FACT

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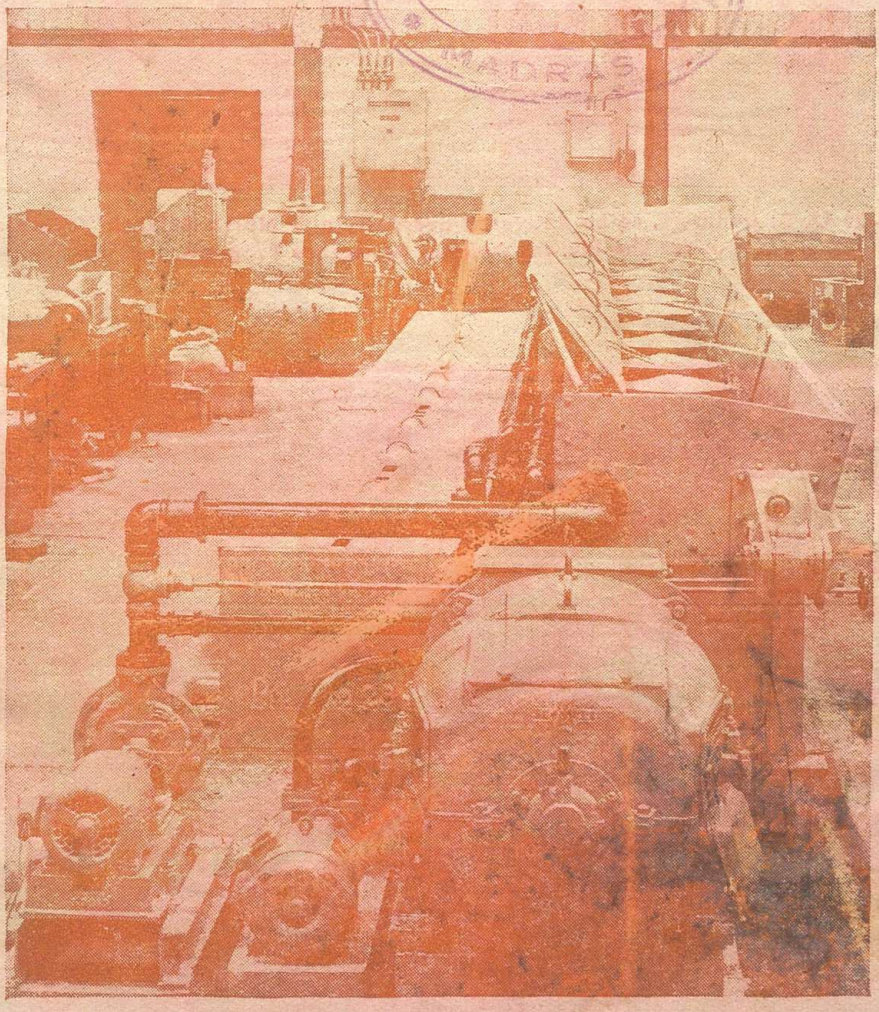
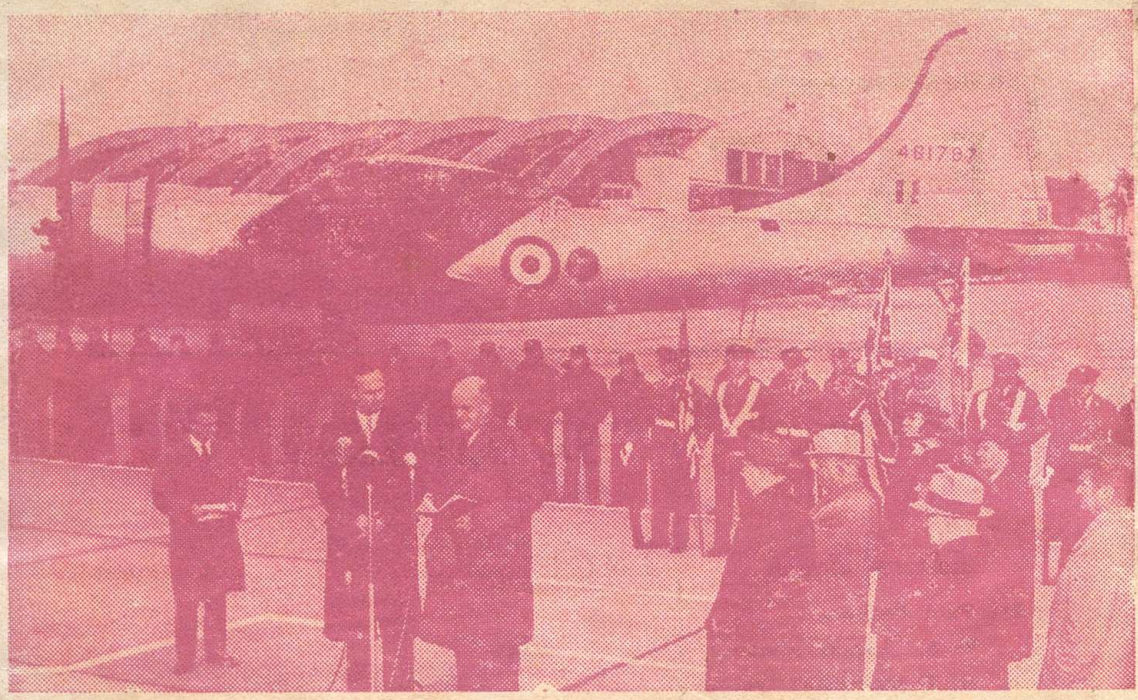
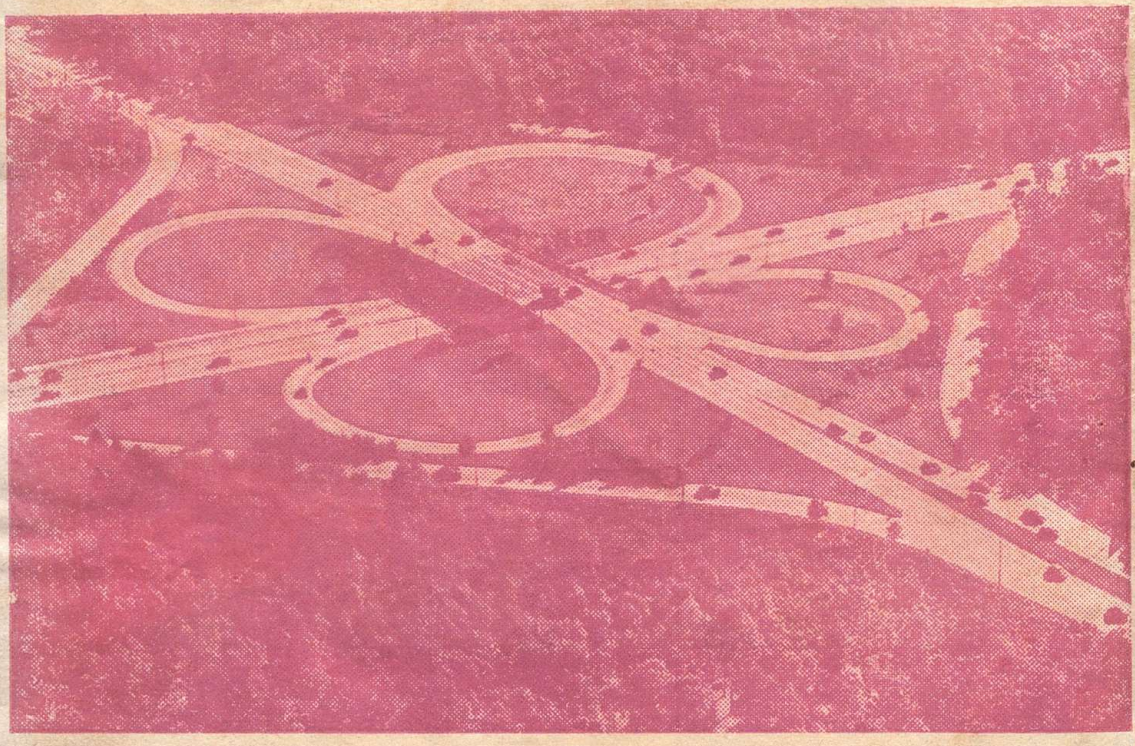


A View of the Workshop of the Aluminium Industries Ltd., Kundara



Four B—29 U. S. bombers, to be delivered overseas to a North Atlantic Treaty nation under the Mutual Defense Assistance Program.



Two arterial highways near New York connected by "clover-leaf" feeders.

FACT

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July 1950

In this Issue .....

The Editorial Board do not hold themselves responsible for the views expressed by contributors.

Books and Pamphlets on scientific, industrial and allied themes are accepted for review in this Journal.

Editor.

ENGLISH

Wise Saws.

Youth and white paper take any impression.

* *

The girl who thinks no man good enough for her, may often be right, but she is more often left!

* *

You must go into the country to hear what news at London.

* *

You may drive the deil into a wife, but ye'll ne'er ding him oot o' her.

* *

Travel makes a wise man better, but a fool worse.

* *

There is no fence against a panic.

* *

The way to Babylon will never bring you to Jerusalem.

* *

The highest branch is not the safest roost.

* *

Plough or plough not, you must pay your rent!

* *

Nae cows—nae cares.

* *

A Dwarf on a Giant's shoulder sees farther of the two.

* *

A little house well filled, a little field well tilled, and a little wife well willed, are great riches.

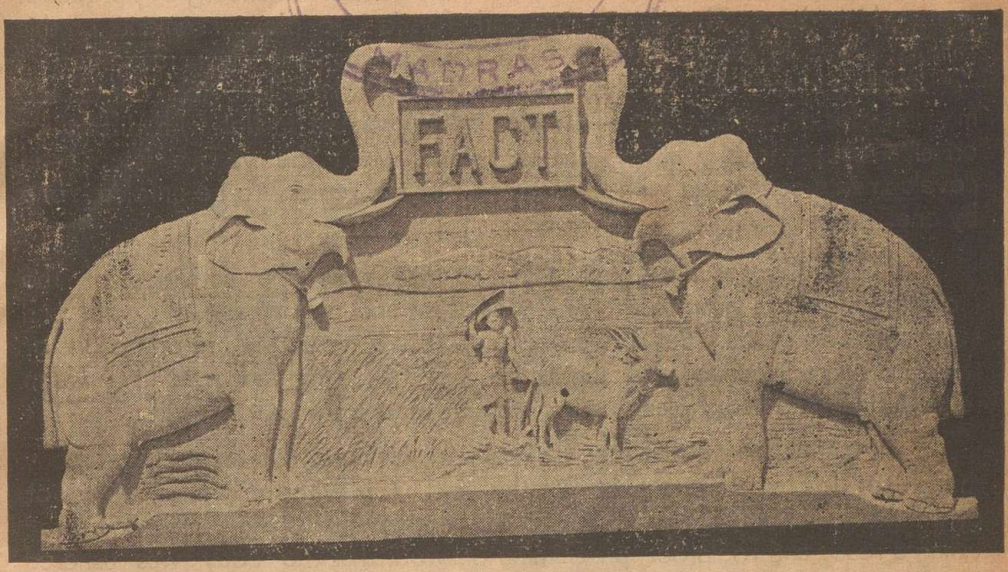
* *

A carpenter is known by his chips.

* *

Don't cross the bridge till you come to it.
Is a proverb old and of excellent wit.

* *



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EDITORIAL.

ECONOMIC PLANNING.

Early this month a preliminary review of the activities of the Government of India Planning Commission was released from New Delhi. It is seen from the report that the Commission was able to secure the full co-operation of the States Governments as well as of the different Ministries at the Centre. Further, they examined minutely the discussions on planning which organisations like the Congress and the Indian socialist party conducted in the past months, and are placing practical suggestions before the Government of India for enabling them to implement speedily the schemes they have already launched.

The report of the Economic section of the Commission is expected shortly. This branch would be dealing with such vital problems as the internal financial position of the country, its resources, capital formation, price structure etc.

Another problem which the Commission has taken up for immediate study and investigation is the vexed question of controls. Of course, the proper working of controls will have very important bearing on the schemes advocated by the Commission. Hence it is but meet that they should go into the question thoroughly. Which classes of public utility goods should remain controlled, how far, and how long, have to be decided only after the

minutest scrutiny and with reference to the particular commodity's position in the world market. Though it is too early for definite pronouncements on this salient topic, it is gathered that the Commission strongly favours certain "strategic controls" only. They do not think it expedient to control too many articles of common use all atonce. This problem bristles with difficulties on all sides, particularly at the present stage when the various issues and developments connected with the Korean War still remain to be unfolded one by one.

Careful steps have been taken to rationalise the activities of the Commission with a view to avoiding duplication and overlapping of work and suggestions have been put forward to secure the voluntary co-operation of the public on a large scale so that there will be ready response and warm reception for the actual plans when they are ripe for practical application.

It is emphasised that the Commission is purely a non-political body though set up by the Government of the day. It is with the primary object of offering help and expert advice on matters economical to the public, and providing a ready and foolproof programme of work that the body was ushered into being. It is further pointed out that the work so far done by them has amply justified the creation of such an expert body. The Commission has certainly outlived the initial atmosphere of scepticism and its next aim is chiefly one of gaining public support in unstinted measure. The work of the Commission first and foremost is centred on sifting the available economic data, laying out definite lines of policy for Government guidance for development in various spheres, and determining the priorities of action by the Government.

Another body, which would be thoroughly nonpolitical and nonofficial in its personnel, and autonomous with the Commission, is in the process of being set up shortly. The object of this body would be to give expert training to a large number of persons in what may be termed "Social Education." The persons so trained will thereafter be engaged in doing valuable propaganda and making the necessary contacts with the masses with a view to creating proper enthusiasm in them and thus securing their willing co-operation by a direct psychological approach.

No doubt, such an all comprehensive and well chalked out compaign for the nation-wide agricultural, industrial and economic rehabilitation is just what we require at the present time. It is also a pleasantly significant but not at all surprising feature that the Commission has taken in hand the vast and varied problems of national regeneration in a thoroughly democratic manner, making a bold bid to have the masses as their chief allies, supporters, and fellow workers in this delectable attempt for converting India into a land of self-sufficiency, economic stability, and creditable reserves. We wish the Commission full success in their undertaking, with the assurance that in the field of Fertiliser industry in which we are working, we are ever ready to go the limit not only to implement their schemes but also, actively to co-operate with them in their endeavours.

Editorial Board.

Certain Bases of National Economy.

By
A. V. MATTHEW, B. A., B. L.

INDIA is primarily an importer of finished manufactured goods and an exporter of raw materials and semi-manufactured goods. The cost of Indian imports from America in 1948 exceeded the cost of exports by 25,00,00,000 dollars. It is to our benefit that India must restrict her imports from both the sterling and dollar areas as much as we can afford and to plan our import policy on a long-term instead of a short-term basis. We should study and understand, from an economic point of view, the difficulties experienced by importing countries in view of the establishment by exporting countries, of export duties. There should be mutual understanding of the respective viewpoints of the capital exporting and importing countries.

The decision by the government of India to devalue the rupee was influenced more by considerations of the dangers of allowing the rupee to appreciate against sterling, of undermining India's competitive position and of endangering the markets for most of our exports, in view of the fact that the major portion of our trade, both import and export is with sterling area countries, than by the balance of payments difficulties which had existed in regard to dollars. Unwise efforts on the part of any country to keep its currency at a fixed exchange rate is sure to hinder the progress of its foreign trade, especially at a time like the present when international uncertainties exist in both the political and economic spheres and when the world's rehabilitation after the last Great War is not yet complete.

The purchasing power in India has now passed in some degree to sectors which have neither the habit nor the facility for investment, while the middle classes are actually poorer to the extent of 40 per cent as compared to their pre-war ratio of the share of national income. Unless the cost of living is brought down, we cannot expect much saving from the middle classes. It would be possible to bring down cost of living and prices only by a reduction in the prices of agricultural and industrial commodities which, in turn, is possible only by bringing down the cost of production. Any maladjustment in prices is sure to create immediate repercussions on the cost of living. Until we are able to subsidise food-grains especially in industrial areas, which will bring down food prices and the cost of living, it will be difficult to lower production cost. The cost of living in India should not rise owing to devaluation, since there is not much of dollar content in the cost of living index figure. It has now become necessary for us in this country to discover new methods of tapping internal resources of savings.

There should be in India a planned development of village and small-scale industries in order to provide a minimum standard of living and more employment to the people. The Union and State governments should adopt the necessary measures to check the tide of unemployment in the country and undertake a planned programme of industrialisation. According to the seven-point programme which Mr. G. D. Birla has recently put before the Indian Chamber of Commerce and Industry, closer co-operation between the Central and State governments, and between labour

and industry, harder work, need for economy and speed, simplification of controls, improvement in our tax system, increased opportunities for savings and rationalisation of industry are to be followed up in practice.

By far the most important economic problem facing India today is that of food. We should aim at self-sufficiency in food. Increased production of food should form the basic criterion for all government policies and actions, when at present necessities of life continue to be in short supply and their production has not reached the expected level. An overall balanced economy should be aimed at rationalisation of our agricultural and industrial production. There should be the intensification of the *Grow More Food Campaign* to achieve the goal of self-sufficiency within the prescribed time-limit. Relevant to all these issues is the problem of raising the yield per acre of foodgrains, by using more manure and fertilisers than we do at present. Quick action in growing more food has now become necessary, since the uncertainties of the situation in India in regard to food is increasing. We must find ways and means to develop our agriculture and to grow more food with the help of modern scientific methods, the importance of which should not be judged solely on the profit angle but from the wide angle of total national economy.

The photograph shows three students from India enrolled at the Utah State Agricultural College, receiving instruction in wheat breeding from a faculty member at the school.

Post-War Development of Petroleum Chemicals Industry.

Big Increase In Refining Capacity Planned.

By
S. GORDON COLLER.

AMONG new industrial projects undertaken in Western Europe since the war as part of the recovery programme are oil refining and associated petroleum chemical plants in Britain which are now growing at an astonishing speed. Within two years, when Marshall Aid is at an end, a country which only three years ago had a refining capacity of only some 25,00,000 tons a year will—according to recent Government estimates—refine about 1,80,00,000 tons annually. In fact the London *Financial Times* has put the figure at 2,00,00,000 tons.

A substantial part of Western Europe's dollar expenditure in the past few years has been British expenditure to ensure that the Marshall Aid countries are supplied with the oil essential for their economic recovery. Approximately 40% of the oil received by the E.R.P. countries has come from British and British-Dutch Oil Companies which have had to buy large quantities of dollar oil themselves but are planning to nearly double their 1947 output of 5,40,00,000 tons by the end of 1953.

The more of this crude oil Britain can herself refine, the greater will be Western Europe's prospects of balancing its trade without Marshall Aid and the greater Britain's own saving of dollars. By the end of June it is estimated that Britain will have spent $ 13,30,00,000 on petroleum products in 12 months. This figure is expected to drop to $1,70,00,000 by the middle of 1952 despite higher British consumption.

INVESTMENT PROGRAMME.

So far the creation of this great new refining industry has cost Britain some £2,50,00,000 (Rs. 33,33 crores)—£90,00,000 (Rs. 12 crores) in 1948 and £160,00,000 (Rs. 2,133 crores) last year. This year, however, a total investment of £3,20,00,000 (Rs. 4,267 crores) is foreseen in the Government's investment programme.

In the past year the expansion of four large refineries has been brought near completion with this money, the construction of a fifth started in July, 1949, and building on a sixth is expected to start this year. All these, together with other new projects, will be in complete or partial operation by the end of 1952. Indeed, the full programme laid down, including later plants, foresees a total capacity not of 2,00,00,000 but of 3,00,00,000 tons a year.

Apart from the important contribution which this programme will

make to the stabilisation of world trade, a further objective is to improve the quality of petrol. One way in which this is being done is the construction of catalytic crackers for crude oil which are included in several of the new plants.

The process of cracking crude oil by great heat under pressure was widely adopted between the wars to meet the demand for motor spirit which the older process of distillation could not supply without large surpluses of other products. The gases generated during the process were used to meet the still newer demand for high octane aviation spirit.

Since then, however, history has come a full cycle with the advent of the jet age in the air and the wider use of Diesel Engines, the former requiring only a distillate of the paraffin type and the latter also using heavier oils. The proportion of oil which is cracked may, therefore decline in the years to come, although the total amount is not expected to fall because of larger demands by motor transport for high octane spirit.

In the 32 years since World War I the world has relied for its energy less and less upon coal (the proportion has fallen from 90 to 60 per cent) and more upon oil (which, from a little more than five per cent has grown to supply nearly one-quarter of world energy), natural gas (from 1.7 to 6.3 per cent in terms of heat) and water power (which now supplies one-tenth of all the energy produced).

But the use of oil to generate energy in one form or another is only part of the usefulness of this versatile raw material from which more than a thousand other products are derived—waxes and residues used to make disinfectants, cosmetics, polishes, fumigants, fertilisers, plastics and organic chemicals.

ORGANIC CHEMICALS.

The expansion of Britain's petroleum chemical industry has, therefore, taken its place naturally beside the refinery programme in the industrial investment plan. Until recently most of Britain's domestic supply of organic chemicals has been obtained by distilling home-produced coal-tar and the fermentation of imported carbo-hydrates, expecially molasses.

Now the new plants and expansion projects undertaken by the oil and chemical companies are being built with sufficient capacity to meet all the major needs of British industry with some surplus for export.

Among new or expanded plants in the U. K. is the Stanlow plant, the most up-to-date in the world; the Wilton plant, which will exchange materials through a 10-mile tunnel under the River Tees with an existing factory on the other bank; and the newly operating Partington project using the Caterole Process whose world rights are British-owned. With the new oil refineries, which include the largest in Europe, the petroleum chemicals industry in Britain will make a major contribution to European recovery.

ROLE OF FERTILISERS IN FOOD PRODUCTION.

THE present low yield of crops which has made our country deficient in her food requirements is to a very large extent due to the neglect of the fertility of the soil. The soil must get back, in the form of fertilisers and fertiliser mixture, the nutrition which is generally taken out of it in the shape of plant food. Next in importance, therefore, to the supply of water and improved seeds is the application of fertilisers and fertiliser mixture to the soil. A judicious application of inorganic fertilisers, it has been estimated, will increase crop yields by 10 to 50 per cent, depending upon the crop.

Until recently, chemical fertilisers like sulphate of ammonia and ammonium phosphate had been applied mainly to cash crops. With the rise in the price of foodgrains and the growing awareness in the country of the nitrogen deficiency in Indian soil the demand for fertiliser for food crops has increased. The most popular and valuable chemical fertiliser in India is Sulphate of Ammonia of which India produces at present only 50 to 60 thousand tons. The fertiliser factory at Sindri, in Bihar, which is expected to go into production by the end of 1951 will produce nearly 3,50,000 tons of sulphate of ammonia a year, as against our estimated annual requirement of four to five lakh tons.

Owing to a world shortage, India's average annual import during the past three years has not been more than 1,50,000 tons. The U. S. A. and Canada are the largest producers of sulphate of ammonia, but their large internal consumption and the scarcity of foreign exchange in India do not permit of any considerable import from these areas.

Phosphatic Manures.

Another chemical fertiliser now being used increasingly is superphosphate. Although the annual production of superphosphate in this country has not so far exceeded 50,000 tons, resources exist to raise the production immediately to 1,00,000 tons, and more in future. The Government of India have accordingly planned for the distribution this year of nearly 1,00,000 tons of superphosphate from indigenous sources and are not importing any phosphatic fertilisers. Rock phosphate, the raw material for producing superphosphaic, is not available in India and is being imported cheaply from the sterling area countries.

Superphosphate is an invaluable supplement to the sulphate of ammonia and is used in the preparation of fertiliser mixture. India at present produces the single superphosphate. Double and triple phosphates have not so far been produced but it is expected that with further experience in the production of this fertiliser, these will also be produced. On the whole, the supply position of superphosphate is satis-

factory and local production will be able to meet the increasing demands of agriculture.

Another source of phosphate is bone meal. It is generally used on the soil where a slow action organic form of phosphate is required. Prior to the last War, India was the largest exporter of good quality crushed bones of which bone meal is the by-product. The inherent religious prejudice of the agriculturists had till hitherto prevented the utilization of bone meal as manure to any large extent. The position, however, has altered and the prejudice is gradually disappearing. To meet the increasing demand for bone meal, the Government of India are encouraging the formation of co-operative societies for the production of bone meal as a cottage industry.

While the export of crushed bones has been allowed to earn foreign exchange, all bone meal manufactured in India is used for agricultural purposes. Moreover, crushed bone fetch a considerably higher price than rock phosphate required for the manufacture of superphosphate.

Like bone meal, blood meal is another fertiliser obtained from the dead animal. Blood collected in the slaughter houses is boiled and the crust or powder thus formed makes excellent fertiliser. Both bone meal and blood meal can be used for manure mixture and applied to the soil direct.

Green Manuring.

Green manuring is another way of returning to the soil adequate supplies of organic matter and nitrogen. Green manure seeds generally used in India are (i) Sunn-hemp, (ii) Guara, (iii) Barseem, and (iv) Dhaincha. Green manuring is advisable in areas where the supply of water is plentiful. These crops are grown and ploughed into the soil where they are allowed to rot to increase its nitrogen content. Partly by demonstration and partly from experience of the more progressive farmers, the Indian grower has begun to understand the utility of green manuring not only in maintaining the fertility of the soil but also in increasing the yield per acre. Under the grow-more-food campaign, the Government of India are encouraging its use by free distribution of green manure seeds.

All forms of nitrogenous fertilisers are controlled by the Union Government which arranges for supplies from producing countries abroad. The indigenous supplies which are also controlled are taken into consideration when allocations are made by the centre to the State Governments.

Controlled Prices.

The price of phosphatic fertilisers is similarly controlled. State Governments should inform the Central Government if they are in need of additional supplies, as supplies from internal production have already been allocated. Internal production can, however, be raised to meet larger requirements.

The internal distribution of fertilisers is the responsibility of the State Governments. In some cases

commercial channels are used for the distribution of fertilisers, in others these are distributed through Co-operative Societies or Seed-stores. A large number of sub-depots situated in villages also supply the cultivator with his requirements.

In the application of fertilisers to the soil, it is essential that all available organic matter is used. Instead of applying in large doses over small areas the fertilisers should be spread uniformly over the maximum area and supplemented with organic material. The advantage of spreading organic matter over as much land as possible is that it maintains the physical structure of the soil. It is advisable for the cultivators to purchase their requirements of fertilisers whenever they are available, and to keep them for application to various crops. This is necessary because, for many crops the growing season is short and the loss of a week or two may mean the loss of the entire fertilising season.

The photograph shows Rural Youth and 4-H Club members planting a tree at the University of Illinois in midwestern United States. Planting is under the direction of a university landscape architect.

TRADE UNION INTEREST IN PRODUCTIVITY.

REPORTS OF FACT-FINDING MISSIONS.

By
HERBER TRACEY.

THE report recently published of the team of representatives of the British Cotton Spinning Industry which visited the U. S. A. last year has aroused great interest. The team went to the U. S. A. under the auspices of the Anglo-American Council of Productivity, a body composed of representatives of both management and labour in the two countries.

More than a dozen such teams have been, or are to go, to the U. S. A. on similar errands and the cotton spinning team is the fourth to make public its findings on American production methods, industrial organisation and technological developments in comparison with those of British Industry.

Level of U. S. productivity.

From the Trade Union standpoint the importance of these fact-finding missions cannot be gainsaid.

Evidence is afforded in all the reports so far published that the general level of productivity is much higher in American Industry than anywhere in Europe, and that it sustains a somewhat higher standard of life among workers.

Trade Unionists are naturally interested in ascertaining the reasons for this. How has it come about that for every 100 ring room operatives required to produce a given quantity of yarn in a given time in American cotton factories (helped, of course, by the fact that they had the pick of the cotton crop grown in their own country) as many as 238 operatives, or 193 operatives according to the basis of comparison taken, are required to produce the same quantity in the same time in England? In English mills, from 197 to 272 operatives are working on the average to produce the same quantity in the same time taken by 100 operatives in American plants.

Reasons set forth.

The reasons for this wide difference in unit productivity are set forth objectively in the cotton team's report which declares that British cotton operatives are neither less hardworking nor less skilled than their counterparts in the U. S. A. Emphasis is placed on the greater "productivity – mindedness" of management, supervisory staff and operatives in America. Textile Unions in America support the policy of high productivity because they recognise that high standard of living, everywhere so apparent in the U. S. A., and eventual security of employment depend on producing more at a lower cost, rather than less at a higher cost.

Production on these lines is, of course, characteristic of the U. S. A. American methods are based largely on mass production for their home

market, highly specialised but fairly uniform within itself. Britain, on the other hand, has to produce goods of a quality and varied character closely adapted to the special needs of her different customers in world markets, a fact which limits her resort to mass production.

Steps to increase productivity.

Research Organisation.

Yet the British people recognise that, even so, productivity can and must be raised. The Unions consider (says the report) that they have a special responsibility in this matter of productivity. They urge not only their own members but also the employers to take every step which will increase productivity.

The Unions maintain a research organisation which publishes pamphlets and directives on technical matters. This material is circulated to Union branches in each area. It then becomes the responsibility of the Union officials in the area to press employers for the introduction of improvements either as regards machinery or conditions.

The report indicates that it is not certain that all members of Unions accept this progressive outlook. But there is no doubt, according to the report, that adoption by the Unions of the principle that technical progress should be encouraged has had a positive effect. The Unions have had their own men trained in work study, and they are thus enabled to play an informed and constructive part in developing the policy.

Particular significance attaches to these developments of industrial policy because the establishment of consultative and advisory machinery is an obligation of the Boards which run, under public ownership, some basic industries in Britain. The Boards are required by the legislation which set them up to join with Unions and other organisations representative of their employer in setting up consultative machinery.

These consultative bodies are not only concerned with matters on the national level, they function also locally. When the national agreement, negotiated recently by the Road Haulage Executive as the employing authority for this section of the Transport Commission's jurisdiction, came into operation it laid down terms and conditions of employment which had to be translated in practice throughout England, Scotland and Wales, over districts widely different from one another at the lonely Highlands and the tightly packed industrial districts.

So there came into being divisional joint committees, and many local joint committees to deal, on the spot with detailed matters. But in addition to responsibilities of this nature the meetings of these consultative bodies provide an opportunity for many suggestions and recommendations to be made for the smoother and more efficient conduct of services.

These developments in joint consultation are producing in British industry the same "productivity-mindedness, and a greater readiness on the part of managements and operatives to give a fair trial to new machines and new methods, such as the cotton team's report single out as characteristic of American industry.

(The Weekly Mail)

BALANCED MANURING.

IN RECENT years violent attacks have been made on the practice of using artificial fertilisers and it has been claimed that the only manures that can properly be applied are those falling under the natural category and which are invariably made up of organic substances. It is claimed that fertilisers are harmful to the chemical and physical condition of the soil but where suitable and well balanced fertilisers have been used under proper conditions there is no evidence that this is the case. At Rothamstead, where for experimental reasons, soils have been treated abnormally by applying heavy annual dressings of fertilisers alone for 100 years, the yields have been maintained and the soils are still in excellent condition.

It is, of course, recognised that the use of any one inorganic fertiliser will remove in course of time other plant food elements from the soil and therefore create a soil condition in which crop production is substantially lowered. In that case, however, this can be remedied easily by the addition of food elements which are essential for the maintenance of a balance in the soil of the 3 main N. P. and K. requirements for food crop production. For instance it is well know that nitrogen produces heavy top growth i. e. green vegetative growth and that superphosphates have an effect of stiffening the top growth and at the same time promoting root growth. Potash on the other hand is invariably associated with improvement in quality. If a heavy dose of nitrogen alone is applied to a crop and no P_2O_5 or K_2O and also assuming that there is sufficient soil moisture or irrigation water available, the top growth or green vegetative growth will be quick and luxurient but should the soil moisture become low or rainfall not available there will not be sufficient food reserves in the top layers of the soil to carry such a crop through a hot weather. The addition of P_2O_5, however, would stimulate root growth and ensure of the root fibres drawing from much larger area than otherwise would be the case with the result that this balance of P_2O_5 would not only ensure of the crop surviving throughout the hot weather but making further substantial growth.

The biological conditions desired in the soil are those which are most suitable for the growth of crops but the study of which is still far from complete. In the soil, population of micro-organisms and of large: living creatures is influenced largely by such factors as food supply, air, moisture and degree of acidity of the soil. One of the main sources of food for the soil population is organic matter and by breaking it up, the microbes of the soil render it fit for plants to live on. We can multiply the numbers of bacteria and other numbers of micro-organisms in the soil enormously by adding a suitable organic material but so far no evidence has been forth-coming to support the contention that fertilisers adversely affect the soil bacteria. Here again

Rothamstead confirms that the plots which have received heavy fertiliser dressings for many years are at least as high in soil bateria as those which have received no fertilisers.

It has been alleged that fertilisers increase the liability of crops to insects, fungus and virus attacks but here again there is no sound evidence that this the case. Certain fertilisers particularly superphosphate and potash have been known to have a markedly potential effect in reducing the infestation of insect attacks and improve quality.

The presentation of manurial problems as a controversy concerned with organic manures versus mineral fertilisers is largely due to the failure to appreciate either the facts or the problems. It is generally agreed that organic manures are most beneficial and should be considered and used as extensively as possible. It is well known that they improve the physical condition of the soil promoting good tilth and water-holding capacity. At the same time they provide nutrients both for the plants and the living organisms in the soil. Because these manures usually contain all or most of the elements necessary for plant growth and are not too rapid in their action, their use is relatively safe even in the hands of the inexperienced. But although they contain a wide range of nutrition these are often somewhat ill-balanced and if the most effective use is to be made of them they must be supplemented by fertilisers.

Fertilisers lack the decomposable plant or animal constituents on which some of the most valuable properties of organic manures depend but they have the advantage of providing plant nutrients in a concentrated and, in some cases readily available form, and they can be supplied very easily and at whatever times are considered suitable. Their variety also enables one or more nutrients to be assimilated at will to make good imperfect plant or to provide a correct balance from the start.

The judicious use of balanced fertilisers can never under any circumstances cause any harmful effect on crops or soil structure. It is only when large unbalanced applications are made and which upset the plant nutrients in the soil that harmful effects on the soil structure or damage to growing crops can result.

The controversy on the use of heavy organic manures versus concentrated fertilisers was raised at the last Food and Agricultural Organisation Committee meetings, and at the Food and Agricultural Organisation Conference held at Compenhagen. It is understood that this world authority came to the considered conclusion that apart from water the rational use of fertilisers is the only method known to the scientific world whereby increased production can be assured quickly. In consultation with Nutrition Experts it has further stated that it does no harm either to man, beast or soil.

PROFIT-SHARING IN INDIAN INDUSTRY.

By
V. V. SURAMANIAM
(Indian Aluminium Co. Ltd., Alwaye)

THE idea of profit-sharing in industry is being keenly felt in all democratic countries and several of them have gone ahead with their own plans, but in India it is still in its infancy. There are stray cases where employers and employees have come to some mutual understanding and are carrying out the schemes as per agreements arrived at round table conferences. But in majority of industries the matter is being decided by Industrial Tribunals, functioning under the Industrial Disputes Act. Disputes regarding profit-sharing are being referred to such tribunals year after year, as a consequence of which both employers and employees always assume inimical attitude towards each other, the net result being reduced productivity and strained employer-employee relationship. Further Government, employers and employees are made to spend their precious time, money, energy and brain power for this non-productive affair, which otherwise could have been utilised for useful and constructive purposes.

Realising the urgent necessity of adopting a proper scheme of profit-sharing in industry to promote industrial peace and thus increase all round production, the Government of India constituted a committee consisting of representatives of Government, employers and employees for evolving schemes for the determination of fair wages to labour, fair return for the capital and profit-sharing and regulating the relation between employers and employees. The Committee submitted its report and recommended a formula for profit-sharing, to which the employers and employees who had previously agreed to the idea at the Industrial Truce Conference, could not arrive at a decision when the plan was discussed in detail at a subsequent conference.

Now, what is profit-sharing? Briefly it may be defined as the method of remunerating labour by which the employees receive a share, generally fixed in advance, out of the net profits over and above their normal remuneration by way of wages. Such payments are made in cash, stock or future credits, such as provident fund, gratuity, pension, social insurance, national savings certificate, etc, once a year as profits are calculated yearly. Sharing of profits by employees, had, for a time, been treated as exgratia payments made by employers, but case law has discountenanced that theory under the plea that profits are being earned by the common efforts of both employers and employees.

By profit is meant the net amount available after deducting from income all expenses necessary for the functioning of the industry, viz., all the usual working charges including cost of materials, wages to labour, repairs, maintenance and

depreciation, interest on loans, if any, provision for taxes, dividend on share capital, contribution to reserve fund, if any, etc. Out of the net profits thus calculated, the percentage of profits fixed in advance, should be allotted to labour. Differences of opinion between employers and employees may arise regarding the method of calculating the net profits available for profit-sharing, the percentage the labour should share out of such profits and the way in which the share will be paid. For ending such conflicts, a proper scheme of profit-sharing should be introduced with statutory sanction.

Much can be said for and against profit-sharing in industry. Such a scheme besides developing in the minds of employers and employees a feeling of mutuality of interest, will provide an incentive for increased production and help eliminate waste. It will, in addition to producing labour turnover, promote industrial peace and effective management. The net result will be maximum productivity at minimum cost with a consequent raised level of profits, which ultimately paves the way for a higher standard of living for the masses and a greater national wealth for the country.

On the other hand, the labour leaders oppose the idea of profit-sharing because they fear the scheme will inhibit the growth of regular organised trade unionism by creating a mistaken notion in the minds of the employees that they are partners in industry thereby partly diverting their attention from trade union activities. Thus they believe, that such a scheme will put in jeopardy, the dignity and liberty of the individual and restrict one's free thinking capacity which are essential for the organic growth of trade unionism. Further they suspect that the employers may keep the overhead and other charges at the highest level possible and manipulate the accounts in such a way as to show less profits. They have also a feeling that profit-sharing does not pay according to efficiency. Employers feel that once they start the profit-sharing scheme they may find it difficult to revoke it during times of depression and strain. In such a situation, they think, the morale of the employees is likely to be lowered to a great extent.

In spite of the many advantages and disadvantages as mentioned above, it is being felt both by employers and labour in India that the time is now fully ripe for the inauguration of a well thought-out scheme of profit-sharing in Indian Industry in order to promote industrial peace and thus increase the productivity of labour which is a matter of utmost importance for the country at present. The feelings of employees in Indian Industry for such a plan have gone so high that further delay in putting into effect a proper scheme will lead to much trouble and discontentment among labour. It should be particularly noted that the plan, if and when effected, should be administered in good faith and by a policy of 'give and take' by both employers and employees, as otherwise the whole idea will be a farce.

Finding Water in the Sands of Marwar

A Pioneer Experiment in Progress

SAMDARI, a small town in Marwar, fifty miles west of Jodhpur city, has recently become one of the centres of activity of irrigation engineers of the Government of India who are exploring into the possibilities of finding sub-soil water in this area. Jodhpur State, the major part of which is an unproductive desert, is a deficit area both in food and fodder. Food has to be imported from neighbouring areas and during fodder scarcity, it is a common practice among the villagers to migrate into adjoining areas of Rajasthan or even as far as Central India to maintain their livestock.

The principal obstacle in the development of agriculture in this area is lack of water. The land is sufficiently fertile and experiments have proved that good crops can be grown with small quantity of water if applied in time. Dr. K. N. Kaul, Prof. of Botany of the Kanpur Agricultural College, who has been studying the problem of water supply in this area for the last few years, has now completed his preliminary investigations and has submitted a scheme to the Government of India for exploration of sub-soil water in this area. Trial investigations have already been started by irrigation engineers of the Government of India. Preliminary borings recently undertaken have shown the existence of sweet water in certain areas.

The area selected by Professor Kaul for immediate investigation is the depression area of Luni river, the principal water-ways of Marwar, and extends about 150 miles southward with its apex at Samdari. This area, which is surrounded on the North, South and East rising plateaus is in the nature of a valley, the river bed of Luni being the lowest point. Luni, which rises from the Arravallis and flows into the Rann of Cutch is fed by a number of tributaries, the principal being, Sukri, Khari, Bandi and Sagi, all rising from the Arravallis.

The existence of water in sufficient quantities in this area was also proved when in 1946–47 the Government of Jodhpur wanted to reconstruct the Railway bridge over the Luni river which was damaged by high floods in 1944. The engineers were confronted with the problem of pumping out large quantities of water before the piers could be put into the river bed.

All these factors point to the possibility of existence of water in this area, although on the surface nothing is visible as the terrain is sandy and rain-water percolates down almost immediately after the rains. It is yet too early to say whether water in sufficient quantity will be found all along the depression area but from the investigations already carried out, the sponsors of the scheme hope that in a 40 mile stretch of land, beginning from Samdari to Tiswara, fresh water exists which at a conservative estimate would be able to irrigate im-

mediately at least 8,000 acres of land besides providing sweet water to thousands of people in this area. Further possibilities of striking water are anticipated when the area of trial boring is extended.

One of the explorations made a few days back at a spot three miles away from the Samdari Railway Station has shown promising results. Here sweet water in sufficient quantity was found within six feet from the surface. A pumping set installed at the site pumped out water at the rate of 40,000 gallons per hour for several hours with no effect on the water level which shows that the rate of infiltration of water from the sub-soil was equivalent to the rate of pumping.

Samples of water raised from this area have been found sweet. Twenty miles downstream from Samdari, the water becomes slightly brackish although it is considered good enough for cultivation purposes. Besides, the saline content of water is considerably reduced during and after the rains as rain water dilutes the salts making cultivation of *rabi* crops possible.

The Water Problem.

The pressing nature of the water problem of Marwar can be realised from the fact that there are places in this area where for getting a pail of sweet water, village women have to travel throughout the night for going to the well and coming back home. There are villages from which the nearest sweet water well is 12 miles away. To mention one extreme case, but by no means singular, people from Chhaba, walk 15 miles to distant Sherghar for collecting water. Even at Sherghar, the water is not sweet enough but the people of this locality are used to taking slightly brackish water.

Another reason for scarcity of water in this area is the complete absence of forests causing not only soil erosion but formation of sand dunes, spreading the desert into the interior of the State. In the Western part of Marwar, round Sherghar area, one can see this process of desert formation in actual operation. The sands spread quickly with the help of the strong wind that blows normally in this part of the country. In a particular locality near Sherghar it was noticed that in the course of one year alone sand had accumulated to a height of five feet submerging everything under it.

Two-way Approach.

The fertility of the soil, however, is great. Even a causal inspection of the farms of some of the well-to-do cultivators or *jagirdars* who have sunk irrigation wells would indicate the agricultural potentialities of the area, provided water was available. There are two ways in which this fertile area can be developed for agricultural purposes: (1) Supply of adequate water for irrigation and drinking purposes and (2) afforestation. Both the methods are linked up with each other as with water trees can grow and when trees are grown in sufficient numbers they can attract the passing monsoon from the Arabian Sea, thus increasing the annual rainfall. The problem, therefore centralises itself to the question of water supply, on which investigations are proceeding.

Rationalisation of Industries.

By
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THE conference of the All-India Manufacturers' Organisation and the Federation of the Indian Chambers of Commerce and Industry, held recently in New Delhi, have laid greater and greater emphasis on the need for rationalizing our industrial production which means, in other words, reducing the cost per unit of output. But this cannot be made possible unless and until production takes place at its optimum point. Hence, the appeal made to the businessmen by Mr. G. D. Birla, while moving a resolution on the economic situation in the country, to expand their activities, is praiseworthy. Mr. Birla further wanted businessmen to go back from the meeting with the feeling that the future of this country was very bright and they could make it brighter by helping Government "by educating our masters and by doing our own job."

Now let us discuss the important industries separately.

Coal.

Coal surpasses all other industries in importance because it constitutes the main source of power. Hence, it commanded the greatest attention of the authorities. Transport bottlenecks presented a great difficulty and the cutting down of the daily wagon supply of 3,000 by 300 in the early months of 1949, led to the accumulation of stocks at pit-heads, curtailment of production, and freezing of stocks. It also reacted against the conservation of high-grade coal as it encouraged greater use of metallurgical coal. But, as indicated recently in the Railway Budget for 1950-51, "the so-called bottleneck in rail transport is no longer even a mentionable contributory factor to such malaise distribution as now prevails in the country." Extension of application of the Payment of Wages Act 1936 to the coal industry and the undertaking of such welfare activities as construction of hospitals, mobile shops and cinemas, etc., have much improved labour-capital relationship. Thus, on the whole, the coal industry showed healthy signs during the year and the fixing of a target of 31 million tons in 1950 out of an installed capacity of 30 million tons and the installation of a plant to produce 1,00,000 tons of liquid fuel from coal, provide ample proof for this.

Iron and Steel.

Next in importance comes iron and steel. Here the problem is a threefold one:

1) How to check the present overall tendency towards falling production:

2) How to attain, not as a special war-time achievement, but as a matter of peace-time effort, the war peak in production; and

3) How to bring about the additional production essential to the completion of the post-war plans for reconstruction and development.

Taking the question of fall in production, this has considerably been checked by our steel works. However, further improvements can be brought about by avoiding delays and bunched heats, reducing charging time, installing basic end furnaces and basic roofs, using multiple melting methods, and applying oxygen to shorten the melt-down and refining periods in the openhearth furnaces. India is still deficient in these techniques.

As regards the second, the steel companies are never opposed to the regularising and stabilising of production of steel. In fact, it is to their advantage to do so. And therefore, steel managements are making a constant effort to regularise production, with concurrent benefits to employees, and to secure the most efficient utilisation of plants and facilities.

Thus, we automatically come to the third and the most important problem, that is, how to meet the ever-increasing demand for iron and steel. This can be done either by adding to the existing plants or by starting fresh units. As for the former the Tata Iron and Steel Company alone have under way a five-year plan for the breakdown of 90,000 tons of finished steel per annum, involving a capital expenditure of about Rs. 156½ lakhs. The Mysore Iron and Steel Works have also made plans, costing about Rs. 290 lakhs, to be executed in two stages. Similar plans have been prepared by the Indian Iron and Steel Company and the Steel Corporation of Bengal. But due to the uncertain policy of our Government their progress is too slow to be of any immediate help. As for the starting of fresh units, the Government consultants have recommended the erecting of two plants of 5,00,000 tons each, one in the Central Provinces and the other in Orissa, costing about Rs. 1,000 per ton of finished product. But these schemes have provisionally been suspended on account of shortage of capital and the over-straining of the national exchequer. Hence, no rationalisation in this industry is possible unless and until the Government once again revive confidence in our investing class by making a more definite statement of its industrial policy.

Cement.

Inadequate supply of limestone has been the greatest hurdle in the way of cement production. Hence, it should be the policy of Government to see that leases of limestone quarries on a long-term basis are given to the factories at reasonable rates of royalty, so that the factories may do their best to strengthen the supply position of limestone. Besides, the Government should also go ahead with its 5-year plans to raise production of cement to 4.2 million tons by the end of 1954–55. Out of the proposed factories, only one in Saurashtra and two in South India, with rated capacity of 2,50,000 tons per annum, have started functioning so far. This is not enough and it needs expediting still further.

Sugar.

Regarding the sugar industry it has now been realised that, owing to the failure to take effective action against the diversion of cane to gur manufacture, the sugar factories were not able to get the required supply of cane to step up the production of crystal sugar. This took place in spite of the fact that this year our sugar factories started crushing much earlier, even though it resulted in a lower recovery of sugar from premature and unripe cane. Hence, the Government should take immediate steps to discourage cane-growers from making their own sugar and giving rise to black marketing practices. Simultaneously, the cultivators should be encouraged to bring more and more land under such cash crops and also to increase the yield of cane per acre, which has been as low as 380.0 maunds in India, as compared to 465.9 in Cuba, 534.3 in Mauritius, 580.9 in Australia, 769.3 in Japan and Formosa 827.0 in Egypt, 1,119.0 in Peru, and 1,530.0 in Java. In this connection, the following revelations from Mr. N. A. Sehrwani, Minister for Agriculture, U. P. while moving the demand for a grant of Rs. 5,70,63,900 for the budget year 1950-51 are quite significant. He said, "The need for improving the yield per acre of sugar-cane has now assumed greater importance than ever, because of the withdrawal of protection from the sugar industry. With a view to achieving this object, a five-year plan for the intensive development of sugarcane in the reserved zones of sugar factories was launched early in 1948. Intensive cultivation has been carried on in 2,000-acre blocks at each factory gate. The aim is to raise the average yield of cane to 700 maunds per acre. Considering that the present average yield per acre is round about 300 maunds for the whole State we have to travel very far to reach this target."

Jute.

Just as sugar, the production of jute suffered from inadequate supply of raw jute for which India has to depend upon Pakistan up to the tune of 50 lakh tons. The trouble was further aggravated by the devaluation of the Indian rupee and the non-devaluation of the Pak. currency, as a result of which the prices of imported raw jute went up by 44 per cent. Consequently, India stopped purchasing jute from Pakistan. As a retaliatory measure, the Pakistan authorities put a ban on the despatch of 5 lakh bales for which payment had already been made by India. They also placed restrictions on the movement of jute from Assam to West Bengal. The net result of all this was that stocks went down considerably and the Indian Jute Mills Association entered into a working agreement to close the mills for one week every month July onwards to tide over the crisis. Hence, the remedy lay only in India becoming self-sufficient in the supply of raw jute. According to the figures available, the area brought under jute cultivation and the yield therefrom have respectively been 5,37,000 acres and 13,20,000 bales in 1946-47, 6,46,000 acres and 16,58,000 bales in 1947-48 and 10,00,000 acres and 2,90,00,008 bales in 1948-49. Thus, it is obvious

that more and more land is being put to this use. This year, in addition to Bengal, Bihar and Orissa, jute is also being grown in Tripura, Cocch-Bihar, Uttar Pradesh and Travancore. In U. P. alone 60,000 acres are being sown. Orissa has got a plan to double the acrage. Travancore is experimenting over 2,000 acres. West Bengal has already got 4.75 lakh acres under cultivation and hopes to increase it further by 4 lakhs. The Bombay Government has got similar plans. These would add 10 lakh bales to our present production which, during the current year, is expected to be in the neighbourhood of 45 lakh bales, thus making us self-sufficient in our requirements of 50 lakh tons by the end of 1952.

Cotton.

The fall in the production of cotton textiles has mainly been accounted for by defective Government policy of control over production, prices and distribution, shortage of suitable types of cotton and the uneconomically high prices, failure of Pakistan to take up the quotas allotted to it, imposition of excise duty and sales tax, and reduction from 54 to 48 in hours of work. The unscientific control over production and distribution gave rise to accumulation of stocks and non-utilisation of the production capacity. Under the Inter-Dominion Agreement for 1948–49, Pakistan agreed to take 30,000 bales of cloth, while only 19,000 bales were purchased. Even out of these, only about 10,000 bales were shipped by the end of July, 1949.

Last but not the least, the shortage in the supply of suitable varieties of raw cotton which, for 1950, amounted to 15,14,450 bales (total supply, 41,58,000 bales and total demand, 56,73,000 bales) caused closure of the marginal and submarginal producing units. Hence, in order to avoid dependence on Pakistan or foreign imports for 15,00,000 bales, efforts should be made to increase the production of cotton by increasing the area as well as the yield per acre.

Govt's Responsibility.

Thus, from the analysis given above, it is quite clear that the non-working of plants to their full capacity has more or less been due to circumstances outside the control of managements. The Government of the land could have eased the situation a great deal by devising a saner economic and industrial policy. Government has also discriminated in favour of food production at the cost of cash crops, which has brought about huge wastage of the productive capacity. If India could utilise her raw materials and her vast mineral wealth and also grow more cash crops, she will be able to buy any quantity of food-grains. Hence, the responsibility of the Government isno less, but rather more than, that of the industrialists. Here to begin with, the Government can do a great service by clarifying its nationalisation policy, removing all control save where it is very essential, and establishing a statistical organisation on a 'sound, scientific, and intelligent basis.'

FACTS THAT INTEREST.

Sunlight to step up fertiliser production.

As any sunbroiled fisherman can testify, water reflects a lot of sunlight. Chemists of Palestine Potash Ltd., were dismayed when they calculated just how much sunlight was being used up when Salt was evaporated from the pans in which they concentrate Dead Sea water. About 35% of the total radiant energy was being wasted like this, bouncing off either the water's surface or the white salt encrusted on the bottom of the pans.

The magazine "Industrial and Engineering Chemistry" lately revealed how the Palestine Pottash scientists had trapped the elusive sunlight and thereby stepped up production of fertiliser, magnesium and bromine from brine. They had simply poured a little green dye into the evaporating pans, only a gallon of dye to every 3,00,000 gallons of water. Thus colored the water absorbed 30% more sun energy. Since evaporation has been speeded proportionately less brine was lost through leaks and the salt was less contaminated by dust and dirt. The dye known as naphthol green is harmless and so little is used that it does not stain the potash.

D. D. T. Not Harmful to Humans.

For those who would like to use DDT. but are afraid of being poisoned by it the current "Mosquito Mews" has a word of re-assurance. According to Lieut. Commander William J. Ferry and Lieut. Leonard J. Bodenlos of the Medical Corps, U. S. Navy, DDT is practically harmless to humans who get it on their skins or breathe it into their lungs.

The two officers examined military personnel and laborers who had been working with DDT for as much as five years. In no case did they find an ailment traceable to DDT. To make doubly sure, they analyzed body fat from 16 men who had been exposed constantly to DDT. Though the insecticide tends to concentrate in fatty tissues, they found none of it in their samples.

Like many other things, DDT. is poisonous to human beings if swallowed in large doses. Perry and Bodenlos suspect, however, that some of the deaths credited to DDT. were really due to the kerosene and other solvents in which the insecticide was dissolved.

Beryllium Hazards Carefully Investigated.

Australian Government Departments have conducted investigations into reports of dangers associated with the industrial use of the element beryllium. Its use in fluorescent lighting tubes and in electrical instruments was investigated. A brochure on the subject has been published by the Australian Defence Research Laboratories. Beryllium and its compounds possess toxic properties: lung diseases may be caused by exposure to their dust and fumes. The brochure states that hazards in industry may be reduced by exhaust ventilation, with the filtration of dust and fumes, and the use of protective equipment.

Inquiries conducted by the 'Australian Manufacturer' reveal that there is no Australian record of any complication arising from flourescent lamps with beryllium powders, either in processing or disposal. At the same

time, the incidence of minor wounds such as cuts, is high, though not unduly so by comparison with other glass handling process work.

Manufacture of Tractors in India.

The Premier Automobiles Ltd. is expected, according to a Turin message, to assemble in India about 500 Fiat farm tractors and several hundred private cars for sale in India during the first experimental year of its new tie-up with the Fiat Motor-works, Turin. The latter firm will ship out the parts to the Premier who before the war used to assemble vehicles for the American Chrysler Company, and is now prevented from doing so owing to control over dollar imports into India.

Rice Processing.

The wastage evolved in rice processing has been engaging the attention of the Central Government for some time past. Recent investigations have shown that a modern "Sheller Type" mill gives an average outturn up to 77% of par-boiled de-husked rice and 75% of raw de-husked rice as against a much smaller out-turn of both the varieties in a huller type mill. In order to popularise the new machine the Central Government has given a number of suggestions to State Governments. Licencing of rice mills has been advised to exercise effective control. It has been suggested that the mills should not run on more than 450 r. p. m. At present some mills are working at double the speed and are thus causing greater wastage. The issue of licences to huller type mills is to be encouraged wherever possible. Much stress has been laid on the use of parboiled rice which not only gives a higher yield but has also got better nutritive qualities. It has been recommended that the issue of licences should be made conditional on the provision of paddy separators so that double hulling may be rendered unnecessary and much breakage may be avoided. The establishment of an inspecting authority is necessary for the implementation of the above measures.

New Crawler Tractor.

The prototype of an entirely new Diesel Crawler Tractor has been given its first public demonstration by a London engineering firm. Features of this four ton tractor include simplified controls, the minimum of maintenance and a totally enclosed track frame. Provision has been made for four forward speeds-from 1.5 m. p. h. to 6 m. p. h.-and one reverse. The tractor is eight feet long and five feet wide. It is powered by a four cylinder 45 h. p. engine.

Development of desert area.

3,00,000 acres of the Ninety Mile Desert on the border of Victoria and South Australia, is being subjected to an intensive developmental programme by the Australian Mutual Provident Society, one of Australia's leading insurance companies. Tractors are already engaged in scrub clearing work. Later it will be ploughed fallowed, fertilised, and sown with special pasture grasses.

Investigations by the Scientific and Industrial Research Organisation disclosed that, despite poor quality soil and low rainfall the desert could be brought into productivity by top-dressing the land with copper and zinc in conjunction with superphosphate and the sowing of special pasture grasses and lucerne.

Because of the large capital outlay involved, and because no income

could be earned for five or six years, individual settlers could not have undertaken the developmental work. The A. M. P., which has the encouragement of the State and Federal Governments, expects that by the end of six years 20 to 25 farms of 1,000 acres each will be available each year for 10 years thereafter.

New Aid to Navigation.

A new navigational aid for shins has been developed in the United States. Called an "anti-collision sound detector" the instrument enables the navigator in a shin's pilot house to pick up in thick weather sound signals from other vessels that are too faint to be heard by the human ear.

The "ears" of the apparatus are four supersonic weatherproof microphones mounted outside the pilot house to cover the sea areas ahead, astern, and on each side. The instrument's "brain" is a meter located inside the pilot house and under the direct observation of the navigator.

When a sound has been detected by one of the microphones, the navigator, by observing the meter, can determine the direction of the sound and its position relative to his own vessel. Developers of the instrument, engineers of C. C. Galbraith & Sons, Inc., say that it is not considered a substitute for radar, but that it provides supersensitive ears as an adjunct to radar's sepersensitive eyes.

Twine from Waste Paper.

Waste utilization is getting more attention in all industries. A recent one is making of twine, cordage, and paper bags out of waste paper mills.

Portco Corp., Vanoouver, Wash., has developed for its own use an octopus-like machine that spins waste paper into cable-sized cord for use in upholstery. The machine twists rolls of paper twine into one thick strand, called seaming cord.

New Safety Light.

New explosion-proof light uses internal air pressure to keep out dangerous vapors instead of a heavy, light-dimming shield. A 200-w. bulb in the new lamb will give equivalent light of a 300-w. bulb in a standard lamp. Lamp is said to have an 85% reflectant co-efficient.

Pressure-sensitive Tape.

An extra-heavy-duty, pressure-sensitive tape is made of glass fibres with an acetate film back. Filaments are embedded in a resilent rubber adhesive. Stretch is 6% as against 15% for other tapes. It is available in $\frac{1}{2}$, $\frac{3}{4}$, and 1 in. widths in rolls 72 in. wide.

Antihistaminics Fight Cod.

Common colds cost industry more lost days than any other single cause. It is hoped that antihistaminics may reduce this absenteeism. In one series of 572 tests, antihistaminics aborted colds in 90 per cent of the patients when administered in the first hour after symptoms appeared.

Some antihistaminics produce side reactions such as drowsiness. Most antihistaminics are given to adults in a dossage of 50 mg. every 4 hr.

News & Notes

62½-Million Motor Vehicles in World Use.

American Automobile (Overseas Edition) world motor census for 1950 shows 62,463,794 cars, trucks and buses in operation in the world. Over 19-million are in operation outside the U. S. Marked increase was shown in vehicle operation in Africa, Asia, Europe, Oceania, and the Western Hemisphere. With the exception of Asia, there were over a million vehicles in operation in each geographic area for the first time.

An increase of 41,00,000 vehicles, 7.1% over 1949 was not quite as large a gain percentagewise as was shown in 1948 and 1949. With world production at 77,17,263 units, the small increase mirrors junking of increasing numbers of over-aged cars, trucks, and buses.

Many countries reported average car ages of 10 yr., many 25-yr. old cars being reported. Replacement must thus remain high during this year.

Operation of buses rose 42.2%; passenger-car operation rose 12.2%; truck operation 7.2%.

Permanent Finish and Dye Applied to Glass Fabrics.

Permanent color and silk-like finish are applied to any weight glass fabric by a new process developed by Waterway Products, Inc. Process does in minutes what has previously taken days. Process will finish 5,000 yd. of gray goods in a day, varying degrees of finish being possible.

Color uniformity is assured. Gray goods are fed into finishing unit, are subjected to an undisclosed chemical treatment, and emerge in solid or white, color. Currently only white, green coral, yellow, blue and gold colors are possible.

The company has made far-reaching advances in overcoating glass fibres with lead, copper, nickel and stainless steel. Finished cloth has appearance and characteristics of solid metal, finish being spray-, dip-, or brush-applied. Coating cost is approximately 3 cents per sq. ft. for copper.

Compressor for Gas Industry.

Worthington Pump & Machinery Corp's new model UTC-16 gas compressor is designed for oil and gas industry, handling scavenging by the Uniflo method. Air enters through ports opening all the way around lower end of cylinder. Exhausts leave through valves in cylinder head.

This system increases compressor capacities. Inlet port area is doubled; exhaust area is half again as great as compressors using loop scavenging.

Synthetic Vitamin A.

Vitamin A, high in potency and free of the fishy taste characteristic of that obtained from fish-liver oil, is now synthesized commercially by Hoffman-La Roche. Already this company has cut the price 30% per million units.

The process employs 12 steps. Raw material is citral, which comes from lemon grass, most of it from India. Merck and Pfizer plan to go into production of synthetic vitamin

A this year. Distillation Products is already making it by a different process.

The synthetic process will hurt the processors who get vitamin A from fish-liver oil. The fishing fleets of the Scandinavian countries and Japan will feel the effects, because the livers of cod, hali-but, and shark brought good premiums.

Fabric Reflects Body Heat.

Cloth impregnated with metal particles in a resin reflects body heat inwardly, thus increasing warmth without increasing weight. Developed by Deering, Milliken & Co., the process made nylon seersucker as warm as a 3½-lb. wool blanket. The developers claim radiant losses of body heat run as high as 75–85%.

So far aluminum has been found to be the most effective metal. Process can be applied to any fabric-nylon, rayon, cotton, or wool. It does not affect cloth's feel, durability, creasability, or other characteristics. It increases porosity, thus making cloth cooler in warm weather.

Stabilizes, Beach in 2-3 Hr.

U. S. Navy researchers have developed a fast, inexpensive method of stabilizing beaches into roadways Beach is chemically hardened to support jeeps in 2 hr., 7–ton trucks in 3., 13½-ton trucks in 24.

Materials, presumably silicate of soda and calcium chloride, are plentiful and cost about 15 cents per lb. For beach solidification a fast, controlled reaction is desired. Catalytic retardants are used.

Mixing and densification are done in a single pass by standard road-building equipment. Progress is 12 ft. per sec. The width depends on the equipment.

Tile Spaces Itself in Layup.

Protruding lugs on Gladdings, McBean & Co. tiles automatically space the tiles during layup to provide a ⅛ in. mortar joints. Lugs protrude 1/16 in. from face and are ¾ in. long. Tiles touch, lug to lug, on all four-sides. Installation time is sharply reduced.

Britain's Gas-Turbine Car.

Successfully road tested at 90 mph., Rover Co. Ltd's gas turbine-powered pleasure cars to be feasible. Extremely experimental, the car smoothly, reached 60 mph. in 14 sec. Exhaust gases proved no hotter than ordinary car exhaust. Fuel was kerosene.

Hot gases spin two independent turbines, one running at high speed combustion chamber, the other running at variable speed, depending on load. Latter is connected to wheels through 6-to-1 reduction gears, conventional drive shaft, and differential.

Break-Point Chlorination Improves Fish Quality.

An in-plant break–point chlorination system at Gorton-Pew Fisheries, Ltd., Gloucester, Mass, has reduced bacteria count on fish and equipment and has curbed objectionable slime and odors.

Water treated by this method requires the addition of sufficient chlorine to produce and maintain free residual chlorine to the exclusion, or near exclusion, of combined residual chlorine. Free residual chlorine is held at 5 ppm. at Gorton-Pew during processing and 25 ppm. during evening clean-up.

First bactericidal treatment is at the conveyor carrying fish to the scaler. Second chlorine wash is in the scaler flume, third in the scaler, fourth on the conveyor leading to cutting tables. All equipment is washed down with the chlorinated water.

Cost is low. The new system requires only 12-15 lb. of chlorine per day at a cost of 10/c. per lb.

Voice Communication by Light.

Air-to-ground or air-to-air voice communication by invisible light is possible with a system developed by North-western University, said to be decidedly more versatile than German and Japanese systems of World War II. In the new system, light beam is spot-lighted instead of being broadcast, reducing possibility of jamming.

Transmitter has a wide beam angle. Aircraft model operates on 28-volt D. C. or 115-volt A. C. A portable unit has been designed.

System employs a gas discharge light source. One light source employed is a caesium vapor arc-lamp operated in an argon gas atmosphere. Resonance light is similar to that of sodium vapor-lamp but is near the infrared region.

Fluorescent Minerals.

Many minerals show characteristic fluorescence when exposed to ultraviolet radiation. Among them are scheelite (calcium tungstate) and powellite (calcium molybdate).

Prospecting for these minerals can therefore be simplified by use of a portable unit consisting of mercury-vapor discharge lamp and power supply. It is only necessary to scrub the rock face thoroughly with water before making the examination. An experienced operator can judge whether the fluorescence is that of a low-grade ore or one of workable value.

Egg Inspection Unit Lowers Candling Costs.

To lower the cost of candling and handling eggs, Industrial Electronic Engineers, Los Angels, have developed an automatic egg processing line. The same idea can be applied to other phases of the food industry.

The setup eliminates hand candling. Racks of rubber-fingered hangers remove eggs, a layer at a time, from the crates (packed by farmers) and place them on an egg-conveyor belt. The belt has a series of foam-rubber cups in which the eggs ride past the inspection stations.

The five inspections are: (1) egg sizing by a resonant-wire, frequency discriminator scale; (2) color and shape by photocells; (3) check shell thickness, air-cell depth, and yoke centres by capacitance sensing head and quartz crystals; (4) checking shell condition by photocell and surface gage; and (5) candling by television-type scanning device.

Data on size and quality are recorded magnetically on a metal card by dots. Each not denotes a characteristic. A collector unit scans the card and transmits data to a control unit that energizes various circuits to send hangers to pre-determined accumulator lines for unloading.

Three workers can operate the whole unit. It is estimated that such a fully automatic line on a 24-hr. schedule can pay for itself in 3 or 4 months.

Films to be Manufactured in India.

A scheme has been worked out by an Indian firm for the production

of nineteen million square feet of raw film per year as the first stage of the establishment of the industry here in collaboration with a Swiss firm. The raw materials it is proposed to use are cellulose acetate and cellulose nitrate. Attempts are already being made to produce cellulose nitrate in one of the Ordinance Factories. Preliminary experiments for the production of cellulose nitrate are understood to have been encouraging.

In connection with the scheme for the production of acetate silk in Hyderabad the production of cellulose acetate has been thoroughly investigated. The Plant for the manufacture of acetic anhydride has already been set up at Sirpur, and it is hoped that the requirements of the country will be met entirely by indigenous production.

A complete plant for the manufacture of raw film base, and for coating, perforating and packing the film base is to be established. Its capacity will be double in the second stage. The factory will be in Mysore near the Krishnarajasagar Dam.

Motion picture production is one of the major industries in this country. It is reported that there are 2,000 cinema houses, and about 42 studios or more than 350 units engaged in film production in the country. The present annual demand for raw film from this industry is estimated at 200 million feet. or twenty-five million square feet. In 1948–150 million feet (about nineteen million square feet) were imported by the three chief importers in the country. The value of imports during the first half of 1949 was Rs. 56,66,812. The Government therefore consider that the manufacture of raw film in the country is essential in the interest of the motion picture industry.

Herbert Block, American Cartoonist. (PF-222.)

First Negro Diplomat
Joseph D. Charles, Haitian Ambassador to the United States.

Devidas Gandhi at Washington

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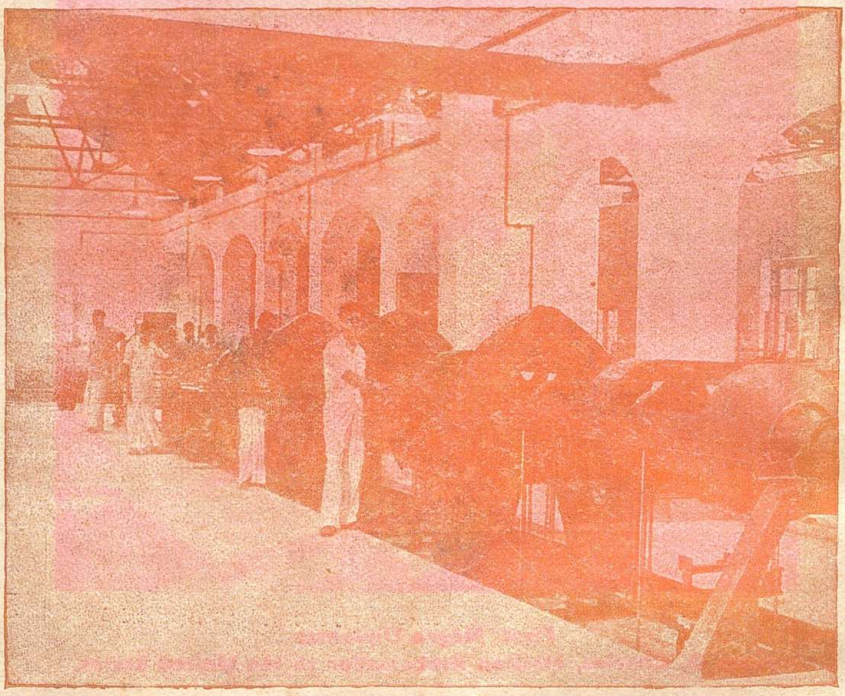

Inside and Outside Views of the Aluminium Industries Ltd., Kundara.

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