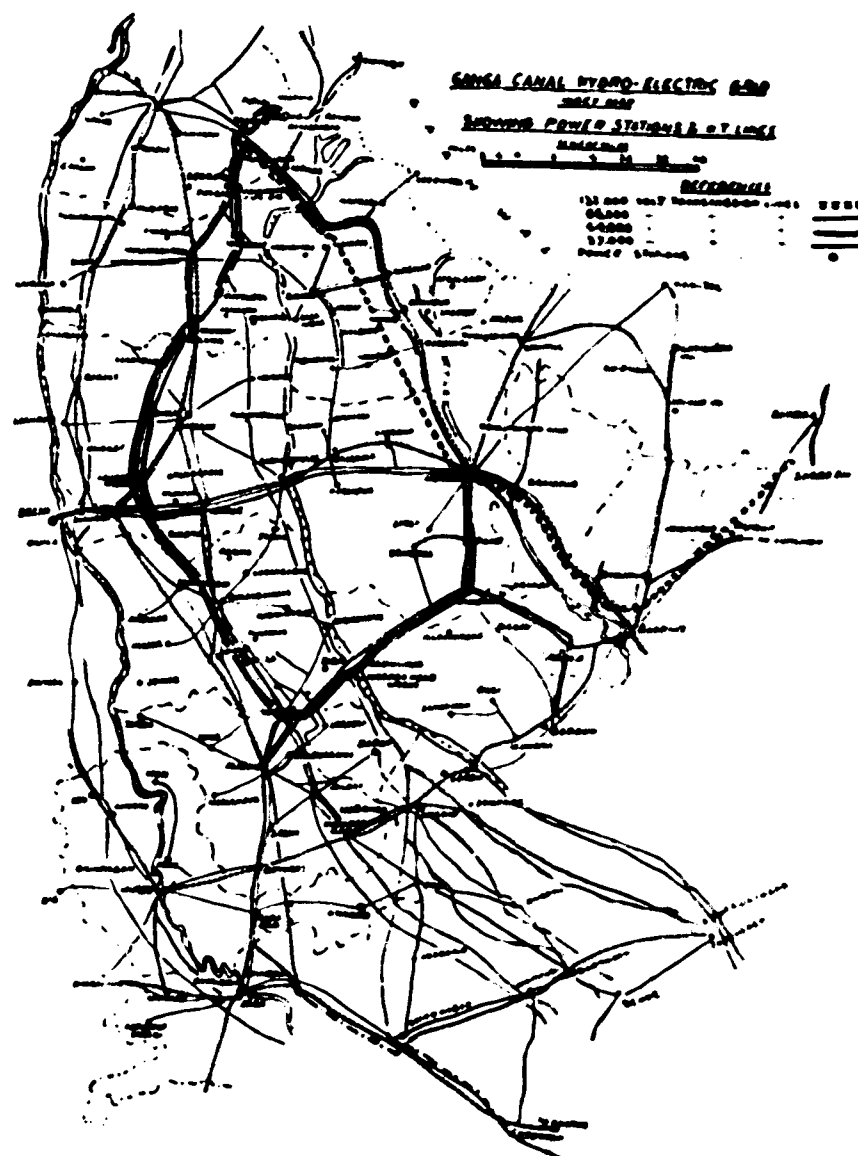
The Indian Aluminium Company's "Alpaste" plant located at Kalwa, 26 miles from Bombay, also, deserves to be noted in this article. Production in this plant started in December 1951. Designed to produce 300 tons of paste and 300 tons of powder per annum (in addition to the quantity required for paste making) the paste plant is being operated, at present, at 200 tons capacity. The plant employs the process known as the "Hall Process" whereby aluminium paste is manufactured in two stages. First, powder is produced and then paste is prepared from it.

The grades marketed to-day are standard leafing paste, fine lining paste suitable for ink manufacture and non-leafing paste suitable for polychromatic finishes or for composite primers for metal and wood.

The plant has plans for the production of 500 tons of aluminium paste from this year onwards—enough quantity to take care of all the requirements of the country's paint and other industries.

Indian Aluminium is a company to whom we are bound not merely by ties of contiguity; to them, also, aluminium is meat and drink, their staff of life. Here's, therefore, wishing our neighbours all success.

Before considering the Department, let us first take a look at the



GOVT. ELECTRICITY DEPT., UTTAR PRADESH

State itself. Uttar Pradesh, first known as the North-Western Province, later re-christened as the United Provinces of Agra and Oudh and still later abbreviated merely to United Provinces, and called for short "U.P." consists of four distinct geographical regions with an aggregate area of 1,13,409 square miles, and a population of 63 million. In the north, there is the Himalayan belt and further down there is the region known as the Tarai or Bhab-

har. And then you have the fertile Gangetic Plain with important towns like Lucknow and Kanpur, pilgrim centres like Allahabad and Banaras, and places hallowed by legend and history like Mathura and Agra. In the south, you get the trans-Yamuna tract.

Lucknow, the capital of Uttar Pradesh, is a town, at once gay and sophisticated and full of an old world charm.

Hazaratganj, the main shopping centre, is like Calcutta's Chowringhee or Delhi's Connaught Circus, but then there is the Chowk which is typical oriental bazaar with its glittering array of gold and silver shops.

Electricity Development—Early history

Now to turn to the Government Electricity Department of Uttar Pradesh. The story of development



Mr. N. N. Chakravarti,
Chief Engineer.

in the State is a story of steady progress in the face of overwhelming odds, and dates as far back as to the early years of the present century. As in most other parts of the country, in this State, too, both generation and supply started under private auspices. In fact, not until 1928, did the State begin to show any interest in electricity development, but it is interesting to note that even as far back as this year the State started taking the benefits of electric supply to rural areas.

The many rivers in the flat Gangetic plain do not unfortunately afford falls suitable for generation of water power, but with a rare foresight and imagination, the early architects of electricity development realised the possibilities of utilising the large

number of canals in the State for the generation of hydro-power. And from amongst the three main canal systems in the State, the Ganga, the Yamuna and the Sarda, twelve falls were selected on the first system ranging from eight to about sixteen feet for water power generation, and as many as seven small power stations ranging from 600 to 5,000 kW were constructed in stages to form a Grid on the Ganga Canal to serve the fourteen western districts

of the State. A feature of these power stations was that they were built over the existing canals right across the canal, instead of on separate foundations on by-pass channels.

The power generated in the Grid was taken up mostly for irrigation by electrical pumping from rivers and tubewells and hundreds of the latter sprang up in the command of the Ganga Grid following the advent of electricity in the area. The other two canal systems were left over for later development.

During the years of World War II, the pace of development slowed down somewhat, but after the transfer of power in 1947, Government began to direct its attention to the development of the central and eastern districts. The construction of the Khatima Power Station with an installed capacity of 41,400 kW (comprising three units of 13,800 kW each) was the result of interest in the development of the central district. This station has now been completed and commissioned.

The Rihand Dam Scheme (whose targetted date of completion is 1970) has been taken up to cater to the electrical needs of the eastern districts. The installed capacity of the Power Station will be of the order of 2,40,000 kW.

The growing demand for more power in the State has naturally resulted in further projects taking shape. Among them, the more important ones are : (1) The Sarda Canal Hydro-electric Project which utilises a number of existing low falls on the Sarda Canal for the generation of 41,000 kW of electricity;

(2) The Yamuna Hydro-electric Scheme with two Power stations



Mr. G. S. Mathur,
Dy. Chief Engineer.

which will each generate 22,560 kW of electricity throughout the year and 28,360 kW seasonally during May–October in the first stage and 87,700 kW in the second stage ;

(3) The Nayar River Project which aims at hydro-electric generation of the order of 2,32,000 kW ;

(4) The Ramaganga River Project providing for the generation of 65,000 kW.

In addition to the hydro-electric schemes mentioned, the State owns two independent steam stations at Sohwal near Faizabad and at Kanpur with installed capacities of 45,000 and 64,500 kW respectively, and two oil engine stations at Gorakhpur and Azamgarh of respectively about 2,000 kW and 189 kW.

The Ganga Grid

Space considerations forbid us from dealing with all the schemes in as detailed a manner as we would like to, but certain recent developments have to be noted. As part of the plan to double the installed capacity of the Ganga Grid which was of the order of 37,900 kW., the construction was taken up of two more water-power stations—one at Mohammedpur (9,300 kW) and the

other at Pathri (16,000 kW) and the installation of additional boiler capacity of 10,000 kW at Harduaganj steam station. In the early stages of construction of the Mohammedpur hydel station, considerable hardship had to be undergone, as consequent on the partition of the country, plant and equipment that had originally been unloaded at Karachi could only, with great difficulty and loss of much valuable time, be transported back to India. This station was put into commission in 1952.

Transmission Lines

With the additions made to the generating capacity of the Grid, it was also necessary to increase suitably the transmission capacity. A three-stage programme of transmission extensions was accordingly drawn up :—

As stage I of the extension, a 66-kV double circuit line on single towers was constructed from Mohammedpur to Salawa, a distance of 36.5 miles. This transmission line inter-connected Mohammedpur, Nirgajni and Chitaura and Salawa Power stations to the grid on 66-kV.

A similar 66-kV double circuit line 84 miles in length was constructed from Lumera to Chandausi and thence to Moradabad. Extensions to 66-kV outdoor substations at Nirgajni, Chitaura, Salawa, Sumera and Chandausi Power Stations also form part of Ganga Transmission Extensions, Stage I.

Most of the work under this project has been completed and the

remaining works will be completed within a year.

When the First Five-Year Plan was formulated by the Government of India, all the projects mentioned above as well as the following further projects had been included.

(i) Construction of a 20,400 kW hydel power station at Pathri.

(ii) Ganga Grid transmission extensions—Stages II and III.

(iii) Harduaganj Power Station extensions.

The Pathri Power Station will incidentally be the largest on the Ganga Grid with its installed generating capacity of 20,400 kW. Three sets of 6,800 kW each have been installed.

Ancillary major works to be carried out (and are on hand or in progress) under the Pathri Project are :

(a) Construction of a 66 kV—double circuit line from Pathri to Mohammedpur—24.5 miles.

(b) Construction of a 132-kV double circuit line from Roorkee to Moradabad—92 miles.

(c) Construction of 132/66 37.5/11 kV substations at Roorkee and Moradabad.

(d) Construction of a 37.5 kV single circuit line from Bhagwara to Moradabad.

(e) Extensions to Aligarh Distribution centre.

(f) Installation of carrier communication system in the Grid.

Harduaganj Power Station Extensions

Additional boilers have been installed at this power station to increase its generating capacity by 7,000 kW. Extension to the outdoor substation has also been carried out and three new 7,500 kVA transformers have been installed replacing the one transformer of 5,000 kVA. This power station will now be able to generate and transmit to its full capacity of 85,000 kW.

Other construction jobs of importance either already executed or in progress are :—

(a) **Muradnagar Substation Extension.** (A new 12,000 kVA-transformer, the biggest so far installed in the Ganga Grid, was commissioned in December 1954).

(b) Installation of additional boiler at Rampur Power Station (Capacity increased by 1,000 kW).

(c) Construction of a 66-kV single circuit line from Harduaganj to Aligarh Distribution Centre (Completed and energised)

(d) Construction of a 37.5-kV line from Aligarh Distribution centre to Mathura (34 miles in length—work completed).

(e) Work on electrification of 600 State tube-wells. (Completed).

(ii) Work on electrification of 100 State tube-wells out of the project of 440 State tube-wells in Saharanpur district. (In progress and expected to be completed shortly).

(f) Construction of a 37.5-kV line from Pathri to Hardwar (Completed).

Future Schemes

Major works proposed to be taken up during the year are :

(i) Construction of a 66-kV single circuit line 85 miles long from Aligarh to Shikohabad via Khanduali with 66-kV substation at Khanduali and Shikohabad.

(ii) Construction of a single circuit 44-kV line from Chandausi to Budaun.

(iii) Construction of a single circuit 37.5-kV line from Roorkee to Saharanpur.

Development outside the Ganga Grid

Important projects that have been taken up in other parts of the State are :—

(i) Manipuri Thermal Power Station. (Installed capacity 10,000 kW) under construction.

(ii) Sarda Service Area : In order to provide electrical facilities in the central districts, the following schemes were included in the First Five-Year Plan.

(1) Khatima Hydel Power Station, a reference to which has been made earlier in this article.

(2) Sarda Transmission lines and substations. A total of 829 route miles 132-kV—212 miles, 66-kV—381 miles and 37.5 kV—86 miles and 11 kV—150 miles and the construction of 15 substations (completed) are involved. One of

the biggest substations constructed is the one at Dohna in Bareilly.

Sohwal Steam Power Station Extension

The Sohwal Steam Station was constructed with an initial installed capacity of 2,500 kW. To increase the usefulness of the station and in order to meet new demands the following works were undertaken (and completed) during the First Five-Year Plan :—

(i) Installation of two additional steam generating sets of 1,000 kW each.

(ii) Improvement of the cooling system.

(iii) Duplication of the existing 9 miles of 11-kV line from Sohwal to Faizabad.

(iv) Increasing transformer capacities from two 500 kVA to two 1,250 kVA.

Gorakhpur Pilot Electrification Schemes

Under this scheme, a diesel power station has been installed for the electrification of 100 State tube-wells in the districts of Basti, Gorakhpur and Deoria and also for supplying energy to the towns of Basti, Deoria, Khalilabad and Chauri-Chaura. (Work completed).

Eastern Area Power Stations Project

The remarkable contribution of electricity to the system of lift irrigation in the western districts prompted the State to pursue a

similar programme in the eastern districts as well. A project was, therefore, framed and included in the First Five-year Plan for the energization of 1,447 tube-wells and 14 river pumping stations in the districts of Gorakhpur, Deoria, Basti, Azamgarh, Ghazipur, Ballia, Faizabad, Sultanpur and Jaunpur. The original installed capacity proposed for the Project was 27,500 kW, but due to increased demand for irrigation facilities, final capacities of the three-power stations under the Project (Mau, Gorakhpur and Sohwal) have been amended to a total of 45,000 kW.

Small Hydel Schemes in Hill Districts

A scheme for the construction of small hydel power stations in the districts of Garhwal and Almora has also been launched.

Uttar Pradesh “has kept steadfastly in view the goal of expansion of power,” as the Chief Minister says in a message to the Silver Jubilee Souvenir of the Ganga Hydro-Electric Grid, “and its efforts have been ably supported by the technical skill, patriotic zeal and unremitting toil of its engineers.”

The Editor wishes to acknowledge his debt in the preparation of this article to all the published literature of the Department. In particular, he would like to express his grateful thanks to Shri R. B. Lall, Personal Assistant to the Chief Engineer, who gave him all possible help during his visit to Lucknow, headquarters of the U.P. State Electricity Department.



Mr. V. Seshasayee with members of the Girls' Camp at
Factory Day flag-hoisting.

Bharat Sevak Samaj

GIRLS' CAMP IN KUNDARA

UNDER the auspices of the Bharat Sevak Samaj, Travancore-Cochin State, a Girls' Camp was held in Kundara for a period of three weeks during the month of May 1955. The venue was the premises of the M.G.D. High School. In all, seventy girls and young women participated in the camp. Credit for the successful organisation of the camp largely goes to Mrs. Vijaya G. Nayar, Chairman of the Social Welfare Project, Quilon, and Miss Annamma Kurien, B.A., L.T., Chief Camp Officer. An interesting and varied programme of activity was gone through. Among the subjects includ-

ed for study-class and discussions were (1) Sanitation, (2) Co-operatives, (3) Cottage Industries, (4) The Five-Year Plan, and (5) Civics and Citizenship.

Among those who visited the Kundara camp and/or addressed the campers were: (1) Mr. K. C. Chacko, Joint Director of Industries and Commerce, Small-scale (2) Mr. V. Seshasayee, Managing Director, Seshasayee Brothers Limited (3) Mr. B. V. D. Menon, Director, Aluminium Industries Limited (4) Mr. K. R. Elankathu, President, Bharat Sevak Samaj State Board and (5) Mr. V. G. G. Nayar, General Manager,

Aluminium Industries, Limited, Kundara.

Holding of Students' and youth camps is a very important plank in the programme of the Bharat Sevak Samaj. The Kundara camp, besides inculcating the spirit of service and dignity of labour in the girls and young women who participated in it also proved to be of great educative value to certain sections of the local population who realised the vast possibilities of what could really be achieved through self-help and co-operative effort for the improvement of their locality and the development of their personality.

A "group" of the members of the Camp.
Fourth from left is Mrs. Vijaya G. Nayar, Chairman of the Social Welfare Project.



Telegrams : ADAPTABLE

Messrs. N. S. KRISHNAMURTHI

EXPORTERS, IMPORTERS & ELECTRICAL ENGINEERS

56-A, GARCHA ROAD, CALCUTTA-19

Sole Agents for :

Messrs. ELECTRIC TAMPER & EQUIPMENT CO. OF CANADA LTD.,
MONTREAL.

Manufacturers of Tampers, Vibrators, Power units, D. C. Motors & Generators, A. C. Motors & Alternators, Gearhead Motors, Welding Generators, Converters, Dynamotors, Plating Generators, Transformers, Fluorescent Ballasts, Wind Chargers, Etc.

Messrs. DENIS FERRANTI METERS LTD., BANGOR, NORTH-WALES,
ENGLAND.

Manufacturers of Electricity Meters A. C. Single Phase and Polyphase
Meters.

Messrs. DENIS FERRANTI COMPANY LTD., ROYTON, OLDHAM,
LANCASHIRE, ENGLAND.

Manufacturers of Distribution Transformers, Power Transformers
upto 10MVA—110KV on the H. T. Side.

★ *Government Contractors registered with D. G. & S. in the list of approved firms.*

★ *Established Importers of Steel Material, registered with Iron & Steel
Controller.*

★ *Suppliers of High Tensile Galvanised Steel Wires for manufacture of
A. C. S. R. representing*

Messrs. ANDREW WEIR & CO. (JAPAN) LTD., and their Principals,
Messrs. KOKOKU IRON & STEEL WIRE MANUFACTURING COMPANY,
JAPAN.

★ *Suppliers of Paper Insulated Underground Power Cables to the various
Government and Corporation authorities.*



CAUSTIC SODA

LIQUID CHLORINE

BLEACHING POWDER

SLAKED LIME

HYDROCHLORIC ACID

FERRIC CHLORIDE

BURNT LIME

CALCIUM CHLORIDE

'CAUVERY BRAND' Chemicals are always dependable, always consistent in quality. If you are in a business which uses chemicals, it will be to your advantage to consult us.

THE METTUR CHEMICAL & INDUSTRIAL CORPORATION LTD.

METTUR DAM, ROSSLYN, SALEM, INDIA

Managing Agents: SESHASAYEE BROTHERS LTD.



INDIAN TRADE & GENERAL INSURANCE COMPANY LTD.

P. O.: Jehangir Bldg., 133, Mahatma Gandhi Road,
BOMBAY

for

ALL CLASSES OF INSURANCE
(except life)

★

COCHIN BRANCH:

4/156, New Road, MATTANCHERRY
Phone: 769

★

BRANCH & AGENCIES:

INDIA, PAKISTAN, E. AFRICA, MAURITIUS,
ADEN & MALAYA

★

ALSO MANAGED BY

ENGLISH & AMERICAN



INDUSTRIAL PLANTS AND ACCESSORIES

DIE CASTINGS

DIE CASTINGS, SAND CASTINGS AND FABRICATION
IN ALUMINIUM & ITS ALLOYS ALSO OTHER
NON-FERROUS METALS & THEIR ALLOYS
FOR
ALL INDUSTRIAL PURPOSES.

INDUSTRIAL FANS

CENTRIFUGAL, PROPELLER OR AXIAL FLOW
FOR
ALL USES AND IN ANY SIZE.

INDUSTRIAL FURNACES

OIL, GAS OR SOLID FUEL FIRED
FOR
HEAT TREATMENT & NON-FERROUS MELTING.

ELEVATORS & CONVEYORS

ALL TYPES & SIZES
FOR
ANY MATERIAL AND TO SITE NEEDS.

KEYMER, BAGSHAW & CO., (I) LTD.

22, STRAND ROAD,

Cables
"KEYMERCO"

P. B. No. 399,
CALCUTTA - I.

Phone
22-4355 6

AGENTS FOR TRAVANCORE - COCHIN :

VERGISOONS & CO., KOTTATHUR, KOZHANCHERI.



TRAVANCORE CEMENTS LTD.

Manufacturers of

VEMBANAD BRAND PORTLAND CEMENT

Reg. Office : Nattakam,
& Factory : Kottayam

Telegrams : "Travocement"
Telephone : Kottayam 511.

Cables: WISDOM—COCHIN

Phone: COCHIN—325

SOUTH INDIA CORPORATION LIMITED

(INCORPORATED IN PUDUKOTTAI, S. INDIA)

WORKSHOP DEPARTMENT

COCHIN-5.



Specialists in the manufacture of:

Overhead Materials, Estate and Factory requisites,
Trusses & Purlins, Mechanical and Civil Engineering,
Galvanizing, Oxy-Acetylene and Electric Welding, Etc., Etc.

Importers and stockists of:

Asbestos Cement Products
Acids and Chemicals
Timber Logs and Sizes
Stoneware Pipes & Specials
Mosaic Cement Tiles

Sanitaryware & Fittings
Electrical Goods
Hardware and Sundries
Terracotta Tiles & Bricks
Cair & Cair Products

Also

Distributors of Mercury Paints & Varnishes.

ENQUIRIES SOLICITED.

We also undertake Clearing, Forwarding & Shipping.

A FULLY-EQUIPPED WORKSHOP IS AT YOUR SERVICE.

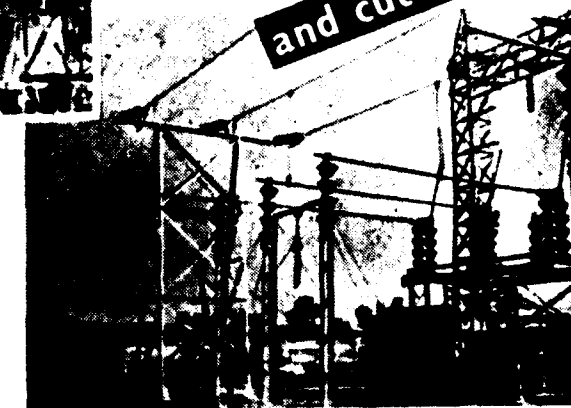
specify ALUMINIUM



Tubular Aluminium Busbar in Demodar Valley Corporation's 132 KV Kalipahari Substation

for your
BUS CONDUCTOR
requirements

and cut COSTS!



ALUMINIUM gives you these important ADVANTAGES

- 1 Low initial cost.
- 2 Fast and easy erection is possible with Aluminium because of its light weight and the facility with which it can be bent, shaped, drilled and sawn.
- 3 Welded Aluminium Bus Conductor in large installations eliminates bolted connections, provides a neat appearance and cuts maintenance.
- 4 Aluminium's light weight coupled with its strength provides additional savings since fewer supports are required.

LET ALUMINIUM SERVE YOU

Aluminium Bus Conductor is available in three sections:-
RECTANGULAR - TUBULAR - CHANNEL



ALUMINIUM UNION LIMITED

(Incorporated in Canada)

41, Chowringhee Road, Calcutta 16

AUX-34(1)

H.O. QUILON
Phone 378

ESTABLISHED
1886 A.D.

Press & Depot Brs.
Alleppey & Ernakulam

S. T. REDDIAR & SONS

V. V. PRESS, QUILON.

PRINTERS, PUBLISHERS, BOOKSELLERS, TYPE
FOUNDERS, STATIONERS & PAPER MERCHANTS

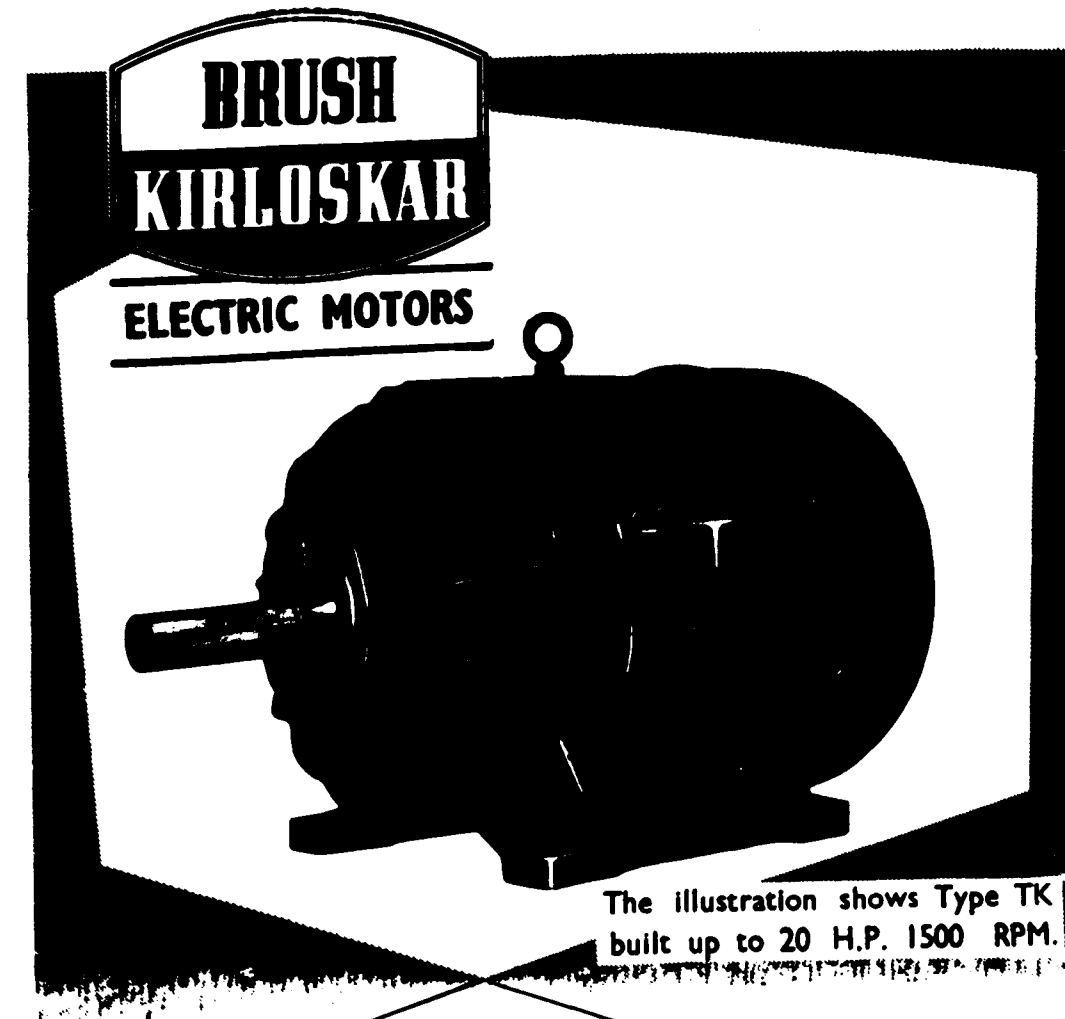
PRINTING IN ENGLISH, HINDI,
SANSKRIT, MALAYALAM AND
TAMIL

The only Long-standing Printing and Publishing
House and the Biggest Store-house of Malayalam
Books & Literature in Kerala.

PLEASE REMEMBER THAT THE YEAR 1955
COMPLETES FOR US **69** YEARS OF PROUD
SERVICE TO THE CAUSE OF PRINTING &
PUBLISHING.

FOR QUALITY PRINTING YOU CAN DEPEND ON US.

KERALA is known for its enchanting views of panoramic beauty
and S. T. R. & SONS known for their QUALITY PRINTING.



The illustration shows Type TK
built up to 20 H.P. 1500 RPM.

MOTORS up to 350 H.P.

Motors in type TK shown above are unexcelled for tough
service in danger, dusty or dirty installations such as
foundries, quarries, cement, paper, steel or flour mills.

After-sales service a speciality.

Manufactured by:

KIRLOSKAR  ELECTRIC

KIRLOSKAR ELECTRIC COMPANY LIMITED, BANGALORE-3.

SOLE AGENTS	PARTY & CO. LIMITED	MADRAS P. O. Box No. 12
		BOMBAY P. O. Box No. 506
		CALCUTTA P. O. Box No. 300
		NEW DELHI P. O. Box No. 172

GRANT

Service with Security

Throughout its career of over 36 years, the "JUPITER GENERAL" has always held and continues to hold a front rank position in the Insurance World. By insuring with the "JUPITER GENERAL" you ensure SAFETY, SECURITY and SERVICE.

ALL KINDS OF
LIFE & GENERAL INSURANCE BUSINESS TRANSACTED

Total Assets over Rs. 3,50,00,000

THE JUPITER GENERAL INSURANCE CO., LTD.

Head Office: BANK STREET, FORT, BOMBAY-1.

Administrator: Dewan Bahadur R. VARADACHARI.

Branches and Agencies throughout India and in Pakistan,
Burma, Ceylon, Aden and Africa.



Principal Office in S. India:

"JUPITER HOUSE"

No. 167, BROADWAY, MADRAS.

Branch Manager: R. RANGANATHAN

'Phone: 2547

For Supplies of

ALUMINIUM CONDUCTOR
(STEEL-CORED AND PLAIN)

ALUMINIUM & ALUMINIUM ALLOY

WIRE & ROD

ALUMINIUM BUSBARS

TRANSMISSION LINE FITTINGS

AND

ACCESSORIES

as well as all forms of

ALUMINIUM & ITS ALLOYS

CONSULT:

ALUMINIUM HINDUSTAN LIMITED

Bank of Baroda Bldg.,

Apollo Street,
BOMBAY.

2, Jessore Road,
Dum Dum,
CALCUTTA-28.



AGENTS FOR:

THE ALUMINIUM WIRE AND CABLE CO., LTD.,
SWANSEA.

THE BRITISH ALUMINIUM CO., LTD.,
LONDON.

Importing House of Repute

Specializing in:—

Foreign Liquors & Denatured Spirit,
Cigarettes, Cigars & Smokers'
Requisites,

Toilets, Pharmaceutical Preparations
& Tin Provisions,

Batteries for Radios, Flashlights &
Motor Vehicles,

Bakers' & Confectioners' Require-
ments,

Everything for Soda Factories,

Typewriters & Office Equipment,

Paper, Printing Inks & All Sundries
for Printing Houses,

Paints, Varnishes, Enamels, Dis-
tempers & Oils.

Open to Entertain

Agencies

In Goods Not Represented.

An Expert and Highly Trained Staff of
Many Years' Experience is
At Your Service.



VALAVI & COMPANY

ESTABLISHED 1899

IMPORT—EXPORT MERCHANTS

&

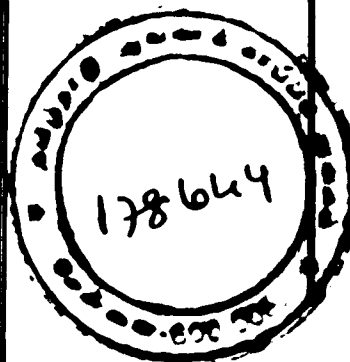
MANUFACTURERS' REPRESENTATIVES

KOTTAYAM (S. India).

COLOUR SCHEMES

AND

MODERN HOUSE DECORATIONS



CONSULT:

CHANDRA DECORATIONS

LAKSHMI VILAS,

TRIPUNITHURA,

T.-C. STATE.

CHARLES G. GORTON, A.I.R.I.

PURCHASING AGENT

(Formerly Hinduk Trading Co., Ltd.)

82, ST. SAVIOUR'S ROAD, CROYDON, SURREY.

Telephone: THOrnton Heath 4938.

Telegraphic Address: CHASGEE, CROYDON.

WE BUY FOR INDIAN CLIENTS IN EUROPEAN MARKETS, RECEIVE OUR COMMISSION FROM THEM AND ARE VIRTUALLY THEIR OWN LONDON OFFICE. OBTAIN COMPETITIVE QUOTATIONS. REPORT PROGRESS ON ORDERS PLACED. PAY SUPPLIERS AND ARRANGE SHIPMENT AND INSURANCE FOR OUR CLIENTS

We are proud and

privileged to number among our clients

The Aluminium Industries Ltd., Kundara, T.-C. State.

May we have the pleasure of serving you also?

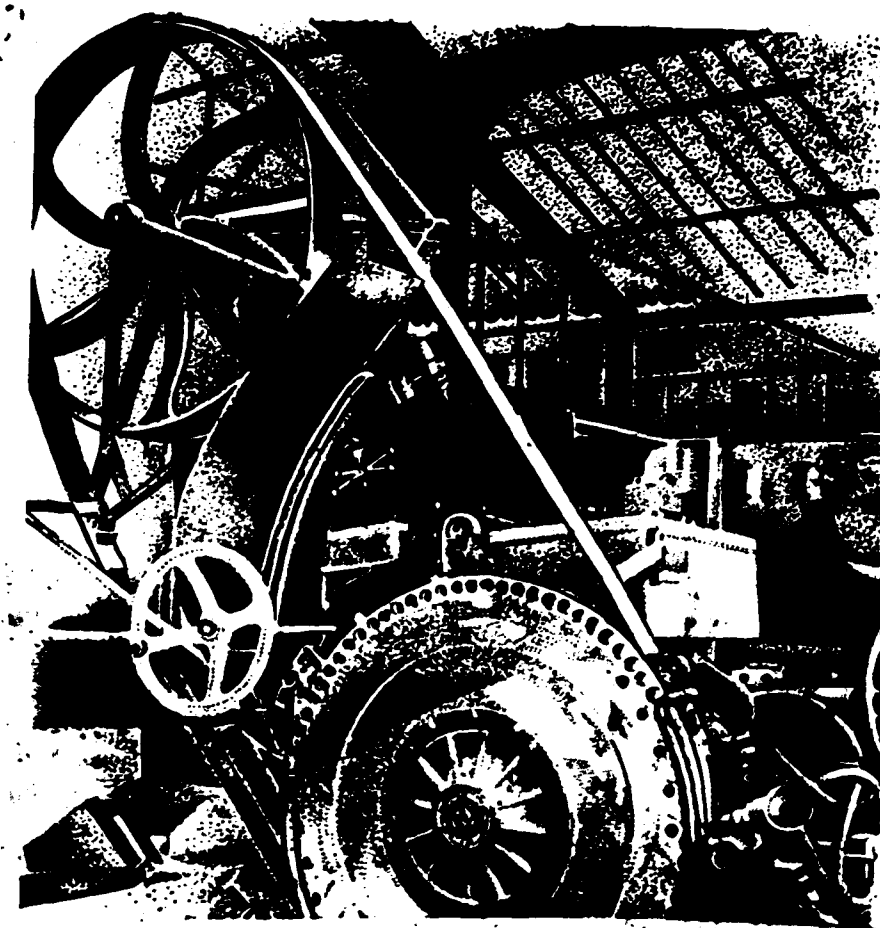
Your enquiries are solicited for plant, machinery and raw materials

Every enquiry will receive the personal attention of

Mr. Charles G. Gorton, A.I.R.I. (formerly Works Manager of

The National Insulated Cable Co. of India Ltd., Calcutta.)

'Tis not in mortals to command success, but we'll do more, deserve it.—Shakespeare.



... the die was cast at dawn

*Five short years ago, we set about making aluminium conductors;
even then, we were set ... that we should make our own
high conductivity rods — a basic raw material in aluminium cable making.*

*And now, with the installation of a modern mill
— the only one of its kind in the East — for the continuous casting
and rolling of re-draw rod, a fond dream has taken shape.*

*The story of our cable manufacture is composed of many strands;
vision, enterprise, knowledge, technique and skill have all gone into its making.*

*But the core of our strength comes from
without ... from the re-inforcing strength of the electricity
supply industry. And through this industry, it is our privilege to serve the nation.*

THE ALUMINIUM INDUSTRIES LTD., KUNDARA, T.-C. STATE
Leading Manufacturers of Aluminium Cables & Accessories