

karmantha

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KALUTARA, KURUNEGALA, KOLLUPITIYA, MATARA



1979 International Year of the Child

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

CONTENTS

	PAGE
* Soya - the best substitute for mother's milk	— by <i>H. C. S. Peiris</i> 2
* Goodrich to enrich our tyres	— by <i>P. L. Ramenaden</i> 5
* Soya milk project available	— by <i>T. T. Jayaweera</i> 7
* Technology transfer : a group approach	8
* Power from rubbish	9
* Sweeping changes in company law	— by <i>P. L. Ramenaden</i> 11
* In place of Maldive Fish	— by <i>Nimal Dayaratne</i> 13
* He was helped to perfect his product	— by <i>Dharmasiri Siriwardene</i> 14
* Good management : Sino quo non to success	— by <i>T. T. Jayaweera</i> 17
* Call for better deal	— by <i>P. L. Ramenaden</i> 19
* Simplified accounting system	— by <i>M. Thenabadu</i> 20
* Good prospects for Chutneys	— by <i>Mrs. K. M. W. Perera</i> 23
* Industrial Information Service	26

Our Apologies

The distribution of the KARMANTHA was held up due to delays at the Printer.

Although we did everything we could to reduce the delay, this copy of the magazine is inevitably late in reaching you.

We hope you will understand that the situation was not of our making. Please accept our apologies for this delay—and also for the delay of the next issue as that too is held up.

The Publishers

In Our Next Issue

- * Accent on small scale ventures
- * Budget and tax incentives
- * Time opportune to direct development
- * Cardamom : Potential for development

Soya — the best substitute for mother's milk?

By H. C. S. Peiris

One doesn't have to be a doctor or a nutritionist to know that milk is the only sustenance to an infant. But what one sometimes fails to realise is that any milk is not the answer. To a human baby, the best milk would be its mother's milk and not that of a cow's because that mammal's milk is meant for its off-spring's sustenance and not for the well being of the offspring of another species.

However, when we in Sri Lanka talk of milk, we tend to think in terms of the milk of cows, buffaloes, goats and mothers milk, only latterly. I say, latterly, deliberately, because we Lankans especially in the urban areas tend to think of mother's milk last, due perhaps to various reasons and in no small measure to high pressure advertising. Many Sri Lankan mothers seem to be relying heavily on substitutes derived from cow's milk rather than on their own.

Impossible task

It is true that thanks to science and technology, man has been able to process the milk of various species of mammals so that they come close to being substitutes of mothers' milk. But at best, one must remember that they are only substitutes and that so far, none of the so-called 'processed' infant milk foods available in the market are capable of competing with breast milk. It is an almost impossible task for any chemist in

Seminars and demonstrations on the preparation of various of food items using soya beans were held at the CISIR and at Badulla and Bandarawela recently. The IDB has successfully completed the project on manufacturing Soya milk and it is now available to the public.

(See page 7 for details)

the world with the present know-how to perfect a formulation that contains the biological properties of mother's milk and market it at comparative prices.

Breast milk

However inspite of all the concerted claims of milk powder manufacturers and the high cost of their products, if infants are breast fed, better results could be obtained and our nation would be a healthy and wealthier one. I needn't go into details regarding the benefits to be gained from breast-feeding because the mass media and every conceivable authority not only in Sri Lanka but the world at large as well have waxed eloquent on the subject.

Though opinion is divided as to the merits and demerits of the

present day milk powder, most food technologists and those in the know are of the opinion that properly processed soya milk would fill the void left by the lack of mother's milk. Nutritionists and paediatricians feel that among the milk substitutes available, soya could well become an excellent base for a substitute for mother's milk. Soya beans could be grown easily in many parts of our country. Furthermore this milk, thanks to modern science and technology, could be made quite suitable to human beings from zero age to those who are over 100 too. Moreover viable projects to produce this milk could be set up quite easily with a comparatively low capital investment.

The protein and oil content of soyamilk is given in the Table below:

Oil	-	1.66%
Crude Protein	-	3.31%
Real Protein	-	3.19%
"Digestible"		
real Protein	-	2.92%
(Pepsin/Hcl)	-	

Annual herb

Soya is a leguminous grain of the plant *Glycine max* (L) Merrill, which has been known to man especially in China and Japan from time immemorial. It is an annual herb which matures within 75 to 180 days. With proper irrigation, management and fertilization a yield up to 2000 lbs of beans per acre is possible.

In fact it is believed that it had been cultivated in the lands east of the Mediterranean as far back as 9000 BC. In East Asia, particularly in China, it has been eaten with rice dishes for over 1000 years, and has been found to be a very safe food. As a result of intense research, we have various soya based products such as milk, meat, flour, curd, sauces and numerous other textured preparations that are wholesome and nutritive. Processes have also been evolved to produce food items with improved flavour and digestibility. Today, USA, China and Brazil are the recognised large scale producers of this miracle bean.

TABLE II

Gives the Average Nutritional Composition as an Average of 100 grams of Soya Bean.

Moisture	..	7%
Proteins	-	35-45%
Oil	-	18-22%
Crude fibre	-	3.7-5.0%
Available Carbohydrates	-	12-14%
Minerals (calcium, phosphorus, potassium, Sodium etc.	-	4.6-5.4%
Nicotinic Acid	-	2.1 mg.
Thiamine (Vit. B.)	-	1000 hg.
Riboflavin (Vit. B ₂)	-	310 hg.

Pyridoxim (Vit. B ₆)	-	1180 hg.
Lecithin	-	2.0-3.8%
Carotene	-	18-24%
Pantothenic Acid	-	2150 hg.
Vit E.	-	140 hg.
Vit. K.	-	100 hg.

Thus it could be seen from the foregoing that except sunflowers, Soya beans contain more polyunsaturated linoleic and linolenic acids—totalling about 60%—than other common edible oils and that it provides a very high quality, nutritive food. Therefore it is possible for soya bean to be eaten in combination with rice because the two supplement the deficiencies of each other and form an ideal, well balanced diet.

Hull removed

However, in order to ensure that soya bean could be consumed by humans without ill effects, it is necessary that it be heated to at least 100°C for 5 to 10 minutes. This is necessary in order to destroy certain anti nutritional and inhibitory factors in it and this should always be borne in mind when processing soya for human consumption. At the same time, the outer skin or hull is also generally removed when it is processed.

Milk

The process for the production of Soya Milk has been known to the Chinese for more than 2000 years, though we have come to know of it only comparatively recently. The process involved in manufacturing milk is comparatively simple—the bean is milled or pounded with water, and could be produced in practically all homes by using a mortar and pestle. The conversion ratio is around 5 to 7 pints of milk from a pound of beans.

Once the milk has been extracted, the residue could be utilized to make cutlets, 'vaddai', biscuits or it could be used as animal feed.

However if production is to be carried on a commercial scale, a mechanised mincer or blender or grinder could be used. If a mechanised grinder or mill is used, the conversion ratio would work out to around 1:7 or 8 pints but if produc-

tion is on a large scale using sophisticated equipment such as homogenisers colloid mills etc, a yield of about 1:10 pints could be expected. However in this case, there wouldn't be any residue or meal left.

For cooking

The milk so obtained could either be used as a substitute for cow's milk or used for cooking. When used for cooking, even the residue or meal, except for the hull could be used. The technological process for extraction is designed to get the maximum amount of milk while at the same time removing the undesirable flavours. However if one so desires, the milk could be bulked with a percentage of cow's milk ranging from 10 to 50% and sweetened and flavoured. In order to increase its shelf life, it should be pasteurised or sterilized.

The steps to be followed in processing the milk are as follows:

- * Soak 1000 grms (2.204 lbs) in 4000 ml (app. 8/9 gallons) water for 24 hours (The ratios given could be changed proportionately depending on production). This process removes the beany and bitter flavour considerably.
- * Remove/drain off water used for soaking.
- * Wash the beans thoroughly.
- * Dip soaked beans in water heated to about 78°C for 10 to 15 minutes. The temperature of the water should be maintained at this level (78°C) This treatment is essential to remove the enzymes which cause "beany flavour".
- * Remove the hulls by either rubbing the beans between the palms or on a rough surface.

Some authorities advocate milling or crushing the beans with water heated to 80°C However any method may be chosen depending on individual preference because both methods have their advantages and disadvantages. However, whichever method is used, if there is an intention of using the residue for human consumption, the hull should be remo-

ved before milk extraction. However if the 'beany' flavour is to be retained, the raw, soaked, dehulled beans could be directly milled without any heat treatment. Even this milk, with 0.5 to 1.0% cream, sweetened with 10 to 15% sugar gives a very delicious milk with an ice cream like flavour.

* The beans should then be milled using three different sized aperture sieves—the ideal would be sieves with 5 mm, 3.5 mm and 2 mm holes, if a motorised mincer is used. If the mortar and pestle is used, then the residue should be milled with every extraction of milk.

* At each milking, about 2000 ml water should be added to the milled beans (ie 1000 grms) and the mixture should be stirred and pressed thoroughly so as to be able to extract the maximum amount of milk.

* The extraction could be done by either using a press or it could be done manually by using a cloth. Then pass the residue left, through the 3.5 mm sieve and extract again after adding another 2000 ml water. The residue after this milk extraction could then be passed through the 2 mm sieve and extract milk as before. Finally after the third extraction, the milk from all three extractions is bulked together and filtered through a clean cloth.

* The milk and the residue thus formed should be heated to 100°C for 5-10 minutes prior to consumption. The product put out by the IDB is so treated, pasteurised, sweetened and flavoured.

Crushing

Crushing or milling could be done by using either a wooden or stone mortar if sophisticated mincers are not available. However the extraction process is the same.

The total amount of milk that could be expected to be extracted is about 6000 ml and the solid content of milk will be about 7%.

A study of Table given below would reveal that soya milk has a high nutrition value as far as oil is concerned.

TABLE III

Oil	—	23.6%
Crude Protein	—	47.3%
Digestible Real Protein	—	42.0%
Sodium	—	0.0001%
Potassium	—	0.102%
Calcium	—	0.009%
Phosphorus	—	0.042%
Iron	—	0.01%

If the composition of the essential amino acids of soya milk protein is compared to the proteins found in normal cow's milk, it becomes evident that soya milk could easily be given as a substitute for cow's milk and that it could be given to infants, babies and children of whatever age from one to 100, without any qualms. Apart from this it should also be remembered that while it is as good or even better than cow's milk, soya milk is very much cheaper. In Sri Lanka however with the production of Soya milk being stepped up, there is every likelihood of the price of soya milk coming down even further.

The following table shows comparison between Soya Milk and Cow's Milk.

TABLE IV
9 litre

Amino Acid	Soya milk	Cow's milk
Arginine	2.82	1.26
Histidine	1.01	0.91
Iso Leucine	2.09	2.63
Leucine	2.93	3.43
Lysine	2.40	2.63
Methionine	0.56	0.84
Phenyl alanine	1.95	1.79
Threonine	1.57	1.51
Tryptophane	0.56	0.53
Valine	2.00	2.52

Glaser and Johnstone have carried out experiments with soya milk and they have described how 65 infants were fed quite successfully on soya milk from shortly after birth until about 9 months of age. According to them if soya is used as a weaning food, Ca, Fe, Vit A and Vit C should be added to it. In fact, even in the case of cow's milk, iron and Vit C have to be added to it because it is deficient in them.

However the most alluring advantage of soya over cow's milk is that it is very much cheaper to produce than cow's milk and it could also be

used as a beverage or to cook as a substitute for coconut milk. Unlike coconut milk, it could be taken by heart patients as well because it is said to be cholesterol free. Further more as can be seen from the foregoing, soya milk could be produced in practically every home in Sri Lanka. Thus the future is bright for soya cultivation.

"New Shoot"

A chinese barefoot doctor is reported to have formulated a nutritious soya flour-based powder which could be reconstituted into milk which is claimed to be a good substitute for mother's milk. Researchers confirm that this product is as good as, if not better than the natural one. The product known as "New Shoot" is claimed to contain the following ingredients:

Ingredients in 100 Kgms of 'New Shoot'

Soya bean	—	24 Kg.
Rice flour	—	50 Kg.
Corn flour	—	16 Kg.
Eggs with shells	—	10 Kg.
Egg shell powder	—	1 Kg.
Vegetable oil	—	2 Kg.
Table Salt	—	0.5Kg.

However the mix seems to be deficient in certain biological factors required in the diet suitable for infants. They are:

Essential amino acids—leucine and methionine
Vit A including carotene.

These could however be supplied by the addition of supplementary foods such as Codliver oil etc. without much difficulty.

This mixture is subjected to steaming and heat treatment in an oven at 120°-139°C for one hour to ensure removal of all undesirable factors including Trypsium inhibitors and haemagghutnin.

Before use, the milk substitute should be cooked thoroughly with water to make a gruel of suitable consistency". (Depth news Science Service).

Reference: Communication 64, Small scale and Home processing of Soya beans with application and Recipes by Dr. Thio Goan Loo.

GOODRICH TO ENRICH OUR TYRES

By P. L. Ramenaden

The Sri Lanka Tyre Corporation which was established in 1962 under the State Industrial Corporations Act No. 49 of 1957, is one of the major industrial organisations in the public sector of Sri Lanka with an approximate turnover of Rs. 170 million per year and giving employment to nearly 2,000 persons.

Originally the Corporation obtained technical assistance from the Soviet Union under an agreement signed in 1961 by the Sri Lanka government. Commercial manufacture commenced in 1967 with only four sizes of tyres and tubes.

Substantial progress

This organisation has made substantial progress during the last 12 years and today, it has introduced 21 sizes of tyres to the local market, thus meeting about 85 per cent of the local demand. In the recent past, the Corporation has also been able to export a few tyre sizes to certain Asian countries.

However, though the Corporation had been able to progressively increase its production and improve the quality of certain varieties of tyres, especially the quality of truck and tractor tyres, it had been unable to achieve accepted quality standards particularly of car tyres. This was mainly because it was not in a position to under-

take research and development due to various limitations such as lack of funds and equipment, the necessary skills and experience. However, inspite of these drawbacks, the Corporation had been able to make much headway during the past two years under the new management. In 1978 the production of tyres and tubes increased by 53.0% compared with 1977 production. The profits earned on production during 1978 were recorded at Rs. 42.8 million. This achieved productivity and profitability are the highest recorded by the Corporation so far.

Remedial action

Even regarding the poor quality of car tyres, the Corporation has taken remedial action—it has gone into collaboration with Goodrich of U.S. The Minister of Industries and Scientific Affairs, Mr. Cyril Mathew made the following remarks in this connection:

“There is no doubt that the Sri Lanka Tyre Corporation is economically viable within the framework of the public sector corporations today. But there is some doubts about the quality of their products as the Corporation is still continuing their production with conventional technology. It is observed from various reports and discussions that the tyres produced, especially the car tyres are not upto the accepted international standard. In order to improve the quality, there is a need to change the present formulations and technology.



Negotiations

“After nearly two years of negotiations with eight reputed tyres manufacturers, the officials of the Corporation and the Ministry recommended to the Government in obtaining technical know-how from M/S B.F. Goodrich Co. Ltd., U.S.A.

“Under the Technical Collaboration Agreement, the Sri Lanka Tyre Corporation would be benefitted in obtaining the Goodrich technology and technical service. Also the appropriate training for our personnel will be provided by them in their factories. With the introduction of new technology, I believe, that the Corporation would be able to reduce the present cost of production of tyres. This would help the country save foreign exchange as the main raw materials for tyre production are based on petroleum, products of which prices are increasing daily.

Different types

"The comparative studies of different types of tyres reveal that the use of radical tyre technology save about 6 per cent on fuel consumption when compared with cross ply tyres. Thus the introduction of appropriate technology for radial tyre production is an advantage not only for the corporation but also for the country as a whole".

Improve quality

Mr. Justin Dias, the Corporation's Chairman and Managing Director told the Karmantha that an institution like the Tyre Corp. was unable to carry out appropriate research due to various obstacles and therefore, it was necessary to explore the possibilities of getting assistance from available sources in order to improve the quality of the Corporation's products.

"There are a few alternative courses for achieving higher quality standard of tyres and tubes. These can be classified into three—firstly, improving quality through the Corporation's own efforts in conducting its research and development with the aid of available, published literature. Secondly, obtaining the services of technicians from abroad. Thirdly, collaboration with a reputed foreign manufacturer".

"The first alternative was not feasible because most technical know-how developed by others, was patented and was available only in part in published literature. In the case of the services of experts, since most of the formulations and know-how of reputed firms are classified and secret, the knowledge and know-how possessed by the technicians would not be sufficient to achieve desired quality standard. Further more, the knowledge gained by the technicians would not be up-to-date, therefore all in all, we felt that collaboration with a reputed manufacturer would be our best bet". he said.

Apart from this the Chairman said that reputed tyre manufacturers possessed up-to-date technical know-how which had been tried, tested and proved successful. Thus under a collaboration agreement, this would be passed on to us." He said that there were four major objectives of the present collaboration with Goodrich:

- (1) To manufacture tyres and tubes of quality comparable to the B.F. Goodrich tyres which has been accepted as a quality product in the world market.
- (2) To improve the manufacturing methods in order to minimise cost.
- (3) To increase the output adopting improved technology.
- (4) To provide appropriate training in tyre technology to Sri Lanka Tyre Corporation personnel.

However, apart these other advantages, according to the Minister himself, there is this provision also—"The agreement does not provide any provision for B.F. Goodrich to control the present management activities of the Corporation. In fact, the experts who will be working in the Corporation will have to serve under the Board of Directors of the Corporation. Any changes in policies or taking decisions in relation to financial and welfare aspects of the employees of the Corporation will be the sole authority of the Board of Directors. Therefore, it is obvious that collaboration with B. F. Goodrich is for national interest on expanding the activities of the Corporation with modern technology to produce a quality tyre upto a standard accepted internationally.

Main objective

"The main objective of our Government is to improve the living standard of the people of Sri Lanka. Since there are many advantages in having technical collaboration with a well-known reputed firm, I strongly feel that any improvement of the Corporation with the assistance of B.F. Goodrich will contribute directly to increase the economic growth of the country. I have no doubt that the present management of the Corporation will implement the project proposals satisfactorily in order to achieve the major objectives of the technical collaboration."...

Therefore it can be seen that with the Goodrich tie up, the Tyre Corporation is on the threshold of bigger achievements. According to Chairman Dias, the Corporation hopes to commence textile radial tyre production for car tyres in two years while at the same time, it would consider the introduction of other more sophisticated technology if these are economically viable and appropriate. With the coming in of Goodrich technology, the production of motor cycle and bicycle tyres too would come into operation. Therefore, in short our production would increase and costs of production would decrease.



For details Contact:
FOOD GROUP IDB

Soya Milk Project Available

By T. T. Jayaweera

The Industrial Development Board has concluded experiments in the manufacture of Soya Milk, on a viable small-scale basis.

A pilot project to demonstrate the commercial viability of the manufacture on a small-scale and its process technology has already been set up at the IDB head office.

Training

The IDB is also hoping to provide training facilities to those interested in setting up small-scale soya milk manufacturing units.

In addition to this, the IDB has already been successful in the manufacture of Coconut Cherry Cubes (Nata-De-Coco) a delicious dessert from coconut water,) Peanut Butter and Turkey Red Oil. Small scale pilot projects to demonstrate the commercial viability of these units have been set up at the IDB head office.

All these projects utilize local raw material and locally fabricated machinery and the technical processes and know-how could be obtained from the head office. Training facilities could also be offered to those interested in setting up small scale units.

Furthermore, the IDB has so far published over 60 project reports on small and medium scale projects which utilize locally available raw material and also locally fabricated machinery to a large extent. Apart from these there are also several project profiles in respect of industries that could be carried on at a cottage level. These, as well as the project reports are available to the public. Among them are the following:

Coconut vinegar, papain, peanut oil, sugar cane jaggery, manioc starch, mushrooms, cheese, radio repair shop, soap (washing) banana fibre, coir, fibre, bees honey & wax, sago, open pan sugar, cutting and polishing of semi-precious stones, modern blacksmithy, modern carpentry shop, sericulture, palmyrah fibre grinding mill, tumeric powder smoked fish, non-ferrous foundry, roofing tiles, nata de-coco, sugar cane juice (for drinking purposes), tamarind concentrate, spice oil, musical instruments, cashew nut shell liquid, rice milling, coir ropes, manioc starch (small scale) cashew processing (kernels) baking powder, electric immersion heaters, hot plates, Kettles, burnt building bricks (conventional type), tooth powder, workshop for motor vehicle repairs & agricultural imple-

ments, distemper, sports goods, (leather) modern pottery manufacture, fertilizer, mixtures, low cost rice mill, roasted peanut, brick manufacture (wirecut type) metal crushing 2 unit crushers) and metal crushing unit (single crusher).

These Project Reports are essentially model reports and should necessarily be modified to suit the particular location where the projects are to be set up and other circumstances that would be relevant to the undertaking. They seek to maximise the utilisation of available local raw materials, skills and technology.

The IDB would render all assistance to entrepreneurs in the setting up of these projects. Project Reports and all assistance in the setting up of projects could be obtained conveniently from any of the IDB's Regional offices at Anuradhapura, Amparai, Kalutara, Kurunegala, Colombo, Badulla, Kandy, Matara and Jaffna.

GASOHOL PRODUCTION GETS PRIORITY

A committee appointed by the Minister of Industries and Scientific Affairs, Mr. Cyril Mathew has given high priority to the production of an alternate source of energy - Gasohol - by using sugar cane and manioc.

The committee, which comprises representatives from the IDB, CISIR, ARTI, Distilleries Corp., Sugar Corp., and Exise Department, has got the project moving at top gear and experiments are now underway in this regard.

Technology transfer: a group approach

A group of British businessmen is trying to get to grips with the underlying problems in grafting western technology on to more primitive cultures. They have formed a novel kind of trade association. In fact, it is more like a club the handful of members appearing to be surprisingly free from suspicions of each other's activities and motives.

The club is called Technex—the technology transfer group. Its members have each paid Rs. 63,000/-. Not much, perhaps, to a company the size of John Laing Research and Development., but a lot for one or two small consulting firms among the members.

Through its Transmark subsidiary, British Rail is represented among the club members. Others include Imperial Foods, the United Medical Enterprises (the government-backed group that sells medical technology and services overseas), the P.E. Consulting Group and SIRA Institute, a scientific instrument research company.

Much of the club's strength lies in its wide diversity of interests.

How this expertise can come together to provide a technology package tailored precisely to the needs of a particular developing nation is best illustrated perhaps by the idea of the National Industrial Technology Centre. This is a package designed to lay the foundations of a national standard of quality control and quality assurance for a country with no industrial base.

Initially, the club worked up a detailed proposal at the invitation of the United Arab Emirates. This was a country with no basic standards for the industrialisation programme it was planning. Laing SIRA Institute, the National Computing Centre and the British Hydraulics Research Association collaborated to produce a scheme tailored to the range of industries—petrochemicals, metals, food, paper, building materials, etc.—the U.A.E. was planning for a site in Abu Dhabi. But the whole plan fell foul of an economic recession.

Undismayed, Technex has set out to market very similar schemes to other countries. Currently it is working on feasibility studies for two other West Asian oil countries and a third country in East Africa.—Financial Times.

**More
Services
from
the
IDB**

In order to promote and develop small scale industry, the IDB will shortly set up a Rubber products service centre, an electroplating centre and two light engineering common services centres.

At the same time, in an attempt to revamp the services it provides to industrialists, the IDB would also be setting up a sub-contracting exchange while the services provided at its workshop and foundry too would be expanded in order to offer a more streamlined service which would benefit a larger spectrum of industrialists.

The World Bank would provide financial assistance to the value of Rs. 10 million for the purchase of machinery and equipment etc. under this expansion programme envisaged by the IDB

Thus under this new programme, the IDB would be equipped to meet the demands for its services from the public and also help in the development and expansion of such industries that have potential for further exploitation. (PR)

RESEARCH AND DEVELOPMENT

POWER FROM RUBBISH

Seven companies of the George Kent process control and instrumentation group have received orders worth nearly £250,000 (Rs. 45 lakhs) for equipment for a refuse incinerator plant which the Singapore Ministry of the Environment is building in Ulu Pandan, near Ayer Rajah in the south of the island.

This will be an effective means of disposing of rubbish and will provide low-cost electricity at the same time. The refuse will be mixed with oil and will fire three boilers, the steam from which will drive a 20 MVA turbine generator set to be supplied by BBC Brown Boveri of Mannheim, also responsible for the engineering, supply, installation and commissioning of the electrical control and instrumentation package.

Erection and commissioning of the control equipment will be carried out by George Kent (Singapore) on behalf of Brown Boveri, using instrumentation to be supplied by six other Kent companies. Kent Instruments of Luton will supply the bulk of the instruments, nearly 500 items, comprising Deltapi Series E electronic process variable transmitter; Flexel recorders

and indicating controller, and computing bin systems with

logic and arithmetic function minicards. —Financial Times.

New 'Cheap' Fuel Found

An American inventor has developed a completely new fuel which he claims is "clean, inexpensive, adaptable in unlimited quantities".

This was reported in Udaipur in a background paper presented at a seminar on "International Economic Order: The Agricultural dimension" by the Udaipur University and the American Centre.

Called Woodex, the new fuel is small wood pellets resembling oversized match sticks—about two centimetres long and six millimetres in diameter.

Developed by Rudolph Gunnerman, the wood pellets are said to have the energy producing equivalent of coal. One kilogram of woodex generates exactly the same quantum of energy as a kilogram of coal. [PTI]

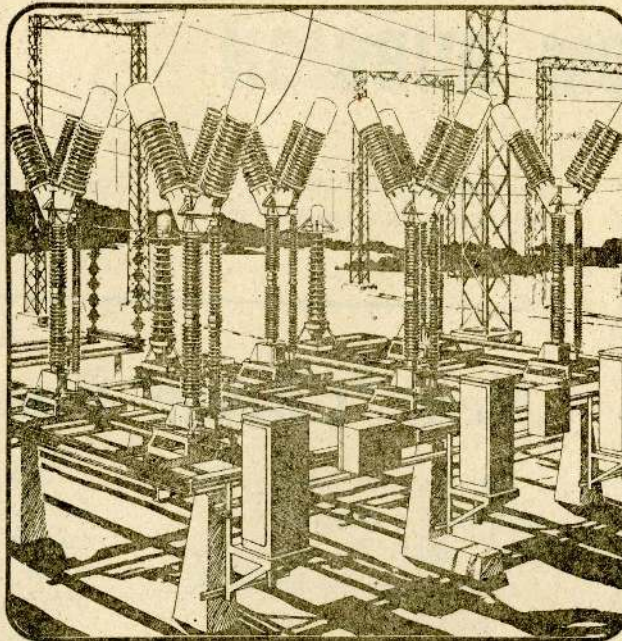
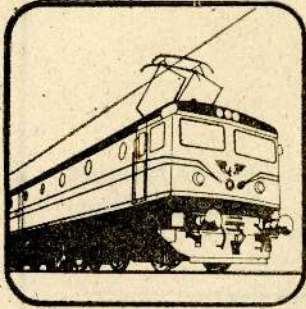
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Or better still, send us a nice article of about 1000 words.

Editor

ASEA in power in industry in transportation

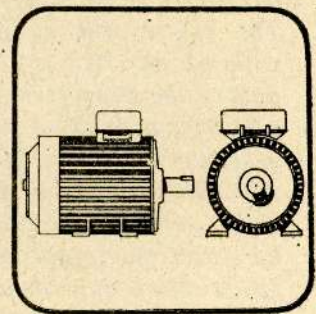
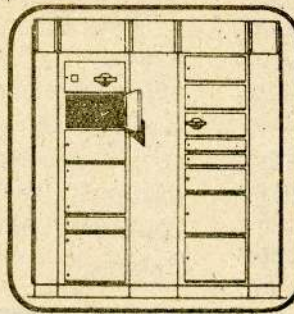
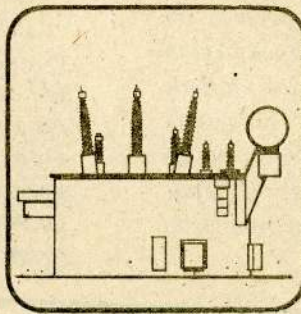
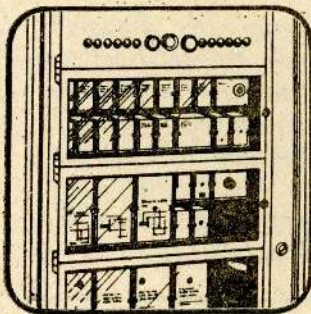
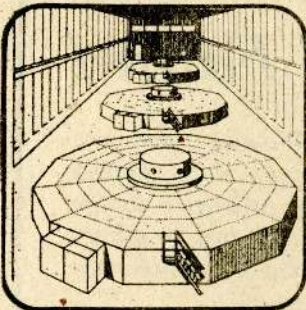


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ASEA

Sweeping changes in Company law Soon

By P. L. Ramenaden

The Company Law of 1938, is to be amended. The draft proposals for the amendment of the law will be presented shortly as a sessional paper to the cabinet and it would be open for public discussion.

The new Law seeks to up date the Company Law as it stands by embodying some of the provisions of English and Indian Law. The English Company Law act of 1929 was replaced in 1948 and again in 1967 and 1976, certain amendments to the Act were made. While in India, the Company Law act of 1956 has been amended in 1965 and in 1967, in Sri Lanka however, no such updating had been done and in the light of present-day development, it has become a crying need.

Greater Powers

The Registrar of Companies will be vested with greater powers to investigate the affairs of private companies. Apart from this, the other major amendments proposed include far-reaching changes to the structure of the Company law including the setting up of public companies.

Wider privileges

According to the amendments, share holders would be given wider privileges and rights and under legal obligation, even private companies would have to file accounts with the Registrar of Companies. At present only public companies are obliged to do so.

A Registrar of Companies spokesman said that prescriptions of English Law regarding disclosures and accounting would be included in the draft proposals. English Law requires that all payments made either in cash or kind to directors and senior employees be disclosed. It also stipulates that their terms of contracts of service, dealings with the firm, share holdings and other business interests be disclosed. The spokesman said that the draft proposals had provision for these prescriptions to be incorporated in our new law.

According to the wider powers to be vested with the Registrar of Companies, the Registrar would now have the authority to appoint his own investigators to look into the affairs of private companies if circumstances of fraudulent practice and intent to defraud shareholders or any other justifiable information is brought to notice. He could also investigate the affairs of firms where persons connected or concerned with the management or even the formation of such companies have been guilty of fraud or misconduct in relation to those companies.

The Registrar could also initiate investigations if it is brought to his notice that the share holders have not been given information regarding the affairs of the company including its finance and accounting.

If the draft proposals enter the statute book, the present legal requirement of a minimum 10 per cent shareholding as a pre-requisite for a minority share holder to have the right to litigation would be done away with and every share holder would be given the right to litigation.

People's companies

A new dimension in the structure of companies in Sri Lanka would be embodied in the draft proposals with the establishment of People's companies. Under this proposal, persons resident in Sri Lanka may form incorporated companies for any lawful purpose with limited liability. However, according to the proposal, no person, either individually or together with his wife or minor children or as a family group may hold either directly or indirectly through nominees, more than 10 per cent of shares individually valued at not more than Rs. 10/- in a people's company. The government, however, could have the right to hold an unrestricted share capital in any people's company.

The draft has also stipulated that directors of a people's company be elected every year by shareholders and that none of the directors could hold directorates in any other people's company. Further more, it is stipulated that no company, private or public could hold shares in a people's company.

The proposals to amend our Company Law comes under the initiative of the Trade Minister.

Indonesian Cement for Sri Lanka

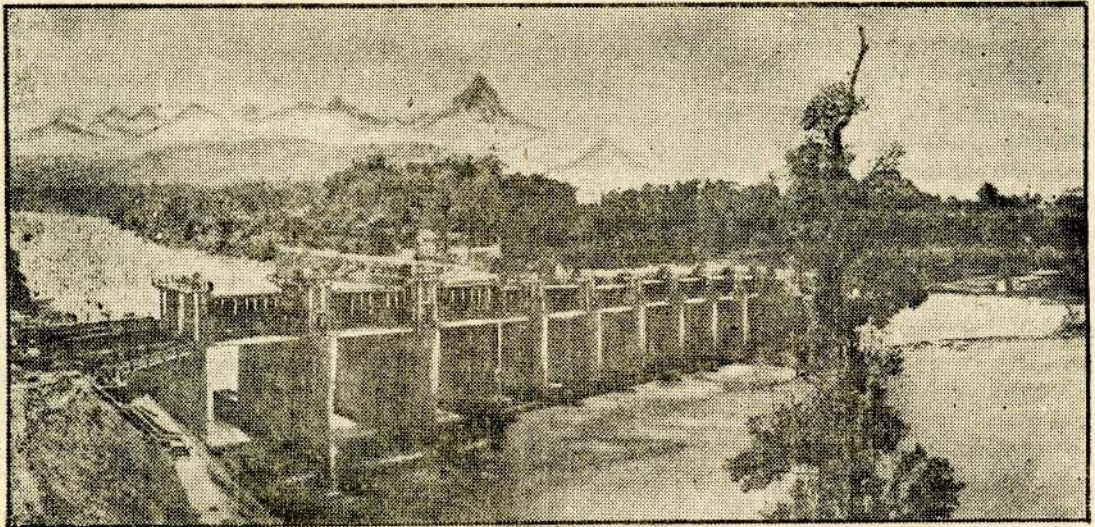
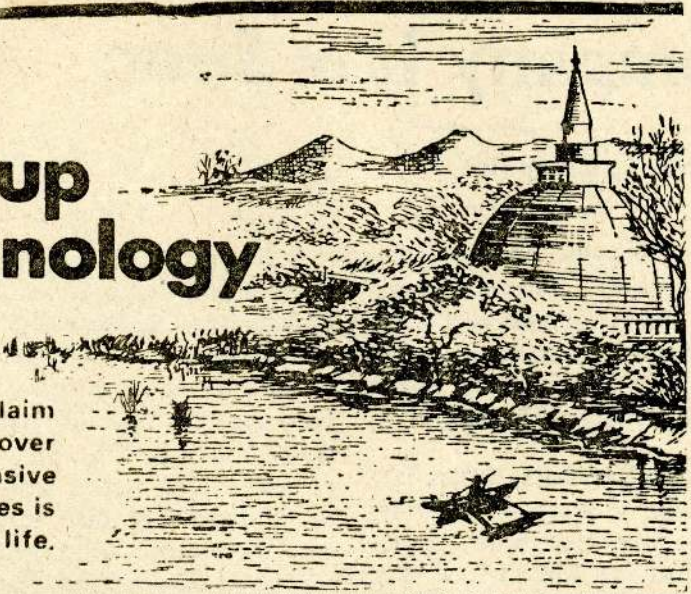
Following the successful conclusion of negotiations between Sri Lanka and the Indonesian Cement Association, Indonesian cement will be available here shortly.

The Indonesian Cement Association has agreed to hold 40,000 tons of cement in reserve for Sri Lanka.

Leading Indonesian companies are expected to bid for tenders that are to be opened by the Cement Corporation and the Building Materials Corporation for the supply of both Portland cement and clinker.

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IN PLACE OF MALDIVE FISH

By Nimal Dayaratne

Maldive Fish needs no introduction to the Sri Lankans, it is undoubtedly a tid bit that many a Sri Lankan gourmet has relished and yearned for. However, of late, due to its non-availability and high prices, Maldive Fish, more often than not, has been yet another item that we have come to tag as a 'luxury', and learnt to do without.

Therefore, a recent Ministry of Fisheries announcement that it had come up with a substitute, would of course, be welcome news to many of our trenchermen. According to the announcement, the Ministry has introduced a kind of powdered fish, which is claimed to have a similar taste, but having more protein value than Maldive Fish.

The substitute—Rasajeewa—was initially manufactured in Norway using a species of fish known as 'Caplin' which is a variety very similar to Sri Lanka's 'Karalla'. This fish powder is said to have 80% protein content.

At present, under the Norwegian aid programme, a Rasajeewa packing centre has already been set up at Kotte and this centre is said to have an annual manufacturing capacity of 1,000 tons.

According to the aid agreement, the Norwegian Government has agreed to manufacture Rasajeewa at the rate of 1,000 tons annually for a period of five years. The proceeds from the sale of this product would be ploughed back to develop the fishing industry in Sri Lanka.

Process

The Caplin or Karalla is initially thoroughly washed and cleaned, then it is boiled under a moderate temperature. The excess fat is extracted by feeding the boiled fish into a mechanical extractor. Once the fat is extracted, the residue is dried, powdered and packed. It is now ready for market.

According to a Fisheries Ministry spokesman, Rasajeewa could be used with any type of food and like Marmite or Bovril, it enhances the flavour of the foods as well as adding protein to it. A tablespoon of Rasajeewa is claimed to be sufficient to give the necessary flavour to 'Seeni sambol' made from one pound of onions. However, like almond essence, too much of it could have an adverse effect, the spokesman cautioned.

The Ministry has already test-marketed this product and it had been received favourably, according to reports.

Since Maldive fish is so scarce and expensive, there is a big demand for it and steps have already been taken to produce Maldive fish locally. The Fisheries Ministry meanwhile has come up with a substitute which is prepared according to a Norwegian formula and is claimed to be as good as Maldive Fish.

The Kotte packing centre has initially provided employment to 20 girls and 5 boys. At present this factory has a capacity of 180 packets per hour working out to a daily output of 1,300. However when the factory steps up production by the end of this month, when it hopes to market its product in 40 gram packets on a island-wide basis, the Ministry hopes to provide employment to a considerable number of persons.

FROM YOU TO US

If you have anything interesting that you think would be useful to our industrialists please send it along to us, we'd be happy to publish it.

Pictures and drawings will be very helpful to those who are "Do it yourself types."



He had no know-how. The IDB came to his aid.

Nadesan Mylvaganam, the proprietor of Printing and Decorating Industries, engaged in manufacturing grills for hot plates, insulators and other accessories for electrical goods from clay, on a very small scale, was having problems with his kiln. Though he had the enterprise or the initiative to start the venture, he did not have the know-how needed for this exacting project, nor did he have the capital required to obtain sophisticated equipment and trained personnel. All he had was the desire to produce these items.

At first, since he was producing goods on a very small scale, his lack of knowledge did not matter. Using his "hit or miss" method of production, if the product turned out badly, he merely discarded the



Many of his products were rejected by the customers and therefore he sought IDB help. The IDB's technical unit helped him to perfect his product.

He was helped to perfect his products

By Dharmasiri Siriwardene

Since the Industrial Development Board is an institution set up to help small-scale industrialists we have published this article not in the spirit of praising ourselves, but merely to stress the fact that we are dedicated to serve the cause of developing our own industries so that in time to come we could produce practically every component that is required in this country and also to invite other industrialists who are having technical problems to bring them along to us—we'll help you.



The industrialist was operating with the very bare requirements using rather rudimentary equipment. The technical unit helped him to perfect his product within this framework. Today his product is widely used and it is as good as the imported ones.

lot and started all over again. In fact, many have been the occasions on which his customers had rejected his product. These repeated rejections and spoilt products were taking heavy toll on his purse and since his resources were not unlimited, he had to seek the assistance of the Industrial Development Board to raise a loan.

However, even this fresh capital was insufficient because his percentage of discards were still rather high and at the same time, he had been able to secure fairly large and regular orders. But he was in a quandary because his 'hit or miss' method was proving to be rather costly. It was while

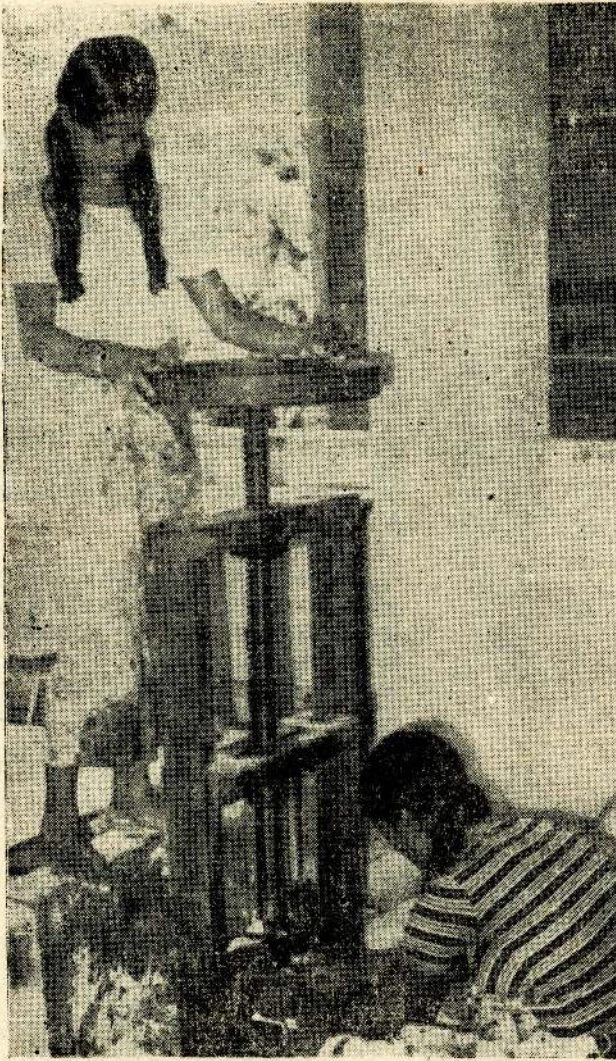
he was in this impasse that he finally decided to enlist the assistance of the IDB.

The technical unit of the IDB, found that he was operating with the bare requirements using rather rudimentary equipment. His unit was housed in a 54ft. x 20ft. building and the equipment he had were, an improvised pot mill and kiln, an hand operated screw press, balance moulds, a blower and compressor. Even his kiln which was an improvised one, was a rather poor one which did not function efficiently. Even in the matter of firing the kiln, the industrialist was lacking in know-how.

Furthermore, the industrialist complained that his end products i.e. the grills and even the insulators, tended to warp and also to be discoloured. Thus the IDB officers had quite a problem on their hands. First and foremost, the officials studied the kiln. They consulted the Ceramics Corporation and got an



The industrialist was given detailed instructions regarding the design and firing of the Kiln.



expert from that institution to inspect the kiln. The Ceramics Corporation expert advised the industrialist to redesign the kiln according to specifications drawn up by the IDB and the Ceramic Corporation. Since only a limited sum of money was available, a certain amount of improvisation was required. Furthermore, the industrialist was instructed to line the inner walls of the kiln with fire bricks.

However, even after this, the kiln tended to smoke and to produce soot. This, the officials found out was due to a faulty mixture of Kerosine and air. Finally after several tests, the optimum mixture was arrived at.

Once the problems with regard to the kiln were rectified, the question

The hand press was being operated by unskilled girls. The IDB officials helped to train them.



*On right:
Even the glaze composition was perfected by the IDB's staff.*

of the body composition of the clay was studied. After tests, it was felt that the defects in the end product were due to the liberal addition of fluxes—Feldspar, Dolomite and glass powder. The industrialist's rough and ready methods resulted in the products having a tendency to warp. However the proportions suggested resulted in perfect products being obtained. Apart from the composition, the officials were also not satisfied with the manual mixing of the raw materials because the final mixture was not of a constant quality. They suggested that the industrialist should get a ballmill.

Even the glaze composition that was being used by the industrialist was unsatisfactory. Therefore it was suggested that the composition of the flowing glaze should be altered.

Thus the main problems that the industrialists had with regard to his, kiln, body composition and glaze

(continued on page 19)



GOOD MANAGEMENT: SINO QUO NON TO SUCCESS

By T. T. Jayaweera

Good management is 'sino quo non' to the success of any type of activity whether it be business, industry or any other organisation. It simply means getting a job done and getting it done efficiently. Thus good management is designing creating and maintaining an internal environment in an organisation where individuals working in a group could perform efficiently and effectively towards the attainment of the aims and objectives that organisation seeks to achieve.

For granted

However many small organisations tend very often to take this aspect for granted. They tend to treat the basic elements of management on a low key, giving it a very low place of importance. Even certain large establishments tend to err in this respect. Very often this is due to such factors as technicalities of operation and the demands of commercial achievement in the face of expanding sales and the pursuit of profit. Furthermore even complications arising from financial and other control routines tend to relegate these basic elements of good management in the case of small firms and sometimes, even in large enterprises.

These may well be unavoidable in the context of modern business, but it is well to remember that they are in fact, the very tools of good management, which of

course are the manager's targets but they are not the targets themselves.

However, whatever the form or size of an organisation, management implies planning, organising, directing and controlling, without which, no organisation, whatever its functions may be, would be able to function properly. It becomes very important in the case of a business enterprise.— If planning, organising, directing and controlling, are absent then, that enterprise would never run efficiently or profitably.

Therefore, since these factors play such a vital role in the well being and profitability of a venture, it would be best if these elements that go to constitute good management are examined so that their significance to an organisation could be assessed.

Planning

Planning constitutes the determination of policy i.e. the laying down of the aims, objectives and targets of an organisation, the general principles on the basis of which the organisation would operate, forecasting the future, making decisions on programmes, procedures and potential achievements of that establishment. This aspect of planning especially the setting up of production targets etc. become very vital in that the

very well being of the organisation depends on it. Therefore, this is a function of the top management but, greater participation of the employees in the formulation stage of the plan helps to obtain greater participation of the employees in the achievement of the targets set, and also in the very implementation of the plan.

Overall plan

An organisation could have an overall plan while the separate departments responsible for the major tasks could have plans covering their respective activities. However, the departmental plans have to be integrated into the overall plan of the organisation in order to ensure that the direction of the common effort towards the achievement of the set targets is not impaired.

An inherent factor in management is risk-taking but the fact that alternatives—the various aspects of the problem and the variety of solutions to them have all been considered at this planning stage, help considerably in reducing the risks of failure in achieving the set targets.

Organisation

The allocation of major tasks in allogical manner, in conformity with the aims and objectives of an organisation, in such a way as to demarcate the areas of authority, functions and areas of responsibility and relationship between and among the major tasks in hand, all constitute organisation.

Proper systematic organisation eliminates confusion, duplication of effort and unnecessary expense. While ensuring efficiency and proper utilisation of capacity and capabilities, good organisation also enhances the possibilities of fostering good inter-personnel relationship, does away with corruption and misunderstanding while, at the same time it facilitates the successful co-ordination of all sections of the organisation in achieving the successful completion of the project in hand or achieving the organisation's primary objective. At the same time, when there is proper organisation of activities, there is a sense of achievement and personal satisfaction that even the members of the staff feel at the successful accomplishment of tasks.

The recruitment of staff is an aspect of organisation. The expression "putting square pegs in square holes" should characterise the objectives of those who are responsible for selecting and placing individuals in jobs.

DIRECTING

Directing consists of overseeing and supervising the performance of the firm as well as the staff. It is the process by which the plans and organisational relationships are translated into action and it includes training, motivating and disciplining personnel in an effort to gain maximum efficiency.

Therefore it is evident that directing is a crucial function in the entire pyramid of management because not only the well being of the firm rests on its effectiveness but also that of the human beings engaged by the organisation. It is therefore, not only a confrontation between the management and its staff but also the handling of human beings, their capabilities and skills and their failings and temperaments in relation to the overall aims and aspirations of the firm or organisation.

Thus, any attempts at directing without taking into consideration and without regard to human emotions, behaviour psychology, safety, self-actualisation, aspirations and capabilities of the staff and the magnitude of the task expected of them are bound to fail and these attempts would end with poor results, losses and frayed tempers. Apart from this, all good and efficient planning, organisation and control would come to nought.

Therefore it can be seen that directing is an integral part of good management, because if good directing is absent the efficiency of planning, organisation and control are negated.

CONTROL

Control implies the existence of a plan without which it becomes meaningless. It is the process of checking current performance against pre-determined targets and standards set at the planning stage with a view to ensuring adequate progress and satisfactory performance. It also helps to detect deficiencies for immediate corrective action, enables changes to be affected to plans and for modification of plans and targets.

Thus if proper control is maintained it would be possible to regulate the activities of an organisation and ensure that targets are maintained. It would also indicate capacities and capabilities so that remedial action could be taken in case of short falls in production and output. Therefore feed-back, which is a vital factor in effecting corrections in the light of actual performance as compared with planned performance necessarily flows out of control.

Thus the efficiency, viability and well being of an unit, organisation, enterprise or any other human endeavour depends entirely on the management and the management itself depends on how well or to what extent the foregoing golden rules of good management are practiced and adhered to.

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CALL FOR BETTER DEAL

by Philip L. Ramenaden

The Minister of Rural Industrial Development, Mr. S. Thondaman, recently urged entrepreneurs in the field of handicraft exports to bring the export markets and the craftsmen in the village together.

He was inaugurating a seminar on "Handicraft Exporter/Producer Co-ordination" in Colombo.

Mr. Thondaman asked exporters to change their operations from a purely purchasing activity to a series of activities embracing the passing down of design information, providing marketing guarantees and the like.

In this way not only will a larger production volume be generated but the benefits will flow directly to the rural producer, the Minister said.

He said that in the absence of recognition of his skills in the domestic market, the craftsman was often compelled to debase his product.

A major challenge before the authorities was how best to recognise the craftsman's skill and give him the appropriate financial and social rewards so that he will be encouraged to propagate his skills among a new generation.

Mr. Thondaman said it was alarming to note that

while incomes in the agricultural and industrial sectors had risen by 150 per cent in the last 10 years, craft-level incomes had improved only between 30 to 40 percent.

If this trend continued our traditional crafts would be eclipsed.

The Minister said that the problem was not so much finding markets as finding enough craft goods to meet the demand. Poor design, quality and presentation of goods, failure to meet delivery schedules lack of credit and the absence of regular marketing channels are some of the problems listed by the Minister.

It was in this context that he urged exporters to play a catalytic role in bringing new managerial skills to the craft sector.

(continued from page 16)

composition were all rectified by IDB officials and the Ceramics Corporation officials.

Naturally Nadesan is full of praise for the IDB. He says "I knew very little about the manufacture of clay products. If not for the IDB, I would never have been able to produce quality goods. It is a pity that only a few people realise how helpful the IDB is. If more people approach the IDB for help, they would be spared many a headache".

Today, the industrialist is going from strength to strength assured that if he has any more problems, the IDB is there to help him.

KARMANTHA

Editorial Note

The journal is a means whereby information on innovations, inventions etc. are communicated to the industrial sector. Besides highlighting the latest technological developments through articles, the journal carries information on processes, utilisation of raw materials etc.

Contributions are invited on industrial development and related aspects. Articles based on factual data, research work and surveys are welcome.

Contributions could be from research workers, entrepreneurs, educationists or any others interested in the industrial field.

Published contributions would be paid for. The amount payable would be decided by the Editorial Board.

SIMPLIFIED ACCOUNTING SYSTEM FOR THE SMALL INDUSTRY SECTOR

By M. Thenabadu

Financial management is a very vital aspect of running an industrial venture and its importance cannot be overstressed. However this is a field that is more often than not taken for granted by most small and medium scale entrepreneurs. Furthermore, book-keeping is a closed book to most of us. Therefore we intend publishing several articles on this subject, designed especially to cater to the needs of small scale units. In order to help a large cross-section of our readers, we have adapted a very simplified approach to deal with this very complex subject.

Systematic record

Before setting out to explain the theory behind elementary accounting, let us examine what is expected to be achieved by this exercise. By keeping a systematic record of transactions, in the proper books of record, it enables anyone to acquire a knowledge of the state of affairs of the undertaking.

This would also enable the following uses and benefits to be obtained:

- * Ascertain cash and bank balances—(this would facilitate cash Control)

- * Costing information relating to the direct costs of the products manufactured or services provided,
- * Information pertaining to money's due to outsiders from the firm, (Creditors) and amounts receive from persons to the firm (Debtors).
- * Details of assets owned, cost, accumulated provision for depreciation and written down value,
- * Inventory control,
- * Assessment of profit or loss during a given period,
- * Capital structure of the firm,
- * Apart from these, maintaining accounting records also becomes important when dealing with the Inland Revenue authorities and lending institutions.

The system of accounting adopted here too is the Double-entry method of book-keeping.

CASH TRANSACTIONS— CASH BOOK

Irrespective of the magnitude of a firm, the book used to record cash dealings is called the "cash book" because it records the actual amounts received or paid by the firm. Thus the proper maintenance of the cash book renders it possible for the following more important uses to be obtained:

- * Ascertain cash in hand at any given date.
- * If a bank account is maintained to ascertain the bank balance. For this purpose a cash and bank book is used.

- * The first entry made in the cash book when completed in the relevant ledger Account according to the Double-entry system helps to ascertain the Incomes and respective categories of expenditure separately.

Any book with columns ruled out in the manner shown below could be used as a cash book.

[See page 21]

The amount column on the left of the cash book is used to record moneys received by the firm. The left side entries are known as 'Debit' entries as they are receipts of the firm while those on the right are known as 'Credit' entries because they are payments made by the firm.

However care must be taken to ensure that all transactions, be it a receipt or a payment are entered in the cash book in all details. In each transaction the date, description giving details of what it is, and the amount has to be duly entered in the correct side, for example, if it is a receipt of cash, the details should indicate from whom it was received and on account of what etc.

If a cash book is just being started, the amount of cash available or the cash in hand should be entered in the Debit side the details to be entered should be termed "balance in hand".

CASH BOOK

Debit Side (Receipts)				Credit Side (Payments)			
Date	Details	Ledger folio	Amount Rs. cts.	Date	Details	Ledger folio	Amount Rs. cts.

The ledger folio column contains the folio number of the ledger account to which the corresponding entry of the cash book's first entry has been posted.

Similarly as for receipts, for payments too, the date, details, ledger folio and amount columns provided on the right side have to be inserted in the relevant cages, for each and every transaction. The details column should record to whom the payment was made and for what and on what account.

In order to ascertain the balance in hand, the cash book has to be balanced daily. The steps to be taken to balance the cash book could be enumerated as follows:

- * Draw two lines on the receipts side under the last entry on this side.

(Care must be taken to ensure that these lines are one line below the last entry on the payments side as well)

- * The total of the receipts should then be entered between these lines.

- * Then in line with the two lines drawn on the debit side, draw two lines on the credit side and insert within them, the same debit or receipts total as earlier obtained.

The total of payments or credit entries should now be separately ascertained and deducted from the debit total.

The difference thus obtained is the balance in hand as at even date. This amount is inserted in the line just above the two lines on the credit side. In line with such an entry, the words "balance carried down," must be entered under "details" and the date of balancing must be entered in the date column...

January 01	: Cash Balance in hand	—	Rs. 500/-
January 02	: Purchase of raw material	—	Rs. 100/-
January 03	: Transport charges paid	—	Rs. 15/-
January 03	: Sales	—	Rs. 200/-

In this situation, the cash book entries should be as follows:

- * The balance obtained as above, represents the 'closing' balance on the balancing date and would form the 'opening' balance on the next day. Since the balance is brought down to the receipts' side, it is entered with the narration "Balance brought down" and the relevant date is also entered.

As can be seen from the foregoing, it becomes evident that the balancing of the cash book should be done daily if it is to be done efficiently.

Let us now take a practical example of how entries should be made in the cash book. Let us assume the following:

Receipts

Date	Details	LF	Amount	Date	Details	LF	Amount
Jan 1	Balance b/d		Rs. 500	Jan 2	Raw Material		Rs. 100
Jan 3	Sales		200	Jan 2	Transport		15
			—	Jan 3	Balance c/d		585
			Rs. 700				—
Jan 4	Balance b/d		585				Rs. 700

The ledger folio column will be entered after the entries are made in the ledger.

CASH AND BANK BOOK

This is the most convenient form of book that could be used when the firm maintains a bank account as well.

The cash book described earlier was only to record cash transactions

and therefore had only one column to record the amounts received and disbursed. This type of cash book is called a single columned cash book. Thus the cash and bank book will have two columns—one for cash and the other for bank transactions. These columns have to be set apart on both the receipts

and payments sides. Because of this, the cash and bank book is known as the double-columned cash book. In this type of book space must be left for the cheque nos. to be entered. A specimen of the cash and the bank book is shown below:

CASH AND BANK BOOK

Receipts					Payments						
Date	Details	Chq. No.	L.F.	Cash	Bank	Date	Details	Chq. No.	L.F.	Cash	Bank

All cheques received by the business and deposited in the bank are entered in the relevant column i.e. the receipt side. Likewise all payments made through the bank account are entered on the payment side in the bank column.

The following will show how entries are made in a cash and bank book:

In subsequent articles, we'll deal with the manner in which the Bank account balance obtained from the monthly Bank statement, is reconciled with the Bank balance as appearing in the Cash and Bank book.

1978	January	01	:	Balance in hand	—	Rs.	2,000/-
	January	03	:	Deposited at the Bank (For opening a Bank Account)	Rs.	1,500/-	
	January	04	:	Sales	—	Rs.	400/-
	January	07	:	Purchases for cash	—	Rs.	300/-
	January	08	:	Withdrawn from Bank	—	Rs.	150/-
	January	11	:	Cheque sent to Perera	—	Rs.	100/-
	January	13	:	Received cheque from N. Fernando	—	Rs.	200/-
	January	17	:	Paid cash to Alwis	—	Rs.	150/-

CASH AND BANK BOOK

Date	Details	Cash	Bank	Date	Details	Cash	Bank
1978		Rs.	Rs.	1978		Rs.	Rs.
Jan 1	Balance b/d	2000		Jan 3	Bank	1500	
Jan 3	Cash		1500	Jan 7	Purchases	300	
Jan 4	Sales	400		Jan 8	Cash		150
Jan 8	Bank	150		Jan 11	P. Perera		100
Jan 13	Fernando		200	Jan 17	Alwis	150	
				Jan 17	Balance c/d	600	1450
		2550	1450			2550	1700
Jan 18	Balance b/d	00	1450				

Good Prospects for Chutneys

By Mrs. K. M. W. Perera

The concept of food preservation is not new. Man learnt to smoke his kill so that it would keep for later consumption from the era that he became a cave dweller.

Evidence of grain storage and preservation systems of ancient civilizations in the form of nearly airtight jars, crypts and dugouts have been dug up from time to time in different parts of the world. Pickling of fruits and vegetables has been a household practice that dates back to antiquity and so has been the practice of preserving and pickling of fruits and vegetables. Making jams and marmalades has been a household pastime of countless thrifty housewives for centuries.

Recently

However, it was only in the last hundred years that food preservation had been industrialised and large-scale food processing had come into its own.

There is, however, a limit to the maintainability of freshness of raw agricultural, particularly, horticultural produce. Thus processing for long-term preservation and easy transport has become a vital function of modern life. In Sri Lanka for example where the production and demand for foodstuff is precariously balanced, wastage through non-preservation would be criminal. Therefore, since in Sri Lanka there is an abundance of fruits for exam-



Chutneys could be manufactured on a cottage basis or on a small scale or as a medium scale venture depending on the availability of fresh fruits.

ple, if steps are not taken to process the excess production there would be a colossal waste of this good food. A simple and cheap method of preserving the excess fruit would be by making jams and chutneys.

Many Varieties

The many varieties of fruit that are freely available could be utilized to manufacture delectable chutneys without much difficulty or capital investment. Furthermore, there is no problem whatsoever about marketing them either locally or abroad—there is a demand always for well-made hygienically marketed jams and chutneys if the price is right. This does not mean that at present this is not being done, but that it has not been done systematically on a commercial basis.

An untapped and not too well exploited market for our edibles is the Middle East. Since at present

there are countless numbers of our countrymen in voluntary exile among the scorched sand dunes of the 'oidoms', who are yearning for a little bit of home, there wouldn't be any difficulty in disposing of the jams and chutneys. Thus it could be seen that there wouldn't be any difficulty in setting up a small scale viable industry to manufacture chutneys, jams and pickles with a low capital investment.

Apart from this, as any housewife would testify, it is not difficult to make chutneys at home. Any good cookery book would give the details, and it is only necessary to master a few general rules in order to get perfect results. The ingredients and equipment needed are not expensive and they are freely available.

Selection of fruits

Care should be taken when selecting fruits to ensure that the fruits are fresh and not mushy. However prior to manufacture, the fruits

must be closely inspected and the damaged, spoilt fruit should be discarded. Thus it could be seen why only fresh fruits should be purchased because otherwise the percentage of rejects would be high and this would lead to both wastage and high costs of production.

Once the fruits have been selected they should be washed thoroughly in clean running water to remove dirt and extraneous matter. Just prior to manufacture, the fruits should be cut or peeled with a stainless steel knife.

Consult us

In this article we have given the recipes for chutneys to be made at a cottage or domestic level and purely for domestic consumption, but if one wished to produce them on a commercial basis, the quantities required would have to be increased proportionately. However, if there are problems with this, please consult a good cookery book or better still, consult our Food Group.

Chutneys as every housewife knows, form a necessary accompaniment to rice and curry. The vinegar used for chutneys and pickles should be of the best quality. The jars or bottles into which chutneys and pickles are put must be perfectly clean and dry. Cork them tightly so as to exclude air or seal the bottles, if the chutney is to be kept long. Successful chutneys and pickles can be turned out by carefully following the directions given below for making them.

Process

Date

- 1 lb. dates
- $\frac{1}{4}$ lb. sugar
- 1 oz. dry chillies
- $\frac{1}{2}$ oz. garlic
- $\frac{1}{2}$ oz. green ginger
- $\frac{1}{4}$ bottle vinegar
- salt to taste

Stone the dates and grind them; also grind the chillies, garlic and ginger with vinegar. Make a syrup of the sugar and the remainder of the vinegar, add the ground ingredients and salt, and boil until the syrup is thick. Let it cool, then mix in the dates.

Dried Apricot

- $\frac{1}{2}$ lb dried apricots
- $\frac{1}{2}$ lb. sugar
- $\frac{1}{2}$ oz. dry chillies
- $\frac{1}{4}$ oz. garlic
- $\frac{1}{4}$ oz. green ginger
- $\frac{1}{4}$ bottle vinegar
- salt.

Wash the apricots well and put them into a basin with sufficient cold water to cover them, and let them soak overnight. Then remove the seeds and put the apricots and the water in which they were soaked into a saucepan and simmer slowly until the fruit is tender, mashing the fruit with a spoon. Grind the chillies, garlic and ginger with vinegar. Put the remainder of the vinegar into a saucepan, add the sugar, ground ingredients and salt and stir over the fire until the ingredients are cooked. Then add the stewed apricots and let the whole boil till they are of a good consistency for chutney.

Green Tomato

- 1 lb. green tomatoes
- 1 lb. sugar
- 1 oz. dry chillies
- 1 oz. mustard seed
- $\frac{1}{2}$ oz. garlic
- $\frac{1}{2}$ oz. ginger
- $\frac{1}{4}$ bottle vinegar
- salt.

Boil the prepared tomatoes in the remainder of the vinegar until the fruit is soft. Add the sugar, the ground ingredients and salt, and boil the whole gently until of a good consistency for chutney.

Ginger Preserve

- $\frac{1}{2}$ lb. ginger preserve
- $\frac{1}{2}$ oz. garlic
- 6 ozs. sugar
- $\frac{1}{4}$ oz. dry chillies
- $\frac{1}{2}$ oz. green ginger
- $\frac{1}{4}$ bottle vinegar
- salt.

Grind the chillies, garlic and green ginger with vinegar. Cut the preserved ginger into very small pieces.

The preserve should be fresh and syrupy. Make a syrup of the sugar and the remainder of the vinegar, add the ground ingredients and salt and boil until the ingredients are cooked. Then mix in the syrup from the preserved ginger and the cut ginger and let the whole boil till of a good consistency for chutney.

N.B.—Chou-chou preserve can be prepared in the same way.

Lime Pickle

- 1 $\frac{1}{2}$ lbs. pickled limes
- $\frac{1}{2}$ lbs. sugar
- $\frac{1}{2}$ lb. sultanas
- $\frac{1}{2}$ ozs. dry chillies
- 1 oz. mustard seed
- 1 oz. garlic
- 1 oz. green ginger
- $\frac{1}{4}$ bottle vinegar
- salt.

Cut the limes into fine strips. Remove the stalks from the sultanas. Grind the chillies, mustard, garlic and ginger with vinegar. Dissolve the sugar in the remainder of the vinegar, and the ground ingredients and boil until the syrup is thick. Allow to cool, then add the lime pickle and the sultanas and mix well together.

Lovi Chutney

- 1 lb. lovi pulp
- 1 $\frac{1}{2}$ lbs. sugar
- $\frac{1}{4}$ lb. sultanas
- 1 oz. dry chillies
- 1 oz. mustard seed
- $\frac{1}{2}$ oz. garlic
- $\frac{1}{2}$ oz. green ginger
- $\frac{1}{4}$ bottle vinegar
- salt.

Pick the stalks from the lovi which must be quite ripe, and wash the fruit. Put them into a saucepan with sufficient water to cover and simmer gently until the fruit is quite tender. Then drain off the water (this juice can be used for making jelly) and rub the fruit through a sieve fine enough to keep back the seeds. Wash the sultanas and remove the stalks. Grind the chillies, mustard, garlic and ginger with vinegar. Make a syrup with the sugar and the remainder of the vinegar, add the ground ingredients and salt and bring to the boil. Then add the sieved fruit pulp and boil till it is of a good consistency for chutney. Let it cool and then mix in the sultanas.

Mango

- 1 lb. green mangoes
- 1 lb. sugar
- $\frac{1}{2}$ lb. sultanas
- 1 $\frac{1}{2}$ ozs. dry chillies
- 1 oz. mustard seed
- 1 oz. garlic
- 1 oz. green ginger
- $\frac{1}{2}$ bottle vinegar
- salt.

Peel and slice the mangoes, sprinkle them with salt and dry for a day in the sun. Then bruise the slices. Wash the sultanas and remove the stalks. Grind the chillies, mustard, garlic and ginger with vinegar. Dissolve the sugar in the remainder of the vinegar, add the salt and the ground ingredients and boil until the syrup is very thick. Then add the mango and boil for 10 minutes longer. Allow the chutney to cool and then mix in the sultanas.

Pineapple Chutney

- 1 medium-sized ripe pineapple
- 6 ozs. sugar
- $\frac{1}{2}$ oz. dry chillies
- $\frac{1}{4}$ oz. garlic
- $\frac{1}{4}$ oz. green ginger
- $\frac{1}{2}$ bottle vinegar
- salt.

Pare the pineapple and cut it into very small slices. Grind the chillies, mustard, garlic, and ginger with vinegar. Add all the ingredients to the pineapple and boil until it is well cooked and the chutney is of a good consistency.

Sweet Mango

- 1 lb. ripe mangoes
- 1 $\frac{1}{2}$ lbs. sugar
- $\frac{1}{2}$ lb. sultanas
- 1 oz. dry chillies
- $\frac{1}{2}$ bottle vinegar
- $\frac{1}{2}$ oz. mustard seed
- $\frac{1}{2}$ oz. garlic
- $\frac{1}{2}$ oz. green ginger
- 1 teaspoon salt

Choose sound fruit not too ripe. Peel the mangoes, cut them in small slices and weigh the fruit. Wash the sultanas and remove the stalks. Grind the chillies, mustard, garlic and ginger with vinegar. Put the mango and sugar into a saucepan and stir over the fire until the fruit is cooked, mashing the fruit with the spoon while stirring. Then add the

ground ingredients and salt mixed smoothly with the remainder of the vinegar and boil till of a good consistency for chutney, stirring all the time. Let it cool, then mix in the sultanas.

Sweet Pumpkin

- 1 lb. sweet pumpkin
- 1 lb. sugar
- $\frac{1}{4}$ lb. sultanas
- 1 oz. dry chillies
- $\frac{1}{2}$ oz. garlic
- $\frac{1}{2}$ oz. green ginger
- $\frac{1}{2}$ bottle vinegar
- salt.

Peel the pumpkin, cut it in pieces and remove the seeds and the stringy part from the centre and weigh the fruit. Wash it well and boil in slightly salted water. When tender, drain well and mash the fruit to a pulp. Wash the sultanas and remove the stalks. Grind the chillies, garlic and ginger with vinegar. Put the remainder of the vinegar into a saucepan, add the sugar and the ground ingredients and salt and stir over the fire until the ingredients are cooled. Then add the pumpkin and let the whole boil until of a good consistency for chutney. It must be stirred constantly. When cool, mix in the sultanas.

Tamarind

- 1 lb. tamarind
- 1 $\frac{1}{2}$ lbs. sugar
- $\frac{1}{2}$ lb. sultanas
- 1 $\frac{1}{2}$ ozs. dry chillies
- 1 oz. mustard seed
- 1 oz. garlic
- 1 oz. green ginger
- 1 bottle vinegar
- salt.

Squeeze the tamarind well in vinegar and strain it through a coarse net. Wash the sultanas and remove the stalks. Grind the chillies, mustard, garlic and ginger with vinegar. Make a syrup of the sugar and the remainder of the vinegar, add the ground ingredients and salt and bring to the boil. Then add the tamarind and boil till of a good consistency for chutney. Let it cool and then mix in the sultanas.

Tomato

- 1 lb. ripe tomatoes
- 1 lb. sugar
- 1 oz. dry chillies
- $\frac{1}{2}$ oz. garlic
- $\frac{1}{2}$ oz. green ginger
- $\frac{1}{4}$ bottle vinegar
- salt.

Grind the chillies, garlic and ginger with vinegar. Scald the tomatoes and remove their skins. Cut them into slices, add the remainder of the vinegar and boil until the fruit is soft. Add sugar, the ground ingredients and salt and boil the whole gently till of a good consistency for chutney.

Woodapple

- 1 lb. woodapple
- 1 lb. sugar
- $\frac{1}{4}$ lb. sultanas
- 1 $\frac{1}{2}$ ozs. dry chillies
- 1 oz. garlic
- 1 oz. green ginger
- 1 bottle vinegar
- salt.

Break the shell and scoop out the inside of the fruit with a spoon and weigh it. Squeeze the fruit well in vinegar, using about half the vinegar, and strain it through coarse net. Wash the sultanas and remove the stalks. Grind the chillies, garlic and ginger with vinegar. Make a syrup of the sugar and the remainder of the vinegar, add the ground ingredients and salt and bring to the boil. Then, add the woodapple and boil till of a good consistency for chutney. Let it cool and then mix in the sultanas.

Jest a sec...

Weights and Measures Inspector to butcher: "We've had several complaints that you've devalued the pound!"

* * *

No light

Customer: "This match won't light"

Shopkeeper: "What's wrong with it?"

Customer: "I don't know. It worked all right a minute ago".

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.

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GENERAL

Hazards of welding-recognition and hygiene standards by M. K. B. Molyneux. (CME, Nov. 1978), p. 54--57.

In addition to the physical hazards such as electrocution, burns and eye injuries, the hazards to health arising from irritant and toxic airborne contaminants are found to be more difficult to control.

Uses of Banana tree by Ranu Pal. (*Khadi Gramodyog*), Vol. XXV, No. 4, January 1979) p. 217--219.

Manufacture of Banana fig, Raw banana powder and the banana pseudostem are described.

INDUSTRIAL INFORMATION SERVICE

What to look for in buying used or rebuilt equipment by Frank J. Persichilli. (Rubber World, July 1978), p. 43--44.

The advantages over the new, and factors that have to be looked into are given.

* * *

AGRICULTURE / ACRO BASED INDUSTRY

A review on sunflower pectin by D. K. Pathak and S. D. Shukla. (Indian food Packer, Vol. XXXII, No. 3, May--June 1978), p. 49--53.

Matured sunflower is a good source of pectin. Its extraction, fractionation, purification and storage are discussed.

* * *

Dehydration of green chillies by A. P. Luhadiya and P. R. Kulkarni. (*Journal of Food Science and Technology*, Vol. 15, July-August, 1978), p. 139--141.

Using a cabinet drier, standard conditions and pre-treatments required to produce the best quality dehydrated green chillies were determined.

* * *

Recycling of Agricultural wastes by A. R. Patel and P. B. Pandya. (*Khadi Gramodyog*, Vol. XXV, No. 4, January 1979), p. 210-216.

Jute sticks, abattoir wastes, sugar cane waste, rice bran, paddy husk, coconut pith, bamboo waste, are described with their prospective uses.

CHEMICAL TECHNOLOGY

Cheap fuel from organic waste by Mary Harsch. (Reprint: *Industrial World*, November 1977.)

A new process converts Wood Wastes, straw, bagasse and other wastes into fuel pellets. Reprint 253

* * *

Liquid fuels from biomass by K. Goddard. (CME, January 1979), P. 33--35.

This article investigates some of the methods of deriving liquid fuels from living and waste organic matter.

* * *

Simple portable charcoal making unit (*Sendoc Bulletin*, Vol. VI, No. 7, July 1978), p. 12-13.

A transportable metal kiln, used for the manufacture of wood charcoal.

* * *

Temperature rise and wear of brake linings by N. R. Chakravarti. (*Journal of Technology*, Vol. XXII, No. 2, December 1977), p. 11-18.

The work has been associated with the evaluations, under laboratory conditions of the temperature rise and wear of FERODO type moulded brake linings. A mathematical analysis has been compared with experimental results.

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