karmantha

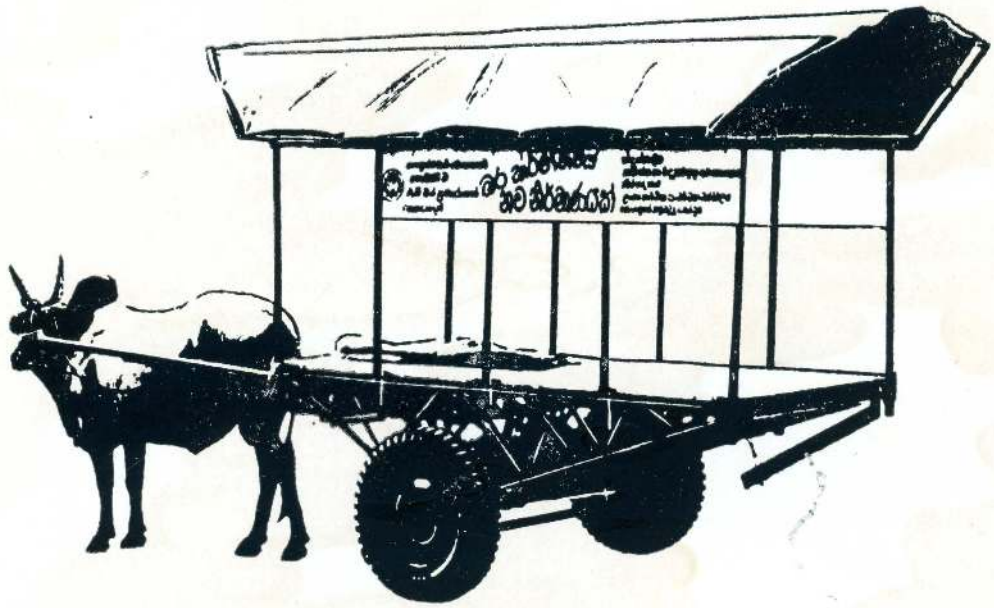
MARCH 1980

MONTHLY PUBLICATION OF THE IDB

Another fuel saving device...

A CART with a difference

A HEAVY DUTY METAL
BULLOCK CART ON TYRES



FOR DETAILS CONTACT

INDUSTRIAL DEVELOPMENT BOARD OF CEYLON

615, Galle Road, Katubedda, Moratuwa.

KARMANTHA

Vol. 8, No. 3, March 1980

Industrial Development Board of Ceylon
615, Galle Road, Katubedda, Moratuwa.

CONTENTS

Cover picture:

Two of the fuel saving lamps developed by the I.D.B. — a carbide lamp (on left) and a bio gas lamp.

In Our Next Issue:

* Is small beautiful?
* Potential for rubber products manufacture.
* Leather goods: prospects for exploitation.
* Some uses for tannery wastes.

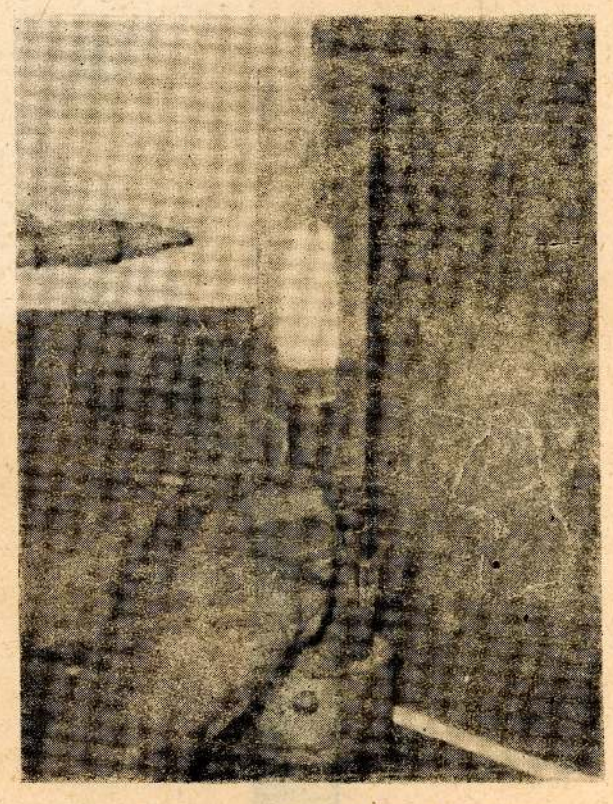
Edited by *Philip L. Ramenaden*

Price per copy Rs. 1.50

Annual Subscription Rs. 15.00

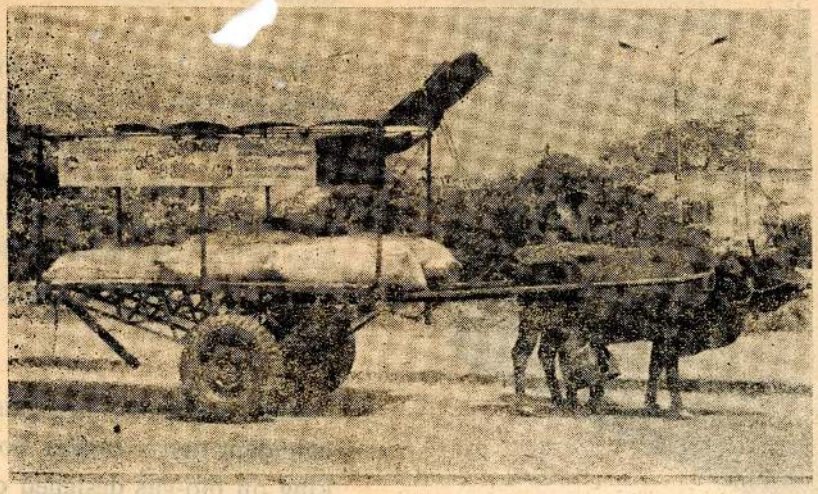
Fuel Saving Devices Developed by the IDB

By P. L. Ramenaden



The worsening energy crisis that is confronting us calls for many pronged solutions to the problem and the Industrial Development Board has launched several schemes to popularise alternate sources of energy.

Giving top priority to conserving energy, the IDB has been working on a number of projects to utilize available resources and to make better use of the traditional energy sources. It has thus been successful in developing several practical and economical devices which could be fabricated even village level.



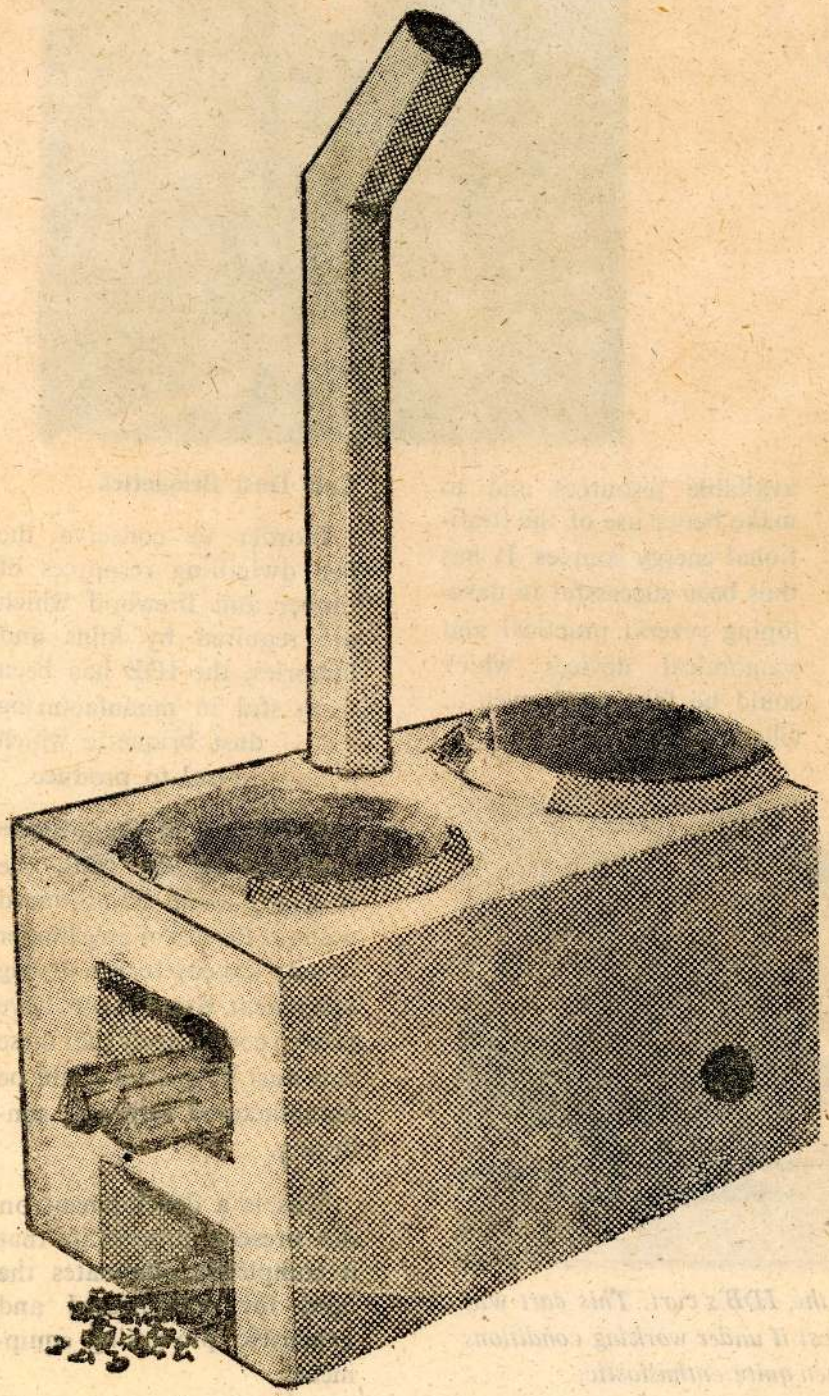
Pictured above is a proto-type of the IDB's cart. This cart was given to an actual user in order to test it under working conditions and the comments have been quite enthusiastic.

Coir Dust Briquettes

Inorder to conserve the fast dwindling resources of timber and firewood which are required by kilns and factories, the IDB has been successful in manufacturing dust briquette which mical to produce.

According to the process perfected by the IDB, the briquette could be produced without the use of any binder or any expensive pre-drying equipment. Experiments have proved conclusively that these coir dust briquettes could be manufactured with only sun-drying.

This is a development on the present process in that it completely eliminates the need for complicated and expensive pre-drying equipment.



Furthermore tests have revealed that while they are as effective, as firewood or charcoal for firing purposes, these briquettes are cheaper to use than diesel.

Meanwhile experiments are also being conducted in the manufacture of briquettes from other materials such as saw dust, paddy husk and other waste material.

Bio-gas Lamp

Work on the use of bio-gas has been extended to perfecing a Titus-type low-pressure lamp which works on bio-gas.

Preliminary tests have revealed that this lamp which uses a mantle could give a light which has the brightness of a 35 candle power bulb; but experiments are underway to increase the intensity of the flame, and the IDB is confident that a brighter light could be obtained.

However tests are still being carried on to determine the rate of gas consumption and steps are being taken to reduce it. Experiments are also being conducted in designing an improved, larger model as well.

The engineers are also confident that a cooker working on bio-gas designed on the same principle as the lamp could be designed shortly.

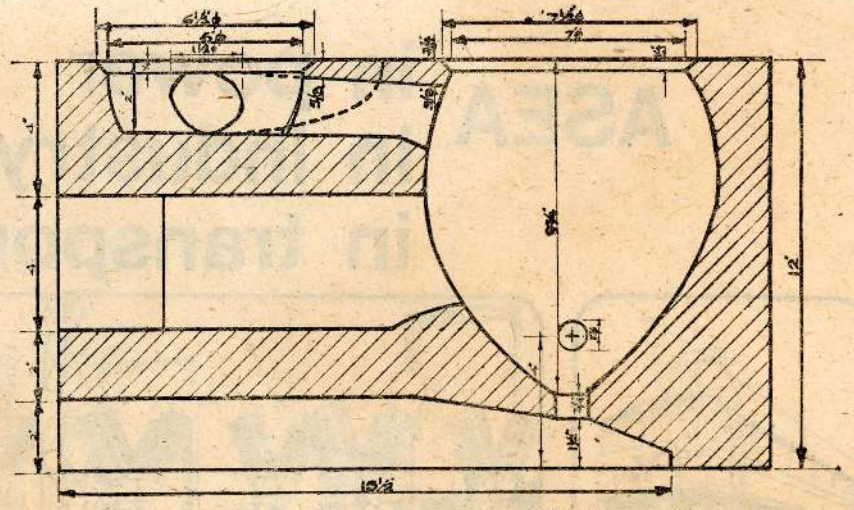
Fuel Saving Hearth

Another energy saving device is the two burner kitchen hearth. An interesting feature of this hearth is that remaining heat in the escaping flue gas from the main burner is made use of in the secondary burner.

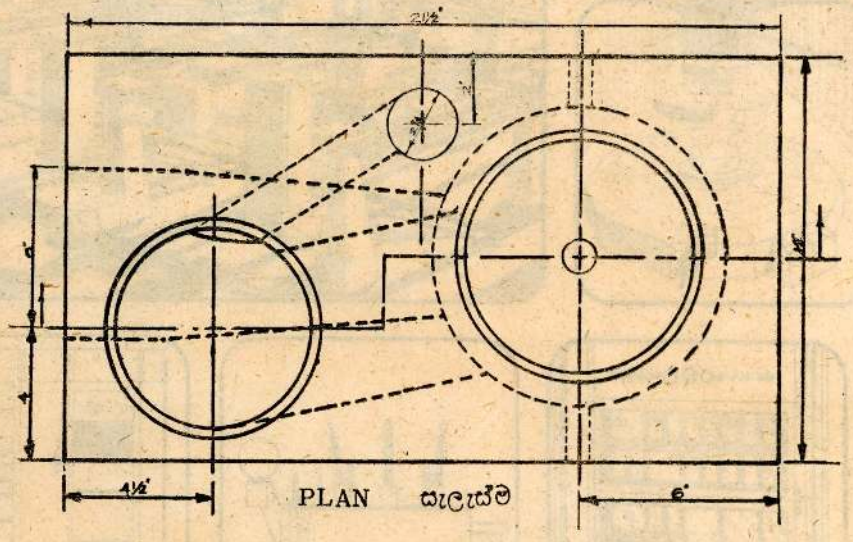
Tests carried out have revealed that when equal weights of the same variety of firewood were burnt in the conventional hearth and the new one, the hearth developed by the IDB proved to be about 70% more efficient. Tests also proved that the cooking done with 100 pounds of firewood in a conventional hearth could be done with only 30 lbs. in the new one.

This hearth could be constructed at home using a mixture of cement, sand and metal, pottery clay and bricks or earth, cowdung and bricks.

The hearth which has a chimney enables it to be operated within the house without interferance from smoke.



ELEVATION දැලැස්ම



PLAN දැලැස්ම

All Metal Cart

The IDB has also designed an all metal rubber-tyred bullock cart which could carry almost double the load of a conventional cart with minimum strain on the bull.

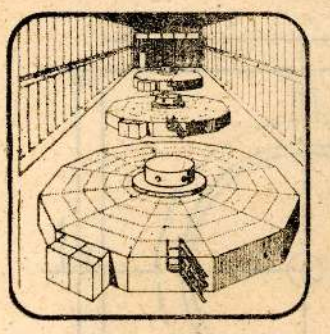
This light weight cart which runs on pneumatic tyres causes no damage to the road. It has a carriage area of 8 feet by 4 feet and it could carry about two tons at a time.

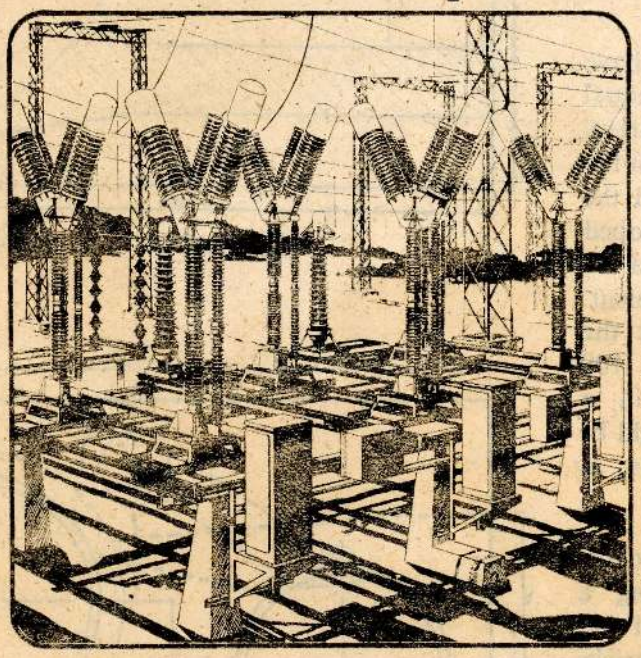
The cart's design is so simple that it could be fabricated at a village-level smithy without much difficulty.

Since it is made of metal, it is long lasting and requires very little maintenance; furthermore, the low wear and tear on the tyres enables the utilisation of used tyres.

[For further details: Contact The Public Relations Officer, IDB]

ASEA in power in industry in transportation



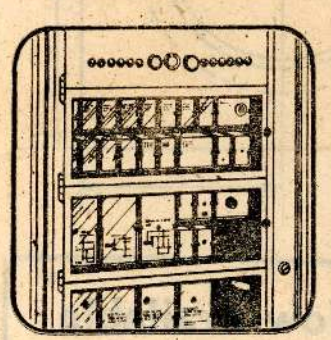


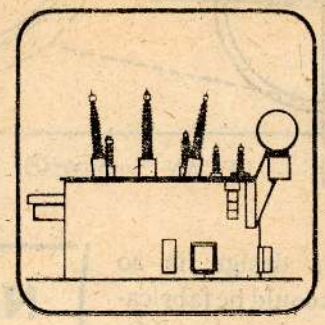
ASEA has a world-wide reputation as an international company with an extensive product range and considerable technical resources.

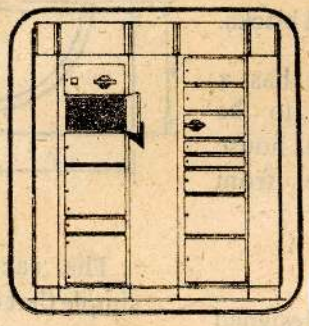
They have factories in ten countries and are represented in more than 80. In 1977 sales outside Sweden amounted to 52% of the total sales of US $2.085 million.

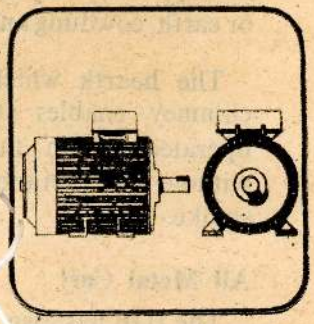
ASEA employs over 43,000 persons in its organisation.

Their programme covers the entire field of electrical engineering-from standard products to complete plants and systems for power stations, industries and transport undertakings.









SAMUEL, SONS & COMPANY LIMITED

Engineers Constructors Manufacturers Merchants

371 Old Moor Street Colombo 12 Telephone: 32341-4 Branches: Jaffna & Kilinochchi

ASEA

Bank Account: An important need for an industry

By Mahinda Thenabadu

EVERY industry irrespective of whether it is small, medium or large or whether it is a partnership or an incorporated company would be at an advantage if it operates a bank account because of the many advantages in having one.

The main purpose in maintaining a bank account of course is to ensure the safe custody of the business funds. While having a bank account would facilitate the obtaining of a bank loan, it would also be a safe and convenient way of carrying out the day-to-day transactions of the enterprise by making it easy to control the finances. If the payments made by the business are made "account payee" cheques, this would help to overcome frauds and irregularities because these payments would be credited to the account of the person in whose favour it has been made and to no other. In this way frauds and irregularities could be minimised.

However, apart from these advantages, there are the following as well:

* Besides cheques, even money orders, postal orders or government payment orders etc. could be credited to the bank account thus eliminating the possibility of these getting lost or misplaced.
* Foreign exchange transactions could be easily negotiated through the bank account.
* When regular or monthly payments such as Insurance premia or rent have to be made, the bank could be instructed to do this by issuing it a Standing Order to this effect thus eliminating the bother of having to attend to this routine.

Bank Statement

At the end of each month, the Bank sends a statement referred to as a 'Bank Statement', to every holder of a current account maintained with it. This statement gives a summary of all transactions made by that Account during the month under review. This statement should enable the Account holder to reconcile the balance shown in it with the amount obtained from the cash book and vice versa.

Thus the usefulness of preparing a bank reconciliation statement becomes important especially because of the reasons given below:

* If these had been an omission of an entry relating to a transaction in the cash book or if a transaction had been incorrectly recorded this would be revealed on comparison with the Bank Statement.
* A bank reconciliation would also reveal the length of time over which a cheque issued by the firm has been lying unpresented or whether cheques deposited by the firm have been realised or not.
* The above information would enable better internal control of cash and finances to be exercised.

Since this is an important aspect of cash and financial control let us consider how a Bank Reconciliation Statement is prepared. It is possible that certain cheques issued by the firm

CASH BOOK

Date	Receipt No.	Details	Cheque No.	Amount Rs.	Date	Details	Cheque No.	Amount Rs.
01.10.79		Balance b/d.		12,943.20	5.10.79	Ceylon Electricity Board— Electricity Bill	D/24326125	432.50
12.10.79	16615	S. Jayasinghe		857.10	17.10.79	Petty Cash	D/24326126	74.60
18.10.79	16616	Sri Lak Trading Co.		2,950.84	22.10.79	P.M.B. Telephone Bill	D/24326127	135.75
25.10.79	16617	Thomas Appuhamy & Co.		1,833.22	24.10.79	Lever Brothers– Purchases	D/24326128	7,250.00
26.10.79	16618	Jayasiri Trading Co.		2,150.00	29.10.79	Felix Perera & Co. — Fuel	D/24326129	634.00
30.10.79	16619	Gunaratne Trade Exchange		9,750.00	30.10.79	Gemunu Book Shop-Stationery	D/24326130	128.40
					30.10.79	Debit Tax		12.43
					30.10.79	Bank Charges		2.50
					30.10.79	Balance carried down		21,814.18
				30,484.36				30,484.36

especially towards the tail end of a month may not be reflected in the Bank Statement though they have been shown as a payment in the firm's cash book.

This may be due to the delay experienced at the bank. It generally takes a few days for the bank to refer the cheque to the bank from which it had been drawn and for the cheque to be realised. Thus if the cheque had been deposited during the last few days of a month, it is possible that this may not be reflected in the statement. Similarly cheques drawn by the firm too may not have been presented and therefore they may not be reflected in the Bank Statement.

Thus inorder to reconcile the cash book balance with the Bank Statement balance and also to ensure the correctness of the cash book entries and the Bank Statement entries, a monthly Bank reconciliation statement has to be prepared.

The following steps should be followed in preparing the reconciliation statement.

(1) The Bank Statement balance is first obtained and recorded in a separate sheet of paper or in a separate cash book folio as "balance as per the Bank statement as at.....

(2) The Bank charges such as the cheque book charge, quarterly commission, standing orders etc. are indicated as payments in the cash book and its final balance is obtained.

(3) To the balance as per the Bank Statement are added the deposits not realised and from the total thus obtained, the total amount of the cheques drawn but not presented are deducted.

(4) The final balance obtained will then be the balance as per cash book.

The following illustration will further throw light on the preparation of a bank reconciliation statement.

(See Page 10)

PEOPLE'S BANK — DEHIWELA BRANCH

Island Trading Co.,
32, Main Street,
Dehiwela.

A/C. No. CA 2532
Date: 31.10.79

Details	*Debit*	*Credit*	
Balance brought forward	432.50		12,943.20
125	432.50		12,519.70
Cheque		1,832.22	14,352.92
Cheque		2,950.84	17,303.76
129	634.00		16,669.76
Tax		857.10	17,526.86
Cheque Book	2.50		17,524.36
126	74.60		17,449.76
Cheque		2,150.00	19,599.76
128	7,250.00		12,349.76
Debit Tax	12.43		12,328.33

Bank Reconciliation Statement
October 1979

PEOPLE'S BANK — DEHIWELA A/C. No. 2532

Balance as per Bank Statement as at 31/10/79		12,328.33
Add		
Deposits not realised (cheque deposited) 30/10/79		9,750.00
		22,078.33
Less		
Cheques drawn not presented		
Cheque No. 127	135.75	
Cheque No. 130	128.40	264.15
Balance as per cash book		21,814.18

When the cash book and the bank account have been thus reconciled the balance as per the cash book will form the opening balance for the next month and transactions thereafter have to be recorded in the cash book, commencing from this balance.

Bureau of Standards to get wider powers

Draft law prepared on Minister's instructions

By P. L. Ramenaden

A draft new law giving wider powers to the Bureau of Ceylon Standards has been prepared.

The draft law to replace the Bureau of Ceylon Standards Act of 1963 was prepared on the instructions of the Minister of Industries and Scientific Affairs, Mr. Cyril Mathew.

The draft law which includes more powers for the inspection of industrial establishments and products also gives enhanced powers to the Minister in implementing the operation and policies of the Bureau as well as in the appointment and removal of members of the council of the Bureau.

Wider powers

The revision also gives wider powers to the Bureau officers in the exercise of their duties. Among other changes, provision has been made for a compulsory certification marks scheme. Under this scheme, the local manufacturers could use a standardization mark on their products, however this would only be in respect of products that conform to the relevant Sri Lanka Standards.

The mark on a specific product would signify consistent manufacture in accordance with the Sri Lanka Standard Specification in respect of that product. This compliance with the specification would be verified by regular inspections and tests by the Bureau.

Suitable scheme

The main purpose of this scheme is to ensure that the consumer is safeguarded and he has a guarantee that the products have been tested and certified by the Bureau and are of quality. The Bureau hopes to administer the Marks scheme in such a manner that the onus of compliance would rest with the manufacturer. Inorder to ensure this, the Bureau has devised a suitable scheme of inspection where by each certificate holder is made to follow this scheme and maintain records himself. These records should be made available to the Bureau officials whenever requested.

In order to make sure that the Mark is not misused, periodic inspections by Bureau officials approved for the purpose, will be made of the production line and of the records kept by the manufacturer. Samples will be obtained during production from the production line. These samples will be examined, tested at the factory as well as at the Bureau Laboratory or at a private or independent laboratory approved by the Bureau.

Apart from this, surprise inspections would be made of the factory and the products. Tests of random samples taken at these checks would also be subjected to tests. Furthermore samples would also be purchased in the open market.

Every effort will be made to protect the standardization mark and the misuse or infringement of the mark will be an offence under the Bureau of Ceylon Standards Act. Fines upto a maximum of Rs. 1,000 or a period of imprisonment not exceeding six months or both have also been prescribed. If the Bureau is satisfied that a

certificate holder's product is substandard or if the holder fails to comply with the terms and conditions under which it was granted, the permit could be cancelled.

Separate applications

If a manufacturer wishes to obtain a permit to use the Standardization mark on his product, he must first ascertain whether a Sri Lanka Standard specification has been approved and published by the Bureau. Then an application has to be made to the Standardization Marks Division of the Bureau. Separate applications should be made in respect of every commodity that has been covered by separate specifications. A separate application would also have to be made in respect of a particular product if that product is being manufactured at more than one plant.

Permits

A permit to use standardization mark would be issued by the Bureau's director or by an officer authorized by the Permit Committee.

Permits would be issued if (a) when adequate testing facilities are proved to be available with the firm (b) when samples drawn and tested are found to conform to the relevant standard specification. (c) on formed acceptance of the general and specific conditions and the payment of an annual fee and finally subject to the Standardization Mark regulations under the Bureau of Ceylon Standards Act.

The permit for the use of the Standardization Mark would not be transferable and it would be valid for the period of currency of the specification including the amendments.

The draft law has also provision for the broadening of the objectives of the Bureau to cover consultancy and advisory services in standardization and quality control and the functional recognition of quality control, pre-export inspection and certification.

Provision for the declaration of compulsory standards has not been included in the draft law because the legal enforcement of standards is the function of the Commissioner of Internal Trade who has been empowered with the necessary authority under the Consumer Protection Act.

CISIR Develops Fuel Saving Cooker

A fuel saving clay cooker developed by the CISIR was demonstrated recently. This charcoal burning cooker is claimed to be consuming less fuel than a conventional hearth and is said to be easy to construct. The Timber Corporation has undertaken to provide the wood charcoal through it's retail outlets according to CISIR sources. Pictured above is a prototype of the new cooker.

most people trust world famous S-Lon PIPES to supply cleaner water

In Sri Lanka you can buy the same high quality S-Lon rigid PVC pipes & fittings with the added advantage of a free+5 scheme.

FREE

- Technical advice
- Design of specials
- Plumber service & training
- On-site inspection
- After-sales service

Select world famous S-Lon pipes and fittings for your home, office or factory. S-Lon is 100% anti-corrosive and specially smooth surfaced inside to ensure the cleanest water and smoothest flow.

S-Lon *backed by the best technical advice and service*

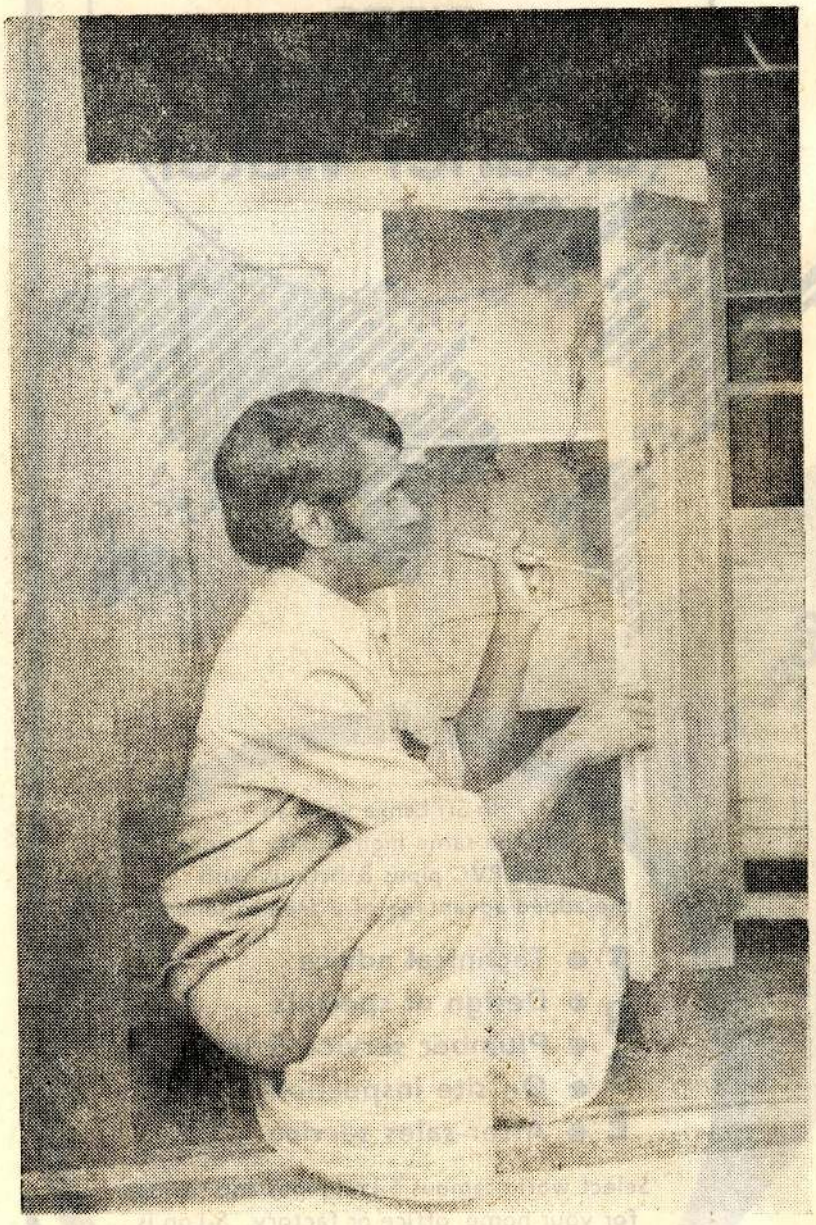
the maharaja organisation limited

Maharaja Building, 54, Bankshall Street, Colombo 11.

TAL-3318

Sub-contracting and small

By W.



Sub-contracting has been carried on in the furniture industry for quite some time now and this arrangement has proved to be a complete success. Today in Moratuwa most of the furniture is being manufactured under sub-contracts.

SUB-CONTRACTING has received particular emphasis in Developing Countries in view of major economic and social considerations such as employment, balance of payment problems, development of under developed areas, the effective utilisation of special skills and available resources of raw material and export of manufactured goods among other factors.

Sub-contracting exchange

In view of it's importance, the Sri Lanka Government has decided to establish a Sub-contracting Exchange "which would be operated by the Industrial Development Board".

The industrial policies of the previous regimes in Sri Lanka were centred mainly on import substitution and due to various factors, mainly owing to limited market potentialities, the difficulties in obtaining vital raw material, the lack of efficient machinery, this policy of industrialization for import substitution, drastically reduced the useful and complimentary role of small scale industrial undertakings.

In fact, it was observed that one of the basic problems of import substitution had been its tendency to narrow down development potential and to limit the possible expansion of domestic markets.

scale industry development

E. Botejue

The present Government however, has realized the limitations imposed by over-enthusiastic support for the import substitution process and has adopted its industrial policies accordingly. Thus interest in the expansion of export markets, diversification of specialities and technology, and the need to increase the domestic context of manufacture has influenced policy in the direction of decentralizing production and specialization. In this, context, the promotion of small scale industry and sub-contracting offer special advantages.

Knives used for rubber tapping and pruning etc. are being manufactured at a small smithy under sub-contract. The unit pictured above has supplied the implements required by the rubber industry for quite some time now.

Definition

The UNIDO Export Group has defined sub-contracting as "a contractual arrangement between a primary company (contractor) and a secondary company (sub-contractor) for:

(*a*) the supply by the sub-contractor on order from the primary company, of parts, components, sub-assemblies and assemblies that are then incorporated in a product sold by the primary company with both companies being involved in the manufacture of the product sold.

(*b*) the processing of raw materials for the primary company whether the materials are provided by it or not—and the processing or finishing of parts provided by, and returned to, the Primary Company.*

* (UNIDO "Sub-Contracting—its role in industrial development" document ID/WG 41/2—CD/PME (69) 7).

According to this definition, therefore, sub-contracting is an extention of the manufacturing process based upon wider dispersal of supplies. It could, however, be extended to include services, research and technical know-how and orders from the primary company. It could also include processing, transformation or finishing of materials or parts by a sub-contractor at the request, of course of the primary contractor.

However there are other areas of sub-contracting which are of significant importance in developing countries and one such is commercial sub-contracting which involves the supply of finished products to manufacturers and/or traders for domestic or international markets. This differs from industrial sub-contracting in that it involves the supply of finished end products to a parent-firm, whereas the industrial sub-contractor specializes in manufacturing or processing parts and components. Although in both instances marketing, design, production, planning and delivery conditions have to be co-ordinated, the difference has a bearing upon the type of the products.

In Hong Kong for example, commercial sub-contracting is used to cope with orders from "chain stores" for large quantities of small industrial products which cannot be met by single producers. Numerous orders are received by trade firms sometimes for prompt delivery of a large number of a specific item. It would not be possible for this order to be met because it would be over and above that establishment's capability and capacity and in such cases as these, there is no alternative but to 'farm' out the order to several small industrialists having excess capacity. In this instance, agreements are made between the suppliers and the trading firms covering details of supplies such as quantity, quality, price, delivery and, where necessary, supply of raw materials and other facilities.

Invarariably

The primary contractor in these cases, is invariably a trading establishment which has know-how and experience in trade. In Hong Kong for example, some of the largest industries in terms of labour employed are engaged in commercial sub-contracting. This is especially so in the electronics, plastics and garment supplying field.

Another aspect

Another aspect that require special mention is International Sub-contracting. Certain multinational firms find it advantageous sometimes to distribute the production of certain components or sub-assemblies to various firms in developing countries. Thus, in some instances, notably in the Americas, US based firms subcontract to Latin American countries, the manufacture of certain components which are then re-imported, by these manufacturing countries for assembly and distribution in the domestic market.

Similar arrangements where components are manufactured in one country, exported to the primary contractor and then these very components are re-imported in the finished or assembled form, are known to exist between Japan and the Republic of Korea, Malaysia and Singapore as well.

In other instances, there are sub-assemblies in developing countries which are responsible for the finished product. In these cases components and parts are supplied by sub-contractors within the country itself or from a neighbouring developing country or if it is a highly specialised product, from the parent firm itself. These finished products are marketed under the brand name of the parent firm and generally they are exported though sometimes they may be intended for the domestic market itself.

In Sri Lanka

In Sri Lanka there are at present several instances of these types of sub-contracting. There are instances where certain items are manufactured and marketed here under the parent firm's trade mark though certain components are got from the parent body and even from India and assembled here.

Arrangements

In the field of manufacturing, the arrangements for sub-contracting are determined primarily by the extent of the market. The existence of a fair degree of development in major industries already in existence which have a capacity for decentralization with economic advantage, the availability of well developed small scale industrial sector or at least the potential for its development with specialized skills which could be recruited without much difficulty, the existence of cottage industries and the demand for the products which are to be manufactured or products having a potential for being promoted in international markets appear to be some of the requirements for the successful arrangement for sub-contracting. In the case of commercial sub-contracting, the existence of cottage industries seem to be of particular importance.

The selection of industries and products is of vital importance for sub-contracting and those most suitable are those that involve simple activity rather than those that require frequent adjustment of the pattern of work, those that could be supplied with drawings, specifications and equipment by the principle contractor. Thus in manufacturing for example, specialization—oriented and capacity oriented industries may be considered as offering the best prospects. In this field i.e. of manufacturing, the contractor may be interested in aspects such as labour costs, lower overheads and depreciation and the capability of sub-contractors to produce quality products "cheaply" and on time. Thus the light metal industries which supply a variety of components and the electrical apparatus and component manufacturing industries appear as prospective sub-contractors.

However apart from these considerations and of course the size of the market, the efficiency and capability of the small industry, the skilled labour at his disposal, capacities and technical capabilities and equipment available are also some of the other factors that are required for successful sub-contracting.

Not possible

Thus if the small industries are unable to cope with requirements and demands of the primary company then from the outset itself subcontracting would not be possible.

As stated at the outset social consideration is one of the several major considerations that have led the developing countries to accord

priority to the establishment of sub-contracting procedures; and this consideration is the employment potential that is offered as a result of sub-contracting.

However the provision of employment should not be the main criteria which influences the awarding of sub-contracts for this may not yield the best results; but from the point of view of the developing countries, this is high on the priority lists. Thus it is important to note that the selection of industries suitable for sub-contracting should be made with care rather than deciding on labour intensive industries merely because they would provide jobs. Generally however, the initiative for sub-contracting comes from the larger manufacturing firms which are motivated by economic and technical considerations. In Japan for example, a survey carried out by the Medium and small scale Industry Agency has shown that the principal motives for sub-contracting are saving of capital, labour and time, the use of specialised skills and technology of sub-contractors.

Other factors

Furthermore there are several other factors that the parent firms find attractive in sub-contracting. They are, the saving of capital, labour and overheads, utilization of the existence of wage differentials safeguards against possible business fluctuations, and reasons such as tax benefits.

Reluctant

In certain developing countries however there is a tendency for manufacturers to engage in the entire process of manufacture. In certain instances even retail distribution is undertaken by manufacturers. Reasons such as the nature of the ownership of the establishment and the type of organization—individual or partnership, contribute to this trend. However more important than this is that entrepreneurs in developing countries are rather reluctant to rely on small producers to supply components because they feel that these producers may not measure up to their quality requirements, dates of delivery etc.

Furthermore small scale manufacturers have also been to found accept orders irrespective of their capacity thus more often than not, they are unable to deliver the goods on time and they are generally inefficient in terms of productivity and costs.

In some instances the belief that the profits made by sub-contractors could be made by the major manufacturing unit itself, also influences one manufacturer to handle the entire production.

Those developing countries which have not been affected by serious exchange problems and which have therefore been able to industrialize without state regulations, such as obtaining exchange quotes, licensing and approval of industry have benefitted from sub-contracting arrangements. They have also developed schemes of commercial sub-contracting. In others, in which state controls and licensing procedures have had to be introduced, there has been little or no expansion of sub-contracting practices without the active encouragement and support of government. In India for example, during the second world war, a large number of engineering workshops relied on sub-contracting units for the supply of components and small units were fostered to supply larger undertakings. However, "after independence..... the people of the country (both planners and executors) in the name of industry could then conceive only of industries which involved large investment intricate mechanization, specialization in the work and employment of a great magnitude of workers..... To a large extent, a good number of them depended on imported materials in sizable quantities. The concept of sub-contracting was completely missing then"—(UNIDO 'Role of Sub-contracting in Small Industries Development in India".

State intervention

It appears therefore, that in countries or conditions which do not favour the rational evolution of sub-contracting, state intervention in the form of special incentives may be required to provide the initial

impetus. Even in countries such as the US and Japan liberal government incentives have played a vital role in the promotion of sub-contracting. In the US for example, steps were taken to promote the development of sub-contracting as far back as the first World War when the government experienced difficulties in procuring military requirements. Today the concept of sub-contracting is firmly established in that country. Even in Japan where modern forms of sub-contracting have been prevalent for over four decades, even today there are extensive lists of measures taken and incentives available could be drawn up. Thus in Japan today, sub-contracting is an integral part of the industrial scene.

Thus it becomes evident that the promotion of sub-contracting in developing countries calls for a concerted effort on the part of their governments. In most of these countries, the small scale industries are run only as a supplementary income source and therefore are incapable undertaking regular work of a high quality as expected under sub-contracting.

Vital role

Therefore in the selection of sub-contractors, the agencies responsible for sponsoring and developing small scale industries should be able to select, provide assistance, incentives and technical know-how in order to gear them to undertake production under sub-contracting. In this respect Sub-contracting Exchanges can play a vital role as can be seen from those that have been operated in other countries such as Britain, France, the Netherlands, Spain and Sweden.

Active part

In short government incentives such as tax concessions, accelerated depreciation allowances on new equipment and machinery, levying of concessionary duty rates on imports of equipment etc, provision of extension services, research and credit facilities, the availability of facilities for training of personnel for specialized jobs all these factors go a long way towards the promotion of sub-contracting. Thus it is clear that in developing countries such as ours, the state has to play an active role in promoting sub-contracting. Furthermore, the State could ensure that quality, prompt delivery, finance and smooth labour relations could be maintained. It could also ensure that the dissemination of information too would be done systematically. Thus the setting up of a Sub-contracting Exchange would be of immense benefit to a country like ours and special attention should be directed towards the establishment of such an exchange.

* * * * * *

Income generating skills for women

IDB PROVIDES TRAINING

The following is based on a paper submitted by Miss Panditesekere at a national workshop on "Income generating skills for women in Sri Lanka."

We have published it in response to requests for information with regard to training opportunities for women.

By Miss M. Panditesekere

THE IDB which places special emphasis on the development and promotion of small and medium scale industrial sectors, provides training facilities, technical assistance, managerial and marketing know-how and extension services to assist industrialists irrespective of whether they are male or female. It has adopted an integrated approach to assist them and the training programme is part of a package deal offered in addition to the special training programmes and it is provided from the point of project identification through to provision of marketing, technical training, right up to the successful operation of the project.

The IDB has contributed in no small way towards developing income generating skills in women. Pictured above is a workshop on the utilisation of soya beans which was conducted by IDB officials recently as part of the IDB's skills developing programme for women.

All these facilities offered by the IDB are available to women both in the urban and rural sectors and also to women already engaged in industry or those interested in obtaining such training.

Self employment

Since the IDB's programmes are oriented towards self employment in industry, experience has shown that training in skills alone is insufficient and that training should also include the management aspect of marketing, finance, administration, etc. and it is this aspect that the IDB's programme emphasises. Thus this programme includes training programmes for small scale industrialists, for prospective entrepreneurs in technical and management skills. These programmes are carried out at the IDB's head office at Katubedde and at the Regional Offices.

However, apart from these, training is also provided on requests made by outside organisations such as the Y.M.C.A., Y.W.C.A., the Sarvodaya movement and the Adult Education programme organised by the Ministry of Education. Furthermore the IDB also organizes special project oriented programmes for developing identified projects with training in both the technical and managerial aspects and assisting them to set up these. Thus all in all there are several projects that are specially geared to training women in skills that are aimed at making them fit to be self-employed.

Acquire skills

A number of these training programmes are carried out by the various divisions and product groups of the IDB—the Food Group, the Rubber Division, the Oils and Fats Group and the Chemical Group—inorder to help the women to acquire skills that would enable them to set up ventures on their own. The group with the highest participation of women is the food group which provides training in the form of lectures, demonstrations, seminars and workshops. Three special units that have been set up for demonstration and training are in the Coconut Cherry Cube, Soya Milk and Instant Stringhopper projects. A special training programme that was organised specially for women but at which even males participated was the Maldive Fish preparation programme.

Varied products

Lectures and demonstrations on such varied products as Mushroom processing, making of cheese, Papadams, jams, jellies and cordials, smoked fish, yoghurt, manioc starch and sago are provided to groups of participants on request and the payment of a nominal fee to cover costs.

Many of these training courses are held in rural areas and include lectures, demonstrations and practical training. They are so designed that even those without any prior training in these fields could benefit. The programme is such that pains are taken especially to cater to the needs of women with the objective of training in product manufacture as well as improving the quality of the product.

For women

The chemical groups training programmes include demonstrations and lectures in the manufacture of distemper, joss sticks, inks, polishes and varnishes, tooth powder, table salt manufacture etc. that one normally associates with household products and those that are suitable for women to venture out into.

In the field of rubber product development, training is provided at two levels—one for absolute beginners and another for technically qualified persons who require practical training. The training consists of lectures on rubber technology, latex and dry rubber manufacture, product diversification, mould and die designing and quality control. Training in management and financial control of small industries and marketing are also included in this programme.

Practical training in the form of demonstrations of compounding for dry rubber products and on making simple latex products such as balloons, rubber bands and rubberised coir products are also imparted to the trainees.

Furthermore in view of the integrated approach adopted by the IDB, it has been felt that providing training in technical skills alone is in sufficient especially since self-employment in industry is the goal.

Therefore it is felt that the managerial aspects such as marketing, finance and administration too should be included in the training package. This aspect of training is normally taken for granted but in view of today's stiff competetion it has become a very essential part of training for, inspite of the fact that most businessmen have some knowledge of entrepreneurship still they lack specific knowledge of costing, marketing, financial control etc. Thus it would be a negation of the whole concept of technical training and industrial development if they are not given information or training in efficient management.

Target Group

The target group for this type of training includes:

(*a*) existing small industrialists who wish to develop their managerial skills.

(*b*) prospective industrialists.

Thus in keeping with the theory of integrated training, the IDB intends training groups of industrialists to set up identified projects which have proved to be viable and have an identified market. Apart from this, the IDB is also collaborating with the National Apprenticeship Board in their programme of training youth for self employment in industry (*See Karmantha January* 1980 *issue* for details of this programme).

All Aspects

Thus the IDB's training programme is not merely limited to providing theoretical information but encompasses all aspects. In short the IDB ensures that the entrepreneur is in a position to carry on a viable project or venture successfully. It assists the would be industrialists from the point of preparation of a project report and cost estimates through to production and marketing and administration as well—and is so requested by the industrialists, even assistance to obtain credit facilities! And this training and assistance is granted to all irrespective of whether they are males or females, educated or not, rich or poor. The IDB's aim is to provide training for self-employment in industry.

Hydrogen: the fuel of the 1980's ?

By C. S. Ranasinghe

FROM the day it was invented, until very recently, the motive force behind motor cars had been petrol or diesel and no conscious thought was directed towards replacing these traditional fuel oils. However today with the spectre of the fuel crisis looming over the entire motor industry, the evolution of an alternate energy source to propel vehicles has become obligatory.

Though the internal combustion engine had come a long way, and many attempts have been made to improve its performance and to increase speed, except for sporadic attempts now and again, no concerted effort had been made up to now to do away with petrol or diesel for propulsion. Today however frantic attempts are being made to find a suitable substitute. Time and again however, steam power, battery power, alcohol etc. have been tried out but so far except for power alcohol no breakthrough had been made. But today, with research and development being placed on emergency footing, a certain amount of progress has been made in this field and the battery operated car and the hydrogen gas powered vehicle seem to be the answer.

Much progress

Much progress has been made with the battery-operated cars and their capabilities and failings too are well known. However very little is publicly known about hydrogen powered cars. Hydrogen, of course needs no introduction, and the uses to which it had been put to so far are well known. However what is little known or taken into consideration is that, compared to other fuels, when taken weight for weight, hydrogen has the highest energy content. The major portion of the energy produced by the combustion of all liquid and gaseous fuels originate from hydrogen gas. Another advantage that hydrogen has over petroleum fuels is that it is free of toxic gases and fumes that polute the atmosphere.

High Costs

Hydrogen gas could be produced from either water or coal and the present problem facing its wide scale use is the high cost of production, distribution and storage. The concept of using hydrogen gas to drive cars is not new—it was first used in the 1930's however due to the high cost of production of the gas, the idea was not pursued. But with the fuel crisis the idea was taken up once again and in 1965 a prototype model was made and today a limited number of cars have been made public. It is claimed that about 100 miles could be done with a tank full of hydrogen and a maximum speed of 80 mphs could be achieved. However it is still rather expensive to produce hydrogen; therefore it is still not possible to mass-produce these cars.

Several methods

At present several methods are being used to separate the hydrogen from the oxygen in water. However many of these methods are costly and require large amounts of heat and energy. A method that is commercially used is the electrolysis process using electricity. Using this method, it is possible to produce pure hydrogen by passing an electric current through a mixture of powdered coal and water. The hydrogen could be produced at room temperature and according to claims, the process requires only half the electricity required for the earlier method.

According to research authorities the hydrogen obtained from coal is less expensive than the natural gas obtained from coal, therefore it is felt that the natural gas pipelines could be used to pipe hydrogen gas and thus solve the distribution problem to a certain extent. However as things are today, most authorities feel that hydrogen would definitely be an answer to the problem of fuel for vehicles in USA in the near future.

The problem of storage has been solved by using hydride tanks. The hydrogen is fed under pressure into tanks containing powdered alloys and it forms loose chemical bonds with them. In this way a dual purpose could be achieved in that the heat produced could also be harvessed while the gas itself could be used as a fuel.

Apart from this, the hydrogen has a tendency to cool when it absorbs heat and when it has cooled, it could be used for air conditioning purposes as well without the need for any additional energy. Therefore as a result of the hydride tanks being used for storage, it has become possible for us to store waste heat for an indefinite period and make use of it whenever it is required. Furthermore by using two tanks that are linked together but operate at different temperatures, it has become possible to provide heat and air conditioning when required.

Therefore it is evident that hydrogen could well become an answer to the fuel crisis if costs of production could be reduced and there is every likelihood that this would be done in the near future.

RESEARCH AND DEVELOPMENT

Hydrogen on Wheels

Hydrogen may one day be the world's primary source of energy, but until recently the use of hydrogen fuels was confined mainly to rockets and research laboratories. Now, a handful of affluent motorists can sample the fuel of the future in a specially modified automobile developed and marketed by Billings Energy Corp., of Provo, Utah.

The car, a modified, limited-edition Dodge Omni, is believed to be the first hydrogen-powered vehicle ever made available to the public. It has a double-fuel system: standard gasoline power and hydrogen. The driver converts from one system to the other by flicking a dashboard switch that changes fuel channels and adjusts engine spark. The car can store hydrogen without danger of an explosion, thanks to a special tank mounted in the luggage compartment. The tank, called a hydride storage system, is filled with tiny granules of metal that release hydrogen gas when they are heated. The hydride holds up to 5½ pounds of hydrogen-enough, Billings officials say, for about 105 miles of driving. The company says that the hydrogen can power the car up to a top speed of 80 mph and has a fuel efficiency equal to about 40 miles per gallon of gasoline.

Since hydrogen is not generally available, Billing is selling the converted Omnis along with a hydrogen generator that works by using ordinary tap water and a 220-volt current. About the size of a washing machine, the generator hooks up to the auto with a cable and can recharge the hydride storage tank overnight. Billings doesn't expect the hydrogen-powered Omni to become a "hot item" any time soon. Hydrogen is expensive to produce, and prototype vehicles are very costly. To date, Billings has sold one car and initially plans to make a total of ten. Eventually, Billings says, it should be possible to mass-produce inexpensive hydrogen-powered vehicles-and to sell conversion kits for conventional autos for only a few hundred dollars. The current price: $300,000, for the car and the hydrogen generator.

(*Newsweek*, 22-10-1979)

Portable Thresher

A light weight portable paddy thresher has been developed at *IRRI* in the Philippines. This machine has no screens but separates grain from straw only by winnowing. Because of its low cost and portability, it has gained considerable popularity in the Philippines.

A prototype unit of this portable thresher was fabricated and it was subsequently modified to incorporate wheat threshing and bhoosa making capabilities. This machine is currently under tests and further developments. (IU)

New Material for Paper Making

By A. S. M. Farouk
Chief Chemist,
National Paper Corporation,
Embilipitiya Factory.

WITH the free availability of internationally manufactured paper today, locally manufactured varieties are facing stiff competition in the market. Therefore it has become essential to improve the quality of locally-made paper and also to cut down costs of production inorder to enable them to compete with this international challenge.

Substitutes

At present however due to the fuel crisis facing us and also due to the fact that we import part of the raw materials required, the cost of production is steadily rising. Today for example, the long fibre pulp required for manufacture has to be imported and it costs the Ambilipitiya factory about Rs. 60 million per annum for this alone. Thus in these circumstances it is evident that the local products could hardly compete with the imported paper. It has therefore become obligatory for paper technologists to introduce substitutes for the traditional raw material and also to evolve more efficient methods of production to keep costs down while at the same time ensuring that a high quality is maintained.

With this in view, the Research Development division of the Ambilipitiya Factory has undertaken a series of experiments in using sugar cane baggase, local eucalyptus, wal beli, sesame stems, suriya katurumurunga and Kapok etc. as raw material. These experiments have revealed that practically everyone of the above mentioned could be used as effectively as the imported long fibres. However of these, Kapok has proved to be the best.

Hard wood

Kapok is a hard wood tree which grows wild in the barren regions of Sri Lanka's dry zone. However there are several varieties of Kapok and two of the main that could be used in the manufacture of paper pulp are the local and the Java varieties.

The local Kapok is not profusely branched but it has a thorny trunk whereas the Java variety is branched and have thornless trunks. Though for the purpose of experimenting, the thornless variety was used, research has revealed that the local variety too could be used without impairing the quality.

Kapok can be grown easily by propagation or germination of seeds without any special manuring or watering. The tree could be used for pulp manufacture when it is about 5 or 6 years old and the branches could lopped off without causing any damage to the parent tree. A harvest of about 30 to 40 tons of oven dried product could be obtained from an acre.

Process

Although both the bark and the wood could be used to turn out pulp, generally only the wood is used because this is more economical because the bark contains more extracts and this poses problems when bleaching.

The bark is therefore removed from the trunk before it is used for obtaining pulp. First the trunk is cut into logs and these are stacked in such a way as to facilitate air circulation. The wood has then to be seasoned for about 3 to 4 months, because it has been found that pulping is ineffective when unseasoned wood is used. Thus seasoning is an important factor where pulping is concerned.

Pulping

There are several accepted methods of pulping but the one used at the Ambilipitiya factory is the soda

process. In the experiments carried out with Kapok, this same process was adapted after allowance had been made for the botanical and chemical structure of the wood concerned. This is essential because if the pulp is not up to standard, the quality of the paper too would be inferior. Thus a minute study of the Kapok, its botanical and chemical properties etc were made. Therefore in milling the raw material in order to dissolve the lignin which is contained in the middle lamella binding the fibres together, extreme care has to be taken to ensure that delignification takes place properly or else it would result in the production of an unbleachable, wasteful and unsatisfactory pulp.

Finally the Kapok pulp was bleached under the chain process which is the method used at the Ambilipitiya factory inorder to remove all remaining lignin pigments etc. Furthermore the bleached fibres should also be purified to form a strong and free-flowing carpet which would flow through the machine easily. Apart from this, during purification the fibrils in the fibres open up and absorb water thus resulting in their swelling up. At the same time they become flexible. The strength of the paper depends mainly on the flexibility and the rate of contraction of the fibre. Since Kapok has, medium length fibres, a check should be maintained to ensure that they don't gut. This has to be down under low pressure and temperature. In so doing a reduction in the consumption of electricity too could be affected.

It should also be remembered that different mixtures are required to produce various types of paper. The classification of fibre, determination of silica and ash content should be carried out and the mixtures and ratios etc. too have to be changed depending on the type of paper—whether writing, printing or band paper is to be made.

By boiling 22% of caustic, dry weight of oven dry Kapok for 8 hours at a temperature of 170° atmospheric pressure of 7.5 and a liquid ratio of 1.4, an unbleached pulp of a very high quality could be obtained. By bleaching this pulp, a pure white pulp with undamaged fibres which is similar to the imported one could be obtained.

The Kapok fibres are longer than straw fibres and it contains less medium sized fibres than the sasame stem pulp. It's ash and silica content too is much less than that of straw and close to that of sasame pulp. Therefore due to its low silica content, Kapok pulp is as advantageous to use as the sasame pulp.

The experiments carried out at the Ambilipitiya factory have proved conclusively that Kapok could be used in place of the expensive imported long fibres. It is as versatile, and cheaper to use than the imported variety. If a planned cultivation of the Kapok now growing wild in and around the Ambilipitiya factory could be carried out, a planned programme to develop this raw material could be launched. In any case, research on this aspect has already been commenced and it is hoped that it would be possible to manufacture newsprint and paper required for magazines etc. from Kapok at a low cost.

The following abstracts are brief samplings of some of the articles occurring in the journals that are available in our library. These articles are provided through our Industrial Information Service (IIS). The public could visit the library and read the articles. This would not incur any cost. The Library is open between 8.30 a.m. and 4.30 p.m. on week days.

* * * *

* Appropriate technology–a strategy for industrial growth in rural areas by Ram K. Vepa (Small Industry Bulletin for Asia & the Pacific No. 15) p. 105-111.

Gives guidelines for cooperation between the developing countries in utilizing appropriate technology for industrial growth.

* Role of NRDC in the development of machinery for leather industry by P. Soundararajan (Invention intelligence, Jan. 1979) p. 18-22.

* * *

* Transfer and development of technology for developing countries (Small Industry Bulletin for Asia and the Pacific No. 15) p. 99-104.

Reviews the position of developing countries in the world market for technology and then presents a brief survey of the major problems arising from the technological dependence of the developing countries

* * *

Coffee Pulp

* Processing of coffee pulp: Chemical treatment by Roberto A. Gomez Brenes (In Coffee Pulp: IDRC) p. 71-81.

Gives treatment with calcium hydroxide sodium metabisulphite & sodium hydroxide.

* * *

* Use of coffee pulp in ruminant feeding by M. T. Cabezas & others (In Coffee Pulp: IDRC) p. 25-38.

Reviews the nutritional characteristics of coffee pulp for ruminants & attempts to draw conclusions about the potential as well as the limitations of this material in feeding systems.

* * *

* **Manure**

Use of rice straw as a fertiliser material by S. L. Amarasiri & K. Wickremasinghe (Tropical Agriculturist Vol. CXXXIII No. 1; Jan-June 1977) p. 39-49.

Rice straw is rich in nitrogen, potassium and silicon.

* * *

* **Ground-nut**

Ground-Nut—(Technologies from developing countries, Development and Transfer of Technology series No. 7, United National New York, 1978).

A protein isolate from Groundnut has been developed by CFTRI. This can be used in the toning of milk, protein-enriched bakery products, protein-based beverages, ice cream and confectionery products etc.

* * *

* **Rice**

Silica content of rice husks as determined by soil properties & varietal differences by M. W. Thenabadu (Tropical Agriculturist, Vol. CXXXIII No. 1; Jan-June' 77) p. 71-80.

The contents of silica in the husk of four varieties of rice grown at seven locations distributed in the wet; intermediate and dry zones in the island have been determined.

* * *

* Rubber an irreplaceable a material with expanding use (Engineering materials & design, May 1978) p. 29-35.

Gives details about vulcanisation & preparation.

INDUSTRIAL INFORMATION SERVICE

For the Latest in Industry

Read

KARMANTHA

*THE ONLY MONTHLY JOURNAL IN THE FIELD

Featuring

* Policy decisions * Processes * Management Techniques * Projects * Latest Research Findings * Marketing Information and Articles of Interest to Students

Be an Annual Subscriber and save 16%!

Annual Subscription (Including postage) Rs. 15/- only

Industrial Development Board,
615, Galle Road, Katubedde,
Moratuwa.

ANNUAL SUBSCRIPTION FORM

A * Postal Order/ * Money Order/ * Cheque bearing

No.....for Rs.....

being * one/ * two year's subscription for the * Sinhala/ * English issue/s is sent herewith.

.....

Signature

Date: .....

Name and Address

.....

.....

.....

* Strike off what is inapplicable.

N.B.

* All payments should be by Postal Orders/ Money Orders / Cheques drawn in favour of "INDUSTRIAL DEVELOPMENT BOARD".

* The annual subscription for either the Sinhala or English is Rs. 15 and for both Rs. 30/-.

(The charges include postage. Price per copy including cents -/25 postage)is Rs. 1/75.

* "KARMANTHA" is published monthly in Sinhala & English.

IDB SERVICE TO INDUSTRY

IIS

OILS & BEVERAGES · CERAMICS · CHEMICAL ENGINEERING · ADHESIVES · ESSENTIAL OILS · FOODS · FOUNDRIES · LEATHER PRODUCTS · FUELS · GLASS · INKS · OILS & FATS · PAINTS · BEVERAGES · CERAMICS · RUBBER PRODUCTS · DYES · ABRASIVES

INDUSTRIAL INFORMATION SERVICE

Utilise the Information in foreign Journals, Reports, Proceedings and Books being made available through the Industrial Information Service . This is aimed at providing up to date know how and information on:

FINANCIAL MANAGEMENT

MANAGERIAL PRACTICES

MACHINERY AND EQUIPMENT

PRODUCTION AND QUALITY CONTROL

PRODUCTS AND PROCESSES

MARKET INFORMATION

Current Awareness Service and Specialised Information Services are made available through this Service

INQUIRIES

Director, Documentation and Publications Division,

INDUSTRIAL DEVELOPMENT BOARD

615, GALLE ROAD, KATUBEDDE, MORATUWA.

Registered as a Newspaper at the G.P.O.

Printed by Mervyn Mendis at The Colombo Apothecaries' Co., Ltd., 125, Glennie Street, Colombo 2.