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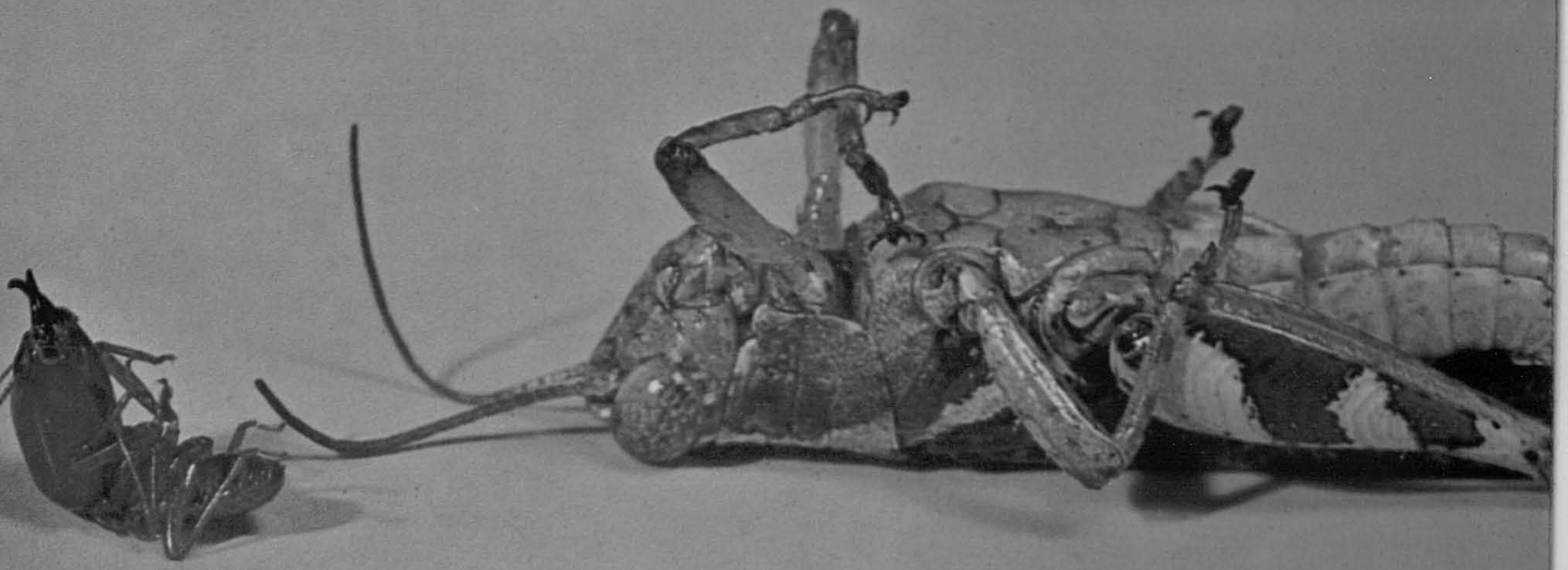

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N O T E

The Planter assumes no responsibility for the statements and opinions expressed by contributors.

SENTIASA MAJU

The Incorporated Society of Planters

Founded 1919

THE SOCIETY REPRESENTS the Planters of Malaysia and other territories, whose personal and professional interests it is bound to endeavour to secure and promote.

OBJECTS foremost in the Society's Memorandum of Association are:

To promote the general interests of the planting profession.

To promote the advancement and facilitate the acquisition of that knowledge which constitutes the professional qualification of planter.

To watch over, promote and protect the mutual and individual interests of its members in respect of matters pertaining to or arising from their employment in the planting profession.

To promote and maintain good feeling, co-operation and understanding between members and their employers.

ACHIEVEMENTS of the Society are a technical education scheme, the publication of authoritative works on tropical agriculture, a monthly magazine featuring original technical articles, the sponsorship of conferences and symposia on tropical crops, and the organisation of joint consultation with employers.

MEMBERSHIP of the Society is open to: —

A Those directly employed in plantation management such as estate managers, assistant managers, superintendents, supervisors and cadets, and

B Executive engineers, estate medical officers, and qualified scientific or administrative staff of estates or organisations mainly concerned with the planting industry.

Category B may include those employed in such other senior executive, administrative, professional or advisory capacities as may be deemed by the Executive Council as being equivalent thereto

Neither category shall include clerks, conductors, hospital assistants, etc.

ENTRANCE FEE for new and rejoining members is $10/- and must accompany application.

ANNUAL SUBSCRIPTION RATES are as follows: —

	During the calendar year in which eligibility for membership occurred and the 4 succeeding calendar years.	Subsequently.
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Ordinary Members employed as Managers, Assistant Managers etc. and normally resident in:		
Malaya and Singapore	$ 48	$ 78
East Malaysia and Brunei	$ 44	$ 60
Category B		
Ordinary Members employed as Executive Engineers, Estate Medical Officers, Research Staff etc., wherever resident	$ 48	$ 48
Approved Overseas territories	$ 44	$ 44

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Editorial:

The Inarticulate Planter?

In our January issue we wrote of The Technical Planter, and this month we consider his ability to convey his technical knowledge to others. As a professional body, this Society has far too many members who are unwilling, or unable to express themselves either through the spoken or the written word. The record of *active* participation by our planter members in the Society's annual conferences is a sorry one, and the presentation of papers and discussions from the floor are left largely to the specialists and scientists. Technical contributions to this magazine follow the same pattern, and it is a red-letter day when we receive an article from a planter.

For as long as the affairs of this Society are conducted in English there obviously will be a problem for those for whom this is not their first language. They need not worry. As a number of Malaysian and foreign authors can testify, they are afforded every assistance by our editorial committee. The editors rarely return a manuscript, and then only to point out how the article may be improved, or to recommend its being offered to a more suitable publication. Our object is to encourage and advise, and budding authors invariably respond with enthusiasm to our criticisms and suggestions. They also learn a lot.

It seems a pity that since off-duty planters always have *something* to say about planting, of recent years our impression is that 'talking shop', (so often an irritant and a bore to non-planters, not to mention the ladies) is nowadays indulged in to a much lesser degree.

The Bulletin of the Planters' Guild of the MARA Institute of Technology, the first issue of which has just appeared, contains a number of articles written by students in the 3-year Plantation Management Course. We have seen some of these, and have been impressed with the enthusiam of these young men—most of whom will soon become planters—for getting their ideas down on paper. If this is an indication of the literary aspirations and ability of planters-to-be, then all is not lost. But would our members have these youngsters put us to shame?

Our remarks are directed in the main to the Malaysian planter, since membership of the Society is now predominantly Malaysian, but there are many non-Malaysians of considerable seniority and experience who must have a great deal to offer our younger readers.

Our critics have said that they get fed up wading through the advertisements trying to find the 'meat' in this magazine. Our advertisers, who are very necessary for the financial viability of *The Planter*, would probably agree with them since, as things are, we often have the greatest difficulty in finding sufficient textual matter to keep the advertisements apart, and the latter lose much of their 'punch' if they are printed cheek by jowl with each other.

So, Planters everywhere, let's hear from you!

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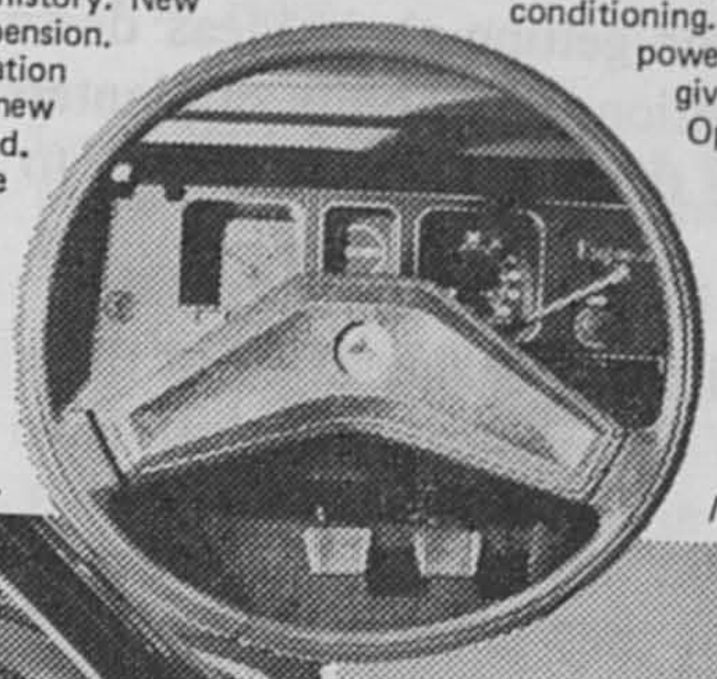
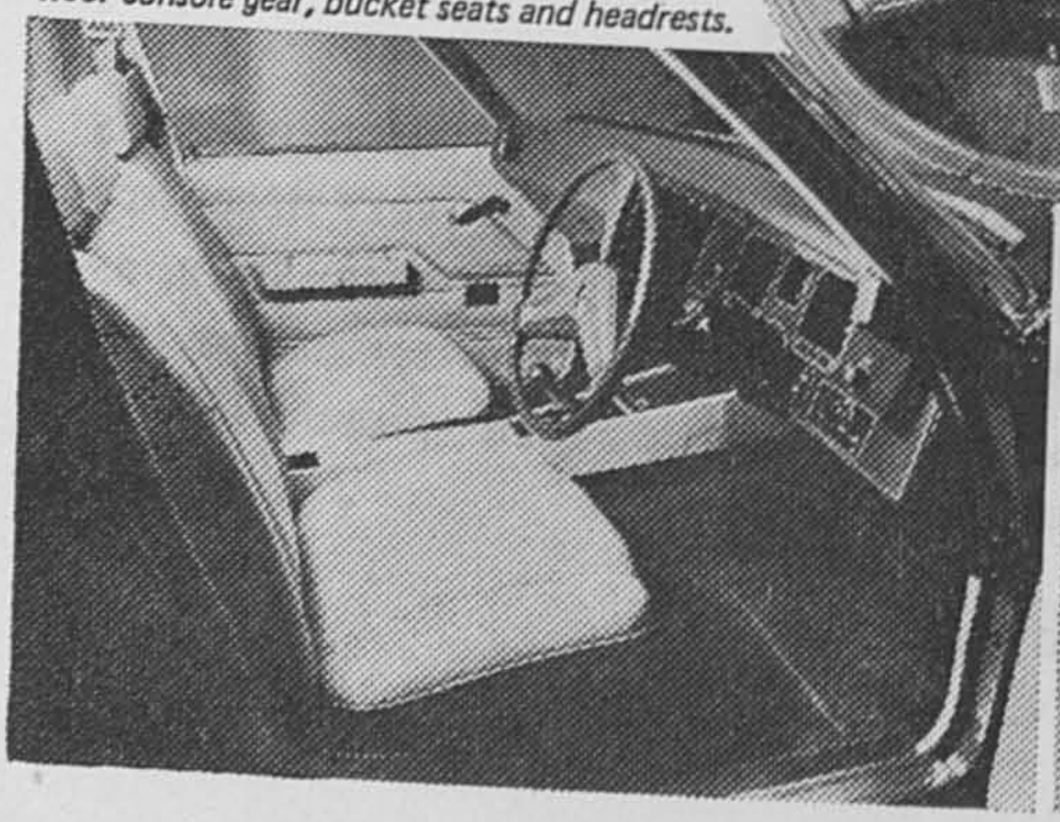


The superb new Kingswood with 4-speed floor console gear, bucket seats and headrests.



The big new Kingswood station wagon with long wheel base — an exclusive chassis design.

Planter, Kuala Lumpur **49:** 106–113 (1973)

Sugar cane as an estate crop

I. HARNESS*

INTRODUCTION

It is almost 60 years since the last few acres of commercially grown sugar cane which had been cultivated in Malaya from Singapore to the Thai border, although mainly in the north, disappeared and, for the most part, were replaced with rubber (Jackson, 1968). Until the last decade little or no interest has been shown in sugar cane as a commercial crop other than the odd patch to be found in kampong gardens throughout the country. A sudden change occurred in the mid 1960's, and since then schemes have started or are under active consideration for the growing of around 120 000 acres of cane in various parts of the country from Johore to Perlis.

In the search for suitable estate crops for diversification a large experimental planting was undertaken on Sogomana Estate in early 1971. Bearing in mind the widely scattered situations of the existing and proposed schemes it seems likely that a number of estates may find themselves near enough to a mill and refinery to consider converting part of their acreage to the raising of cane for sale to the mill. What follows is not intended as an extensive treatise on cane husbandry but a narrative of our experience in converting rubber to sugar and some of the problems involved. Where costs are quoted, some are actual and others are those which, in the light of experience, would be fair and reasonable for the job being done.

PRELIMINARY CONSIDERATIONS

Although most large commercial schemes will have milling and refining plant geared to their own acreage and will have little demand for ouside material, it is almost certain that at least in the developing years they will be able to accept cane from sources other than their own and, no doubt, be pleased to receive it so their machinery can work at near full capacity. For the grower, if no long-term prospect is possible, this is a comparatively minor point as a crop so impermanent in nature compared with rubber or oil palm can easily and quickly revert to longer-term tree cultivation.

It should be borne in mind that cane cultivation can be very labour intensive and without much mechanisation can require up to 60 man days per acre per crop (Meade, 1964). In the early stages of diversification an estate would not wish to purchase extra equipment for mechanisation and would have to rely to some extent on the purchaser for help with specialised machinery. Unless this is forthcoming it would be unwise to embark on the venture without a large pool of unemployed labour being available.

Reasonably flat terrain is essential unless adequate labour is obtainable, particularly for harvesting when crops of about 40 tons of cane per acre must be

*Sogomana Estate, Pantai Remis, Dindings, Perak.

cut and transported to the mill at the earliest possible moment after cutting. Local labour is hard-pressed to cut and load 2 tons of cane per day, although with experience it should be possible to increase this output. Generally speaking, most estates situated in flat areas will have sufficient basic equipment to do a good deal of their own work, but assistance will be required for mechanical harvesting and transporting cane to the mill.

To summarise, it must be established that the mill will take the estate cane, provide some assistance with harvesting and transport and offer an economic return for the cane. Systems of payment will be dealt with in more detail later.

LAND PREPARATION AND CULTIVATION

It cannot be stressed too strongly that good cultivation is vital to sugar cane, both initial land preparation and subsequent cultivation of soil to eliminate weed competition.

Felling and clearing. Felling follows the usual pattern adopted for the particular tree crop to be replaced, and must be mechanical so that all stumps are removed. No costs for this operation are quoted as they vary so much from district to district depending upon the stand per acre, tree size, demand for firewood, etc.

Cultivation. Following felling and burning, subsoiling is necessary to remove roots and break up any hard pan. The deeper the subsoiling the better, but on coastal soils a minimum of 20 in. should be achieved. Most efficient results can be obtained by subsoiling at 2 ft intervals, followed by a second subsoiling at right angles to the first at 4 ft intervals. A bulldozer drawing a multi-tined tool is best for this operation, although we have managed quite well with a Massey Ferguson 165 tractor pulling a single tine. Roots up to 1 in. diameter should be windrowed up and burnt. The cost of subsoiling was about $10/- per acre and that of hand clearing root material $16/-; this operation would cost much less if mechanised.

At this stage the bulldozers should be used to level out as far as possible any irregularities in the terrain. Where infertile subsoils are shallow, subsequent cultivation must aim at improving the fertility of these areas, otherwise cane growth will be poor.

Cane is reasonably tolerant to the local soil pH ranges, but perhaps does best at a pH of about 6, and raising the pH from 4.3 to 5.2 by an application of 2 tons per acre of ground magnesium limestone raised our cane yields by some 10%. If lime is applied it should be broadcast before the next series of cultivations.

The cultivation with ploughs and discs would in most cane-growing areas aim to produce a tilth suitable for the growing of a grain crop, but in Malaysia too fine a tilth, particularly on clay soils, can result in the formation of a surface crust following drying out after heavy rains; a condition with a few 'clods' of up to 1 in. is therefore reasonably satisfactory. We have found that two disc ploughings to a depth of 12 in., followed by one or two discings, produces an adequate seed bed. If a rotary cultivator is available this could be used to replace one discing or

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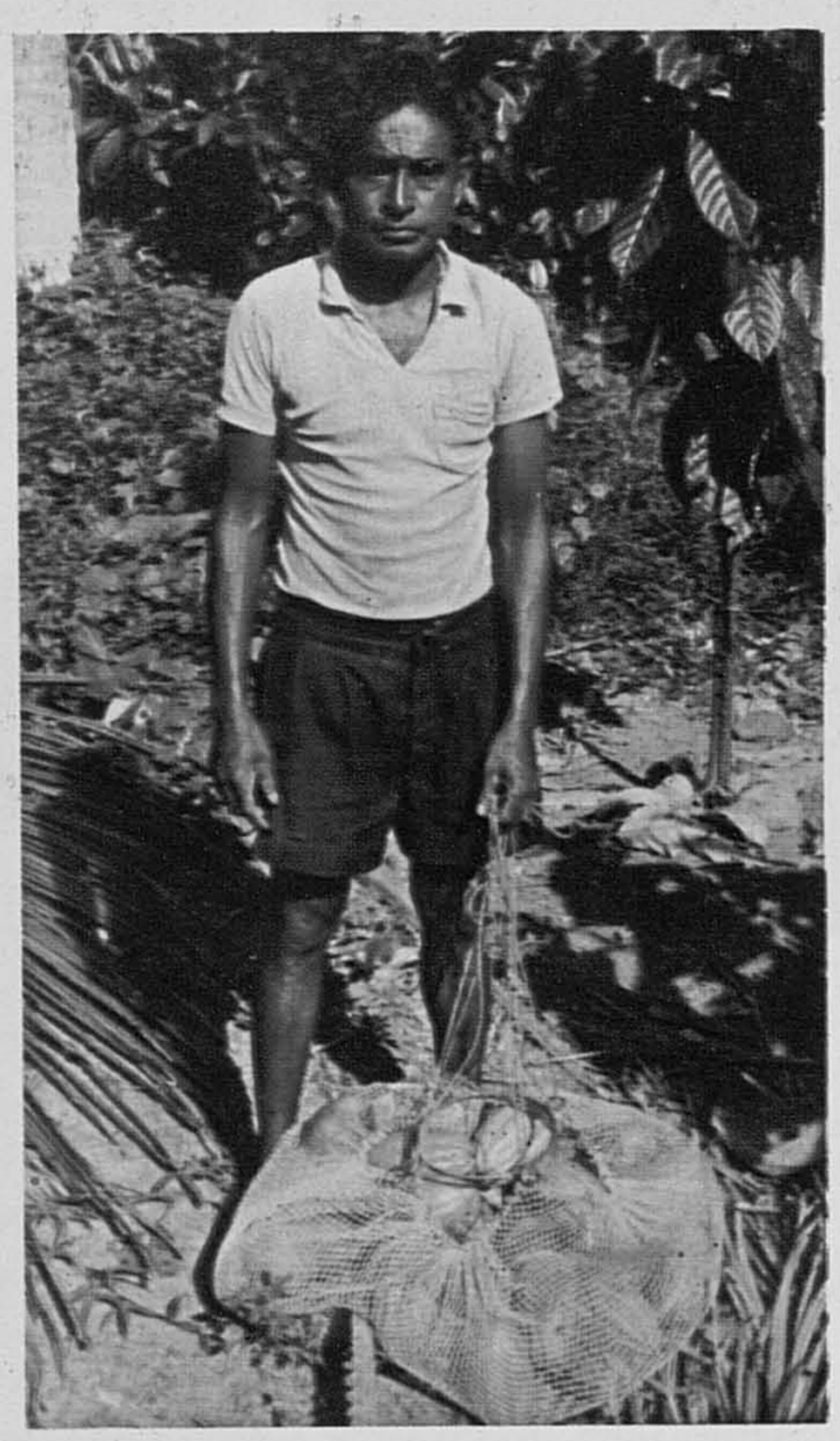


USES:— (1) **FOR COLLECTING COCOA PODS**

The net provided with an Iron Ring leaves a hole for the harvesting. It holds 50 to 80 pcs of the cocoa pods.

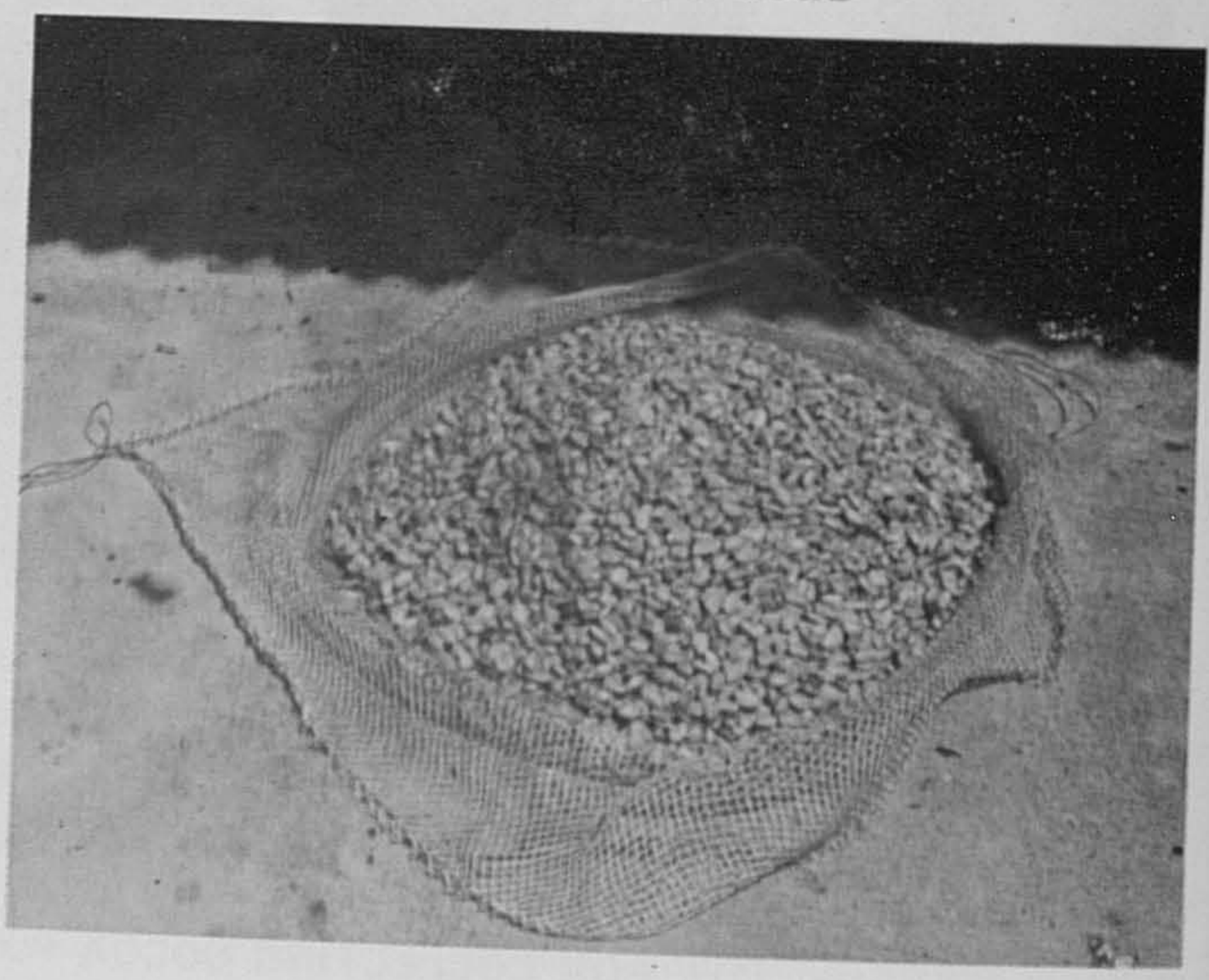
(2) **FOR COLLECTING COCOA SEEDS & FOR WEIGHING**

Using the same net and spread it wide open for the cocoa seeds. Pull the corner strings together, it becomes a bag containing the seeds. for weighing (illustrations next page).

(2) **For Weighing**

For Delivery:
Carrying to the Lorry/Factory

(2) **For Cocoa Seeds**



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supplement the two discings. The number of cultivations needed depends upon how easily a suitable tilth can be achieved. It is recommended that about 7 days elapse between each operation as this allows for weed seed germination and destruction on the next cultivation. A pre-emergence weed killer might be used at this stage, though we have found it was unnecessary (Webb 1970; King, Mungomery & Helen, 1965).

Maximum development of roots usually extends to the depth of tillage. The deeper the cultivation for the first crop, the greater the area supplying moisture and nutrients to the plant, and good cultivation is vital in heavy coastal clays. However, recent work in South Africa indicates that subsequent deep tillage does not necessarily improve yields, except where lime is to be incorporated or a weak sand lies over a clay loam and a good soil mix is required (Moberley, 1972).

Drainage. Sugar cane appears to do well under the type of drainage conditions that suit rubber. It may however be necessary to cut down the intensity of shallow drains and deepen other drains, especially if mechanical harvesting is to be carried out; for maximum efficiency, the harvesting machine should be given as clear a run as possible.

Every effort should be made during cultivation to achieve the maximum degree of levelling, and it should be possible to carry out the above cultivations for $45/- per acre.

Ridging. With the completion of the seed bed, ridges and furrows have to be set up prior to planting. The centre of the furrows should be 5 ft apart and they should be from 8 in. to 12 in. deep. Suitable furrows can be made with a pair of furrow openers mounted on the tool bar. Border discs ploughs can also be used for this purpose. Furrows should run straight and a marker attachment should be fitted to the tool bar to mark out the line for the next run. The setting up of ridges and furrows will cost about $3/- per acre (Webb, 1970; King *et al*, 1965).

Planting. This can be done mechanically but, initially, will probably be done manually. A basal dressing of manure is spread in the bottom of the furrows and 200 lb/ac. of CCM 55 is suggested. Planting material or 'setts' are stalks of 9–12 month-old cane cut to a length of 14–15 in. with at least two nodes with good buds. As each node has one bud and these are alternately opposite, setts should ideally be planted so that the buds are situated at the sides, but this is very time-consuming and expensive and probably not essential. Before planting, the setts should be dipped in an organo-mercurial fungicide to control 'pineapple disease.' During a very dry spell following planting we experienced some bud damage from wireworms and cockchafers, but they were successfully controlled by adding Dieldrex to the mercurical dip at the rate of 1 oz Dieldrex to 3 gal. of dip.

The dipped setts are placed 1 in. apart in the bottom of the furrows. About 2 tons of cane setts are required per acre, but the quantity will vary according to the thickness of the setts. The planting material is then covered with up to 4 in. of fine soil, either mechanically or by hand, and it is advisable to compact the soil if

possible, especially if there is a threat of dry weather (although cane is surprisingly hardy and buds will remain viable for up to 4 weeks.) First shoots should appear after about 10 days, and any supplying required ought to be done as early as possible to maintain an even stand. The cost of manuring, dipping, planting and manual covering was $78/- per acre, including the material.

Subsequent upkeep and cultivation

By the time the cane is 12–14 weeks old shade is generally sufficient to inhibit weed growth, but prior to this weed control is vital; furrows must be converted to ridges and further manure given. The conversion of furrows to ridges can be done with the furrow openers, or by border discs. Before the first ridging or 'hilling up', 200–250 lb of CCM 66 should be broadcast along the row of the growing cane, which at this stage will be about 2 ft high. The second hilling, preceded by another application of 200 lb/ac. of CCM 66, will be carried out when the cane is 4 ft high. At this height a conventional tractor cannot straddle the cane without damaging it, and a high clearance tractor has to be used with a high arched tool bar. If these cultivations are inadequate to control weed growth, MSMA amine cocktails can be used in the interrow.

The value of good weed control by both cultivation and/or the use of herbicides is well illustrated by experiments carried out by the Department of Agriculture, whose plots of weeded or sprayed cane produced up to 3 tons of sugar per acre compared with 1 ton from unweeded plots (Chin & Chua, 1970).

It should be noted that little or no work has been done on manuring commercial sugar cane in Malaysia, although the Department of Agriculture has done some small-scale trials. The quantities of fertiliser mentioned above should be taken as minimum requirements, and planters growing cane would need to vary the mixtures according to the known nutrient shortages in their soils. It is essential that an adequate level of fertiliser be applied initially to achieve good rooting and as much tillering as possible. Little or no manuring particularly with nitrogen should be done during the 6 months before harvesting, as it would encourage the production of new green tissue, a process which seriously reduces the sugar content of the cane. It would probably be worthwhile for any estate growing cane on a long-term basis to set up some small trials to assess the value of higher manurial applications, although there is a level at which extra fertiliser, whilst producing a greater cane weight, does not justify its extra cost (Chin & Chua, 1970).

HARVESTING

The cane will be ready for harvesting from 14 to 18 months after planting for the first crop, and will be over 7 ft high. It should not have luxuriant tops and should, ideally, be cut following a period of low rainfall, when reducing sugars are low and sucrose content high. Quite reliable sucrose tests can be made using a hand refractometer. The time elapsing between cutting and processing is vital to the miller, as the sucrose content drops sharply on cutting. The shorter the cane sticks, the more rapid is the deterioration in sucrose. Close liaison between mill

and grower is essential to ensure that only enough cane is cut as can be rapidly transported to the factory (Meade, 1964; Webb, 1970).

Dependent upon arrangements made with the mill, the cane will either be machine-or hand-cut; before cutting, the cane will usually be burnt off to remove much of the dead leaf trash and some of the top leaf. Burning must be carefully controlled to prevent adjacent blocks being damaged, and should always be done into the wind. As soon as the area is cool, cutting can begin, and to achieve a high sugar content it is best to have the cane at the factory for milling in under 30 hours. Apart from the drop in sugar content the cane dries out rapidly, and there is a substantial weight loss which we found to be up to 14% over 8 days.

Under ideal conditions a mechanical harvester cuts the cane at or just above ground level, and also cuts off the leafy top. Both these operations can be controlled by the machine operator, but the speed of cutting is much greater when ground conditions are level and cane growth is uniform. The whole stick of cane passes up an elevator, is chopped into 12 in. lengths, passed along a conveyor and dropped into a large tractor-pulled basket. Large fans are positioned at various parts of the harvester to blow away as much trash as possible. The filled baskets are then transported either individually or in groups of three or four.

Less sophisticated machines are available which simply cut and top the cane and leave it in stacks in windrows for manual or mechanical loading and transporting.

Cane cut by hand is first topped, and may then be heaped as whole sticks for loading, or cut into pieces and placed in baskets and loaded. Hand-cut cane produces a much cleaner cane than machine cutting, but is much more expensive. Costs of hand-cutting and loading will vary from $5/- to $7/- per ton depending upon the skill of the labourer, whereas machine-cutting will cost in the region of $3/- to $4/- per ton (I. Gibson, unpubl.).

Subsequent crops. Second and subsequent crops taken from the same root system are known as the first, second, third etc rattoon crops. Whilst at present it is not known exactly how long it will be possible to take rattoon crops before replanting, four to five harvests seem possible.

Following harvesting the rows of cane are root-pruned to stimulate healthy regrowth using a subsoiler, border discs or furrow openers. The subsequent operations follow the same pattern as for the first crop. Harvesting of rattoon crops is likely to be 9–12 months after root pruning, and yields of cane for the first and second rattoons the same or slightly better than the plant crop.

PAYING THE GROWER

The method of arriving at an equitable price to be paid to the grower varies from country to country, and usually depends on rules prescribed by government agencies in the territory concerned.

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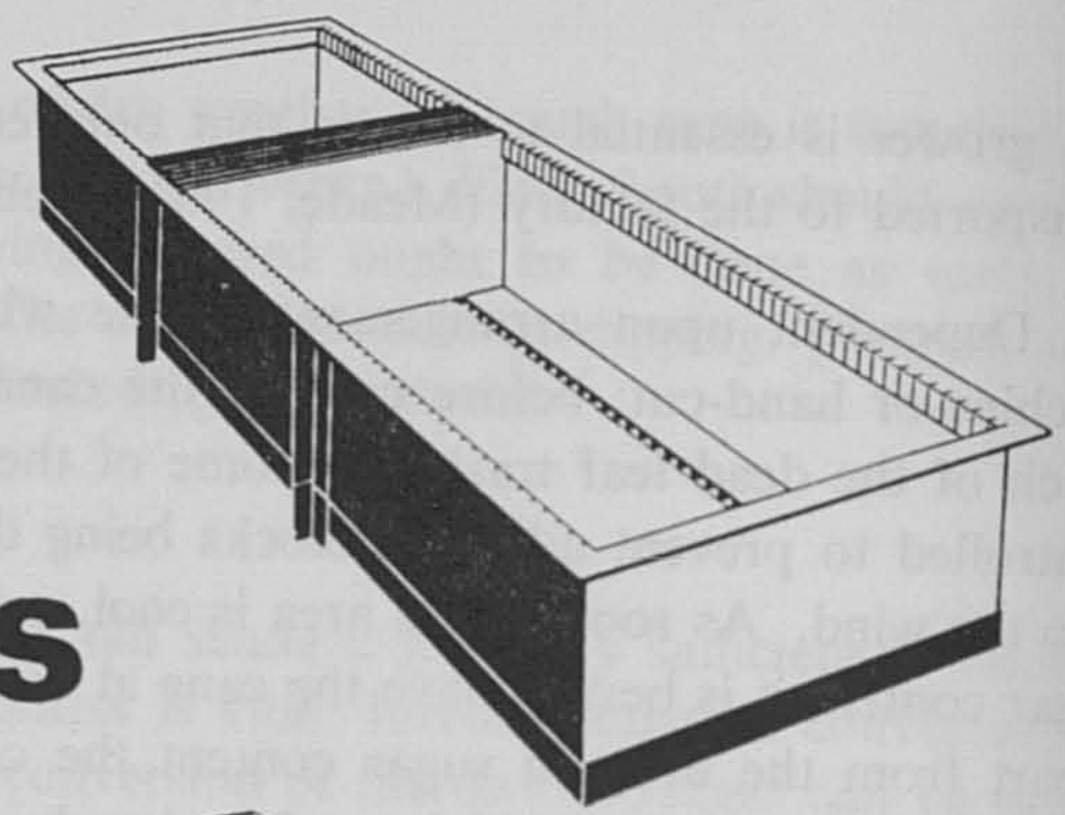

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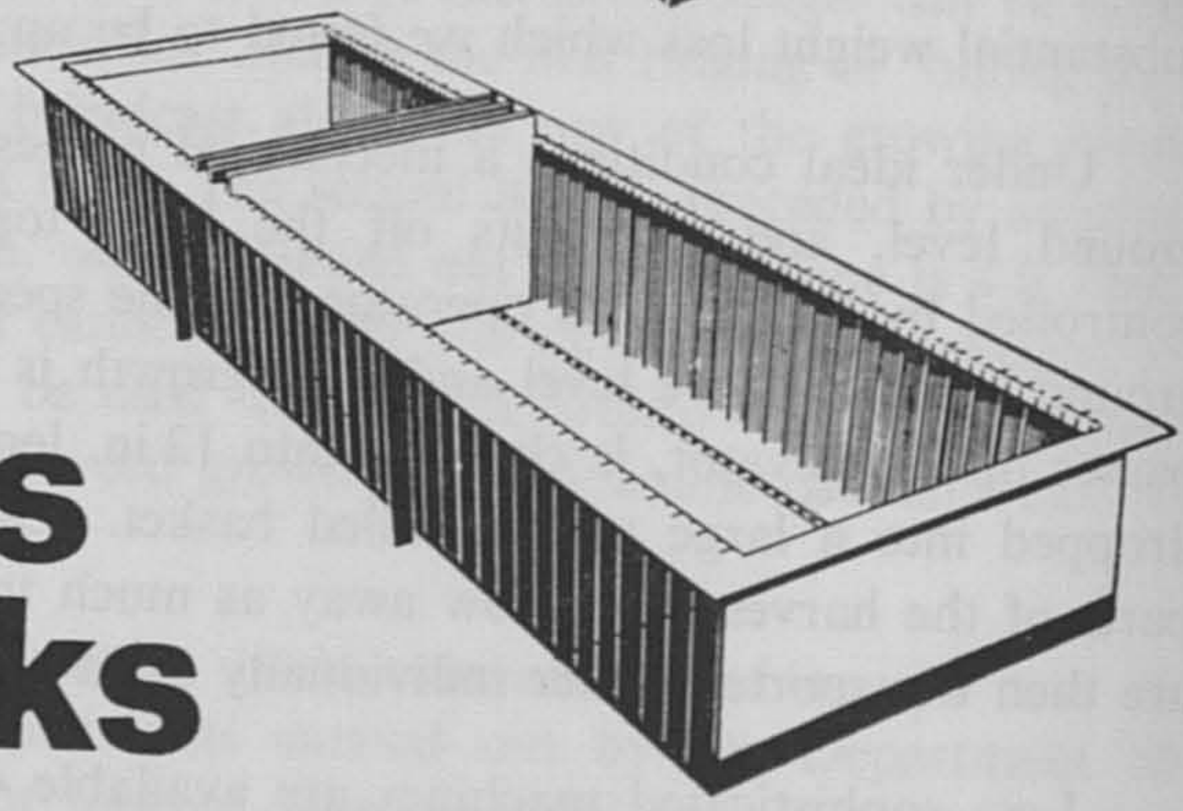

5 reasons you should use an all-aluminium coagulating tank.

1 No upkeep is required; periodical painting and repairs are eliminated.

2 No woodwork to warp or rot; storing for any length of time without deterioration at all.

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The grower can be rewarded on a flat price basis, *i.e.* so much per ton of cane delivered to the mill. The basic disadvantages of this system are (i) the buyer may find himself paying for cane of low quality and low sucrose content; and (ii) there is no incentive to the grower to produce high quality cane harvested at optimum ripeness. The generally accepted method of purchasing cane is dependent upon the amount of sucrose in the cane delivered to the mill. Representative samples are taken at regular intervals, and according to the sucrose content, purity, etc., the quantity of sugar which can be produced is calculated and a proportion of its value paid to the producer. In Australia approximately 66% of the raw sugar price is the growers' proportion, and in Mauritius 68%. In other territories the amount of sugar is determined by the average sugar extraction for the mill or mills for the season, and the price paid calculated in proportion to the tonnage of cane delivered by the individual farmers. A variety of systems of bonuses and discounts for the sucrose content, dirt and trash content and burnt or unburnt cane are in operation. In some countries extra payments are made in respect of by-products produced, *e.g.* molasses or bagasse the fibrous residue after the cane is processed (I. Gibson, unpubl.; Cuke, 1958; Government of Queensland, 1967, 1970; Government of Mauritius, 1964; South African Sugar Association, pers. comm.).

With no system of government control on cane sales in Malaysia, and the fact that growing and refining sugar is a new industry, the question of payment is a difficult one. The new grower is uncertain of the best cultivation techniques to adopt, or of his potential yields and sugar content; the miller is operating a new factory with inevitable teething troubles and loss of sugar, so that initially his recovery figures may be low. Whilst the grower cannot be held responsible for factory inefficiency the miller cannot be expected to subsidise the grower who produces low-quality cane.

It seems probable that at potential yields of about 40 tons of cane per acre and a sucrose content of 13–15%, about $30/- per ton of cane would serve as a reasonable basis for negotiating the price to be paid to the grower.

CANE VARIETIES

At the present time little can be said with regard to suitable varieties, and only experience will show which are the best clones under Malaysian conditions. In time, breeding programmes will produce strains of cane which suit our soils and climate, but little progress in breeding new varieties can be looked for in under 5–6 years, and in the meantime proven clones from overseas must be used. Amongst suitable strains N Co 310, Q 73, Q 80, Q 84, POJ 2878 are known to do reasonably well here. As planting material is likely to be conveniently available from the mill or plantation complex to which the cane will subsequently be sold, growers will not be able to exercise much choice in the early stages. However, the variety N Co 310 appears to be a good reliable clone to plant in the initial stages.

PESTS AND DISEASES

With cane growing being a new venture there has as yet been no major build-up of pests or diseases. It is fairly certain that this happy state of affairs will not last

for long, and increasing damage from pests can be anticipated. With a new industry the opportunity exists to introduce control measures at an early date, and there is no lack of information on pest control in other tropical cane-growing regions which would be applicable to local conditions. It is to be hoped that the Department of Agriculture will give the matter some priority, especially as the growing of small acreages of cane may prove attractive to smallholders with land within 4–5 miles of mills.

Pineapple disease. This is caused by a fungus which rots newly planted setts; it is also responsible for diseases of pineapples and bananas, and is easily overcome by dipping all planting material in an organo-mercurial fungicide (King *et al.*, 1965).

Cockchafers, wireworms and termites. These pests can damage new bud shoots on cane setts, particularly if growth is slow due to adverse weather conditions. A good measure of control has been achieved by the addition of Dieldrex to the mercury dip. Heavy infestations of soil pests may require treatment with fumigants, and systemic insecticides may also be of value (King *et al.;* 1965).

Stalk borers. These insects are likely to prove the most serious pest of cane, and they cause substantial losses in many countries. Clean field conditions discourage breeding places and pre-harvest burning also helps. The breeding and releasing of fly parasites may be of some value, especially if done early before there is any major build-up in the borer population. Endrin can be used to reduce infestations if they occur (King *et al.* 1965; Chin & Chua, 1970).

A variety of other pests and diseases can affect cane, *e.g.* spot diseases, leaf scald, stem rots, mosaics, *etc.*; with time, all are likely to become more common in Malaysia.

GENERAL

Although some agriculturalists have claimed that the local climate, with perhaps the exception of the extreme north of the country, is not entirely suitable for sugar growing, there is no doubt that acceptable yields and a good sucrose content can be achieved. If, as seems likely, the government offers protection to the local industry by way of a progressive restriction on imports, there is every prospect of Malaysia becoming self-supporting in sugar over the next decade or so, with a substantial saving in foreign currency. At the present price of sugar attractive returns are available to efficient growers, and cane will become an acceptable alternative crop in selected areas and also a useful extra crop for smallholders adjacent to mills.

Table 1 gives the cost of production which could reasonably be expected on a flat coastal area, for a field which is 7 miles from the mill and from which a crop of 35 tons per acre is produced. If a price of $30/- per ton of cane is obtained, total receipts of $1 050/- less costs of $626/- would leave an approximate profit of a little over $400/- per acre. Ratoon crops would produce a better return, for at least $200/- per acre of the initial costs would not be repeated, although it would probably be necessary to spend a little more on manuring.

Table 1. Costs incurred in sugar cane cultivation (M$/acre) for a crop of 35 tons per acre transported 7 miles to a mill

	$
Felling, clearing, burning	100
Subsoiling and root clearing	18
Levelling, ploughing, discing	45
Furrowing	3
Planting material	70
Planting	18
Manure	120
Hilling	15
Weeding	40
Roads	10
Drains	10
Tools	2
Burning and harvesting (machine)	140
Transport to mill @ 14 cts/ton mile	35
Total	626

Acknowledgements. I am grateful to the Directors of Sogomana Estate Ltd. for permission to publish this article, and to Messrs R. B. Dixon and Quah Chok Kee for their assistance.

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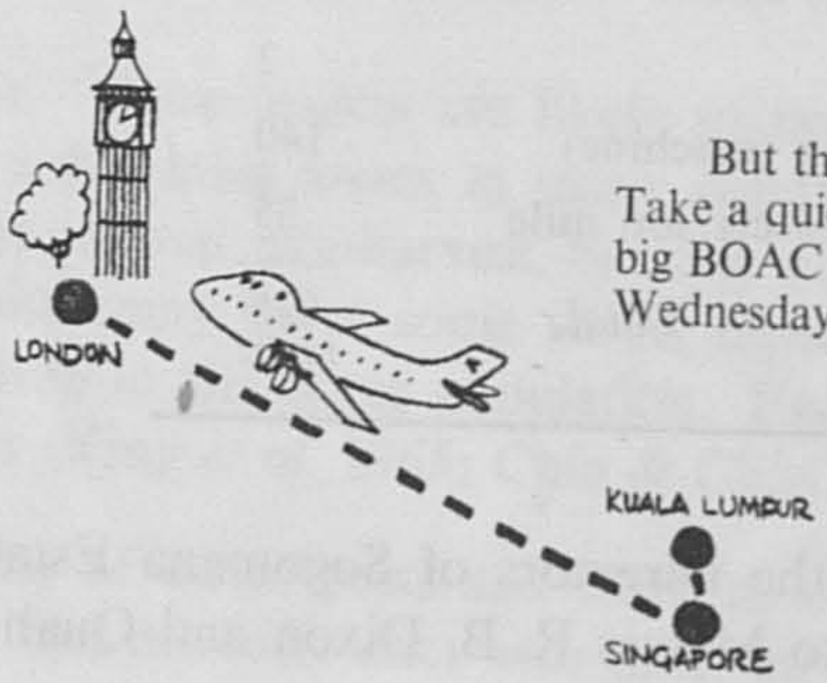

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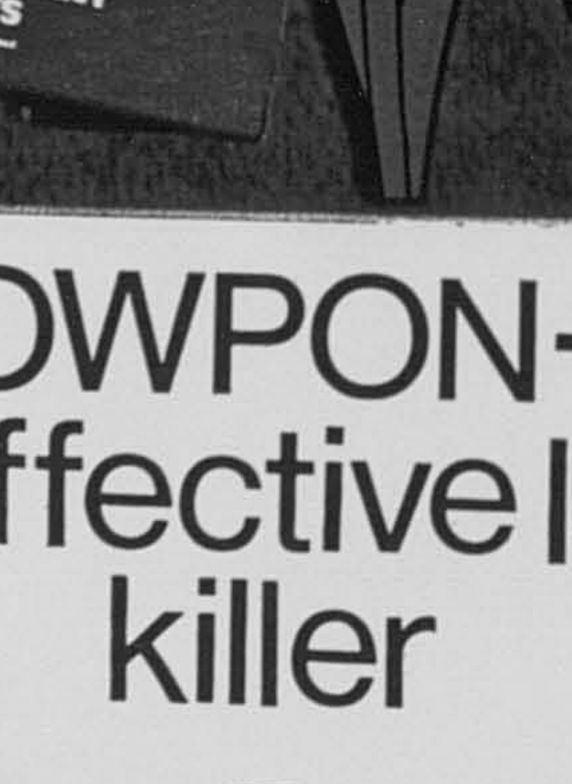

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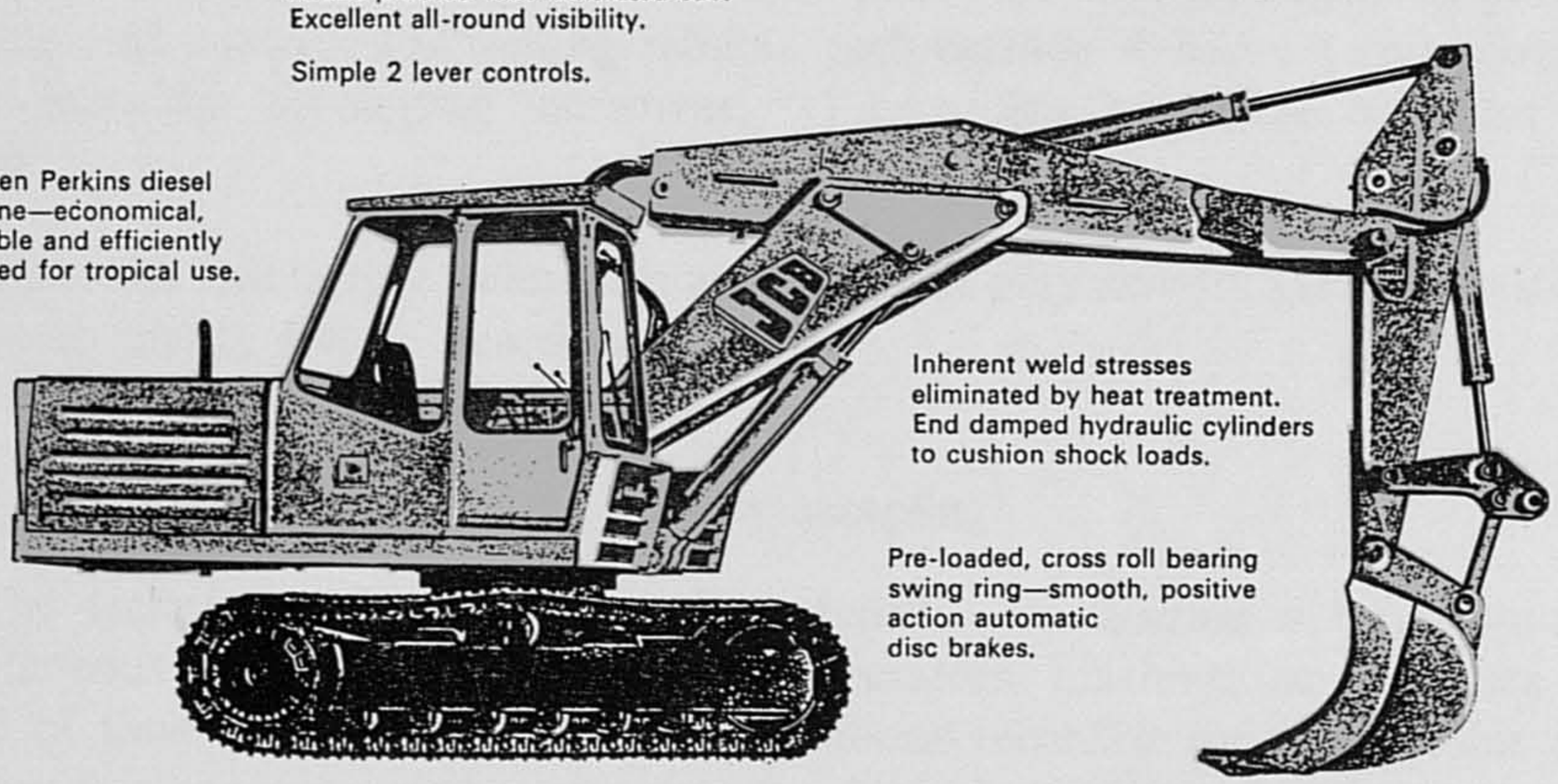

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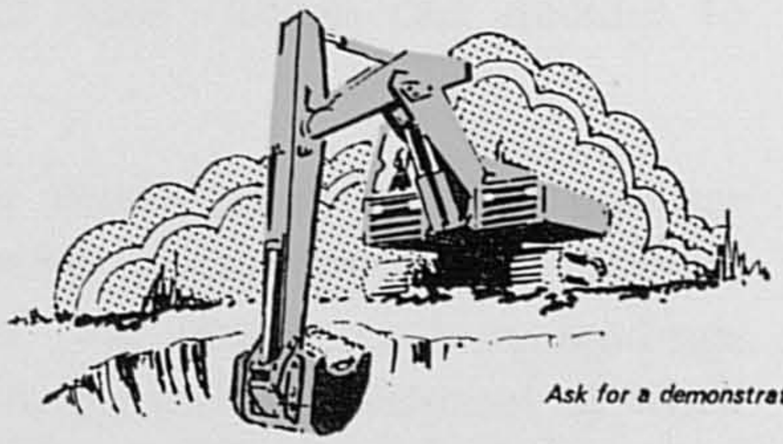

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Work Study: the technique of work measurement. 1. Activity sampling

J. S. BALLARD

As described in an earlier article, Work Study embraces the techniques of Method Study and Work Measurement. Although the two techniques are explained separately, they are complementary.

Work Measurement is the application of techniques designed to establish a time for a qualified worker to carry out a specified job at a defined level of performance (British Standards Specification No. 3138). Work Measurement techniques aid management towards (i) more efficient and economic planning; (ii) improved production planning and control; (iii) setting reliable performance standards; (iv) providing a sound basis for developing incentives; (v) providing a reliable basis for labour control.

There are five timing techniques available, but only activity sampling, estimating and group timing will be described.

Activity sampling

The technique of activity sampling depends on making a large number of instantaneous observations of a group of operators, machines or processes over a period of time. The percentage of observations recorded for a particular activity or delay is a measure of the time during which the activity or delay occurs. It is essential that the observations are carried out at random times and record exactly what activity is being performed at that instant.

In the following example if, at the observation time a spray pump operator is deciding where to start spraying, he is neither spraying nor walking to and from the site of operation. An entry should be made under 'idle' (unless one decides to record under a heading of 'looking to see').

Activity sampling is ideal for studying complex situations in which a number of operators or machines are involved. It can bring about improved methods due to a better balance of work between operators, and better machine loadings (*c.f.* Multiple Activity Charts in Method Study). The general organization of work can be improved because activity sampling highlights unsatisfactory working.

Before any preliminary study is carried out to determine the activities involved in the work, all persons to be involved should be informed or consulted. Having decided on the functions involved, the proportion of time allocated to the major function (most important activity) is estimated. This estimate can be based on

previously gained knowledge, or from a brief pilot study. The number of observations (N) necessary to give the required degree of accuracy at a 95% confidence level is calculated thus: $N = \frac{4P\ (100-P)}{L^2}$

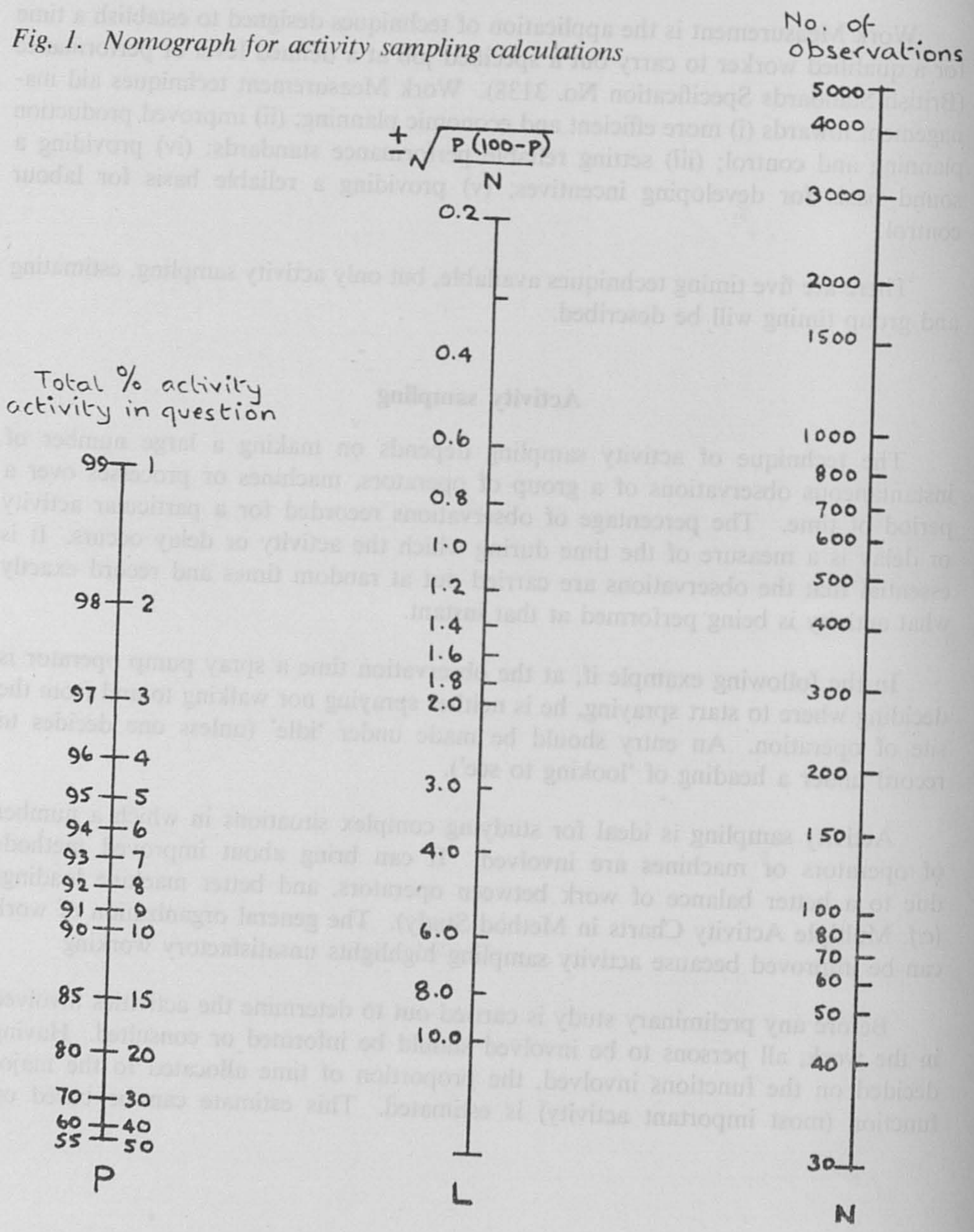
where N is the number of observations required,

P is the activity percentage of the activity in question,

L is the limits of accuracy as a percentage of total time.

Nomographs can also be used instead of equations (*Fig. 1*).

Fig. 1. Nomograph for activity sampling calculations



The observations must be carried out over a representative period. Short repetitive jobs can be assessed quickly over a period of a few days, whereas long processes will require lengthy study. The duration of the study should always be a multiple of the work cycle time. If two or three shift systems are in operation the sampling should be performed throughout all shifts.

After recording two representative cycles, the results are checked against the estimate. If the estimate is accurate, continue recording. If the estimate is not correct, N must be re-calculated using the new P value. The study may have to be replanned. On completing the study, the results are calculated and according to their importance a closer examination may be deemed necessary before action is taken.

The advantages and disadvantages of activity sampling are set out below:

Advantages

(i) Simultaneous studies of several operators or machines can be made by one man.
(ii) Highly trained observers are not necessary.
(iii) Observations can be made over several days or weeks, and the study can be interrupted at any time without affecting the results.
(iv) The recordings are of short duration and do not tire or bore the observer.
(v) The time involved to calculate the results is short.
(vi) No specialised equipment is necessary.

Disadvantages

(i) The operators may change their method of working on seeing the observer.
(ii) Few records are made of the method of work, so that if any element changes a new study must be instigated.
(iii) Management and workers may not understand statistical activity sampling.

An example of Activity Sampling

A spraying gang is carrying out carpet spraying from a tractor-based water supply previously filled from a river. The operators are responsible for mixing chemicals into 45 gal. drums as required. The results of a brief pilot study indicated the total activity to consist of the following elements:

	Percentage of total time
(i) Spraying	60
(ii) Walking to and from spraying zone with full or empty pump	13
(iii) Filling pumps from drums	8
(iv) Mixing chemicals into drums	3
(v) Idle time (smoking, resting, etc.)	10
(vi) Obtaining water supply from river	6
Total	100

The number of observations (N) required, taking L as 10% (of 60%) is calculated: $N = \dfrac{4P\ (100-P)}{L^2} = 266$

Thus 266 observations are needed over 6 days or 44 observations per day.

Using random numbers the times of observations are listed, and recording is commenced (*Fig. 2*). At the end of the recording, all columns of the observation sheets should be totalled and summarized on an analysis sheet (*Fig. 3*). In the example analysed, the first two days' recordings indicated that spraying constituted

Fig. 2. An example of an observation sheet

Study no. S1 Sheet no. 1 Observer: JSB Date: 20 Sept. 1972

Time of observation	Worker				Activity*					
	1	2	3	4	(i)	(ii)	(iii)	(iv)	(v)	(vi)
06.45	/									/
		/								/
			/							/
				/						/
07.40	/				/					
		/			/					
			/				/			
				/	/					
08.35	/					/				
		/					/			
			/			/				
				/					/	
08.50	/				/					
		/							/	
			/						/	
				/		/				
09.10	/				/					
		/			/					
			/		/					
				/			/			
Total	44				16	11	5	4	4	4

* For details *see* text

only 59% of the total activity. N was therefore recalculated at 276, which over 6 days was 46 observations per day. Therefore, activity (i) (spraying) takes between 53.1% and 64.9% of the total time spent.

Fig. 3. An example of a summary/analysis sheet

Study no. S1 Observer: JSB Date: 19 Sept. 1972

Study: Carpet spraying Location: Block 4 No. of workers: 4

No. of observations required: 276

Representative period: 6 days No. of observations/day: 46

Activity	*No. of observations*	*Actual activity (%)*	*Confidence limits (% of total time)*
1	163	59	5.9
2	28	10	3.6
3	28	10	3.6
4	14	5	2.6
5	22	8	3.3
6	21	8	3.3
Total	276	100	

The following suggestions on possible improvements to each of the six activities involved can be made as a result of the study:

(i) Spraying time can be increased by decreasing the time devoted to the other five activities.

(ii) Walking to and from the spraying zone can be decreased by having shorter hauls, or by sending the supply into the field by tractor or hose pipe. Larger pumps could be used.

(iii) The time for filling the pumps from the drums could be decreased by having larger discharge pipes in a bulk supply tank.

(iv) Time spent on mixing chemicals could be decreased by having larger mixing tanks and measuring jugs, or by pre-mixing in batches.

(v) Idle time could be decreased by better supervision or incentive schemes.

(vi) Filling time from the river could be decreased by filling from bulk overhead tanks or by using a high capacity pump.

Acknowledgement. I wish to thank W. J. Grose of Poliamba Estates Ltd. for permission to publish the results of the study.

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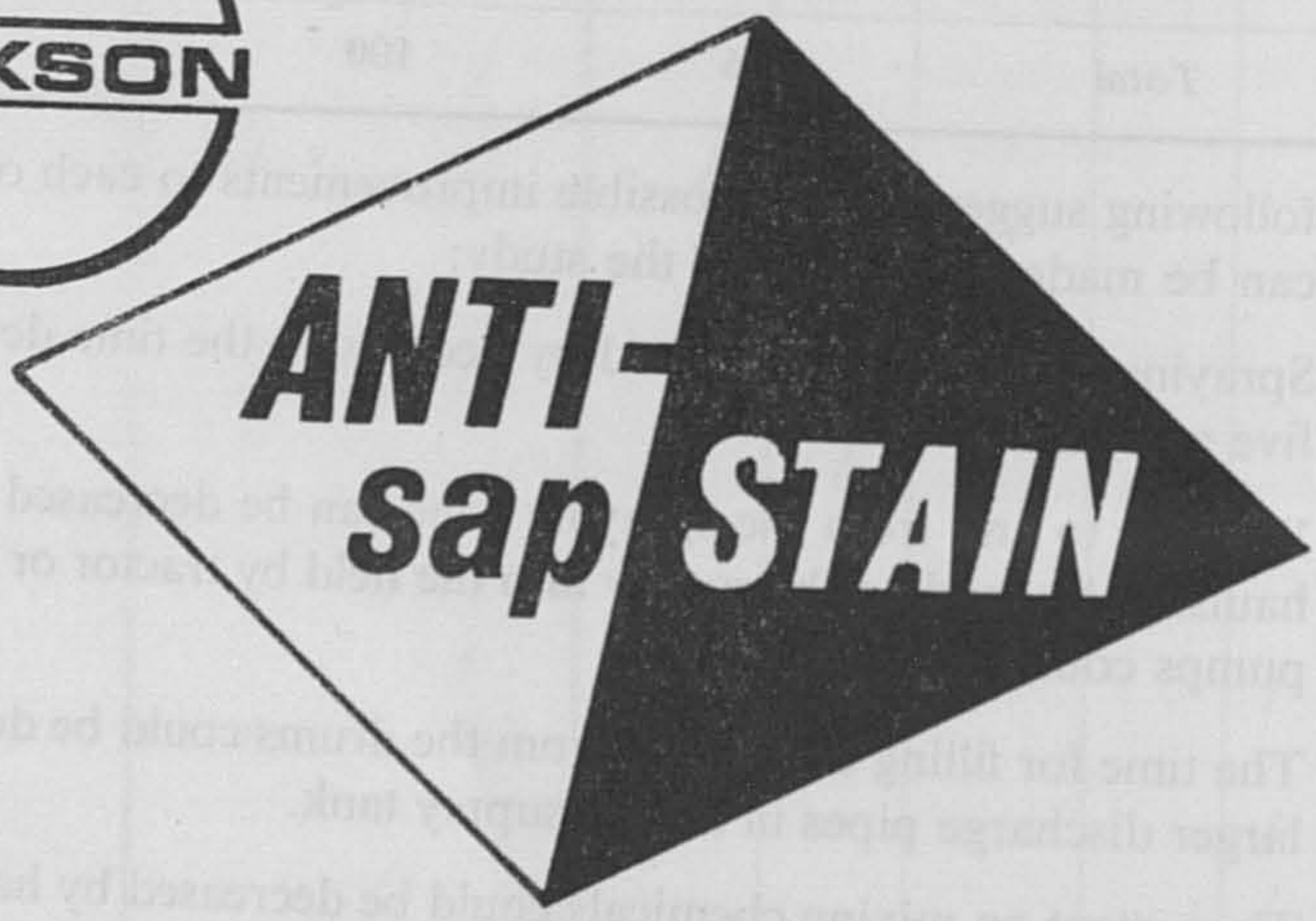

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I.S.P. Technical Education Scheme

(concluded)

Estate Book-keeping

The previously recommended reading for the study of this subject is Butler's *'Guide to Estate Book-keeping and Accounts*, now out of print. Some progress is being made to publish a revised edition of this book but it is unlikely to appear for several months; however, there must be hundreds of copies in estate offices in Malaysia and it should not be difficult for an enterprising candidate to borrow one.

(1) General

a) General office routine; methods of making and recording payments and receipts of cash; treatment and care of correspondence, estate vouchers and records.

b) Field routine; recording of piece work and the making of contracts and the arrangement of contractors' accounts.

c) General knowledge of the principles of double entry book-keeping with particular reference to the form and purpose of the books in general use on estates.

(2) Books of account

General use of ledgers, cash books and journals and subsidiary books of account: sundry wages book, petty cash book, check rolls *etc.*

(3) Monthly accounts

a) Form of monthly accounts.

b) Method of writing up from ledgers.

c) Method of spreading quarterly or annual payments into monthly charges and maintenance of reserve accounts for leave pay and passage, duty, visiting charges etc.

(4) Apportionment of expenditure

a) between capital and revenue;

b) between revenue, new clearing and immature areas.

c) Apportionment of general charges on labour, area or expenditure basis.

(5) **Stores**

Methods of ordering, receiving, accounting for, and issue of estate stores.

(6) Produce sales

Statutory and commercial formulates of produce sales and method of recording sales in estate books.

(7) **Crop records**

Methods of recording crop, and production of various grades of rubber, copra, cocoa, palm oil *etc.* Adjustment of estimated crops to actual. Recording of dispatches. Featuring of crops and despatches both monthly and to-date.

(8) **Trial balance & balance sheet**

Preparation of a trial balance from the ledgers and the construction therefrom of a simple balance sheet and profit and loss account.

(9) **Special estate matters**

a) Recording of lorry mileage and charges. Recording of tractor working account.

b) Transactions through head office account.

c) Recording of Co-operative Society transactions.

d) Treatment of labourers' deposits.

(10) **Preparation of returns for the following :**

a) Insurance—workmens' compensation, cash in transit *etc.*

b) Average earnings.

c) Tapping statistics.

d) Income tax—employers' returns.

e) Running an estate shop.

f) Rates of duties chargeable on estate crops.

g) Calculation of WCI payments.

h) EPF regulations and procedure.

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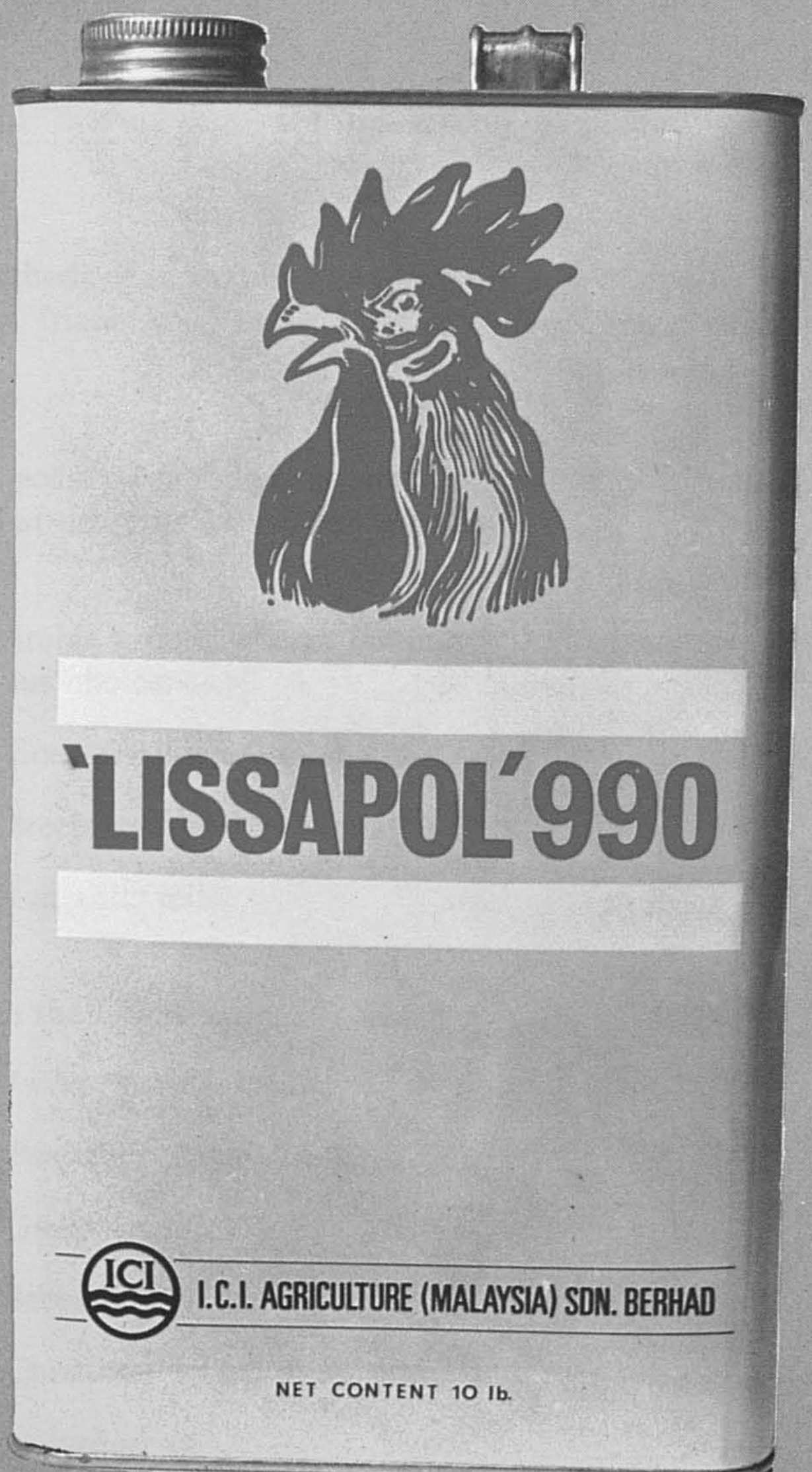

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Estate Practice examinations in Rubber, Oil Palm and Cocoa held on 14 March 1973 Time allowed: Parts 1 : 3 hours; Parts 2 : 3 hours.

RUBBER

PART I

(1) Name two methods of replanting an old rubber area of approximately 400 acres on undulating, friable soil. Discuss the advantages and disadvantages of each method. (20 marks)

(2) Describe two soils series found on your estate or in your locality and discuss their merits and demerits for rubber planting. (20 marks)

(3) Name the desirable ground covers for immature and mature rubber and give reasons for your choice: —

a) Coastal alluvial soil

b) Steep terrain

c) Lateritic soil (10 marks)

(4) Write notes on the following: —

a) *Ischaemum muticum*

b) *Paspalum commersonii*

c) Green budsticks

d) Secondary wintering

e) Christmas Island rock phosphate

f) *Fusarium* sp.

g) 2,4-D

h) Plugging index

i) S/2 d/2 (2×2d/4) 100%

j) Drazoxolon (20 marks)

(5) Draw up a schedule of tapping over a period of 25 years for the following clones: —

PBIG GG/1

GT 1

RRIM 600

RRIM 628 (10 marks)

(6) How do you control cockchafer attacks on immature and mature rubber? Is there a preventive method of control and if so please describe it. (10 marks)

(7) What are the ingredients and uses of each of the following: —

a) Wound dressing

b) Bordeaux mixture

c) Mixture Mag. C2

d) Kerosene/soap emulsion. (10 marks)

RUBBER

PART II

(1) Describe how you would plan to build and commission a block rubber factory with a daily output of 10 tons. (20 marks)

(2) Write notes on: —

a) SMR 20

b) Bleaching agents

c) Anticoagulants

d) Mould on RSS

e) Skim rubber (20 marks)

(3) What are the broad functions of the Malayan Agricultural Producers Association and the Malayan Rubber Fund Board? (15 marks)

(4) Name 3 categories of payment to tappers based on the MAPA/NUPW 1972 wage agreement. Can you name any weaknesses in each of these categories? (15 marks)

(5) Performance in the past year on the estate in which you work has been poor. This is reflected in crop falling below estimates due to frequent absenteeism. Indicate steps to be taken to rectify the situation. (10 marks)

(6) Draw a sketch of *either* a disc harrow *or* a disc plough labelling all the main parts.

Explain how your chosen implement works and list the jobs it can be used for on an estate.

What care and maintenance should be given to the implement you have chosen? (10 marks)

(7) a) List the full duties of your estate hospital assistant.

b) Name two notifiable diseases.

c) Describe briefly the jobs that should be carried out in a line site to ensure that cleanliness and sanitation are of a high order. (10 marks)

(Next examination date: 12 September 1973)

OIL PALM

PART I

(All questions are to be answered)

(1) Write brief notes on the following:

a) The difference in oil yield likely to be obtained from D × P and T × T palms.

b) The possible value of *E. melanococca* in an oil palm breeding programme.

(10 marks)

(2) Compare the advantages and disadvantages of a pre-nursery with direct planting of germinated seed in large polybags, paying special attention to the economic aspects.

(10 marks)

(3) Briefly answer two of the following:

a) Describe a method of clearing old oil palms for replanting, suitable for inland undulating land in West Malaysia.

b) Why is water conservation important to the oil palm estate manager?

c) How would you eradicate tapioca from palm interlines after it was grown as an intercrop?

(10 marks)

(4) Discuss in detail how harvesting methods, bunch ripeness and fruit transport systems can affect oil quality.

(10 marks)

(5) Write short notes on five of the following:

a) Blast

b) Ammonium phosphate

c) Exchangeable potassium

d) *Darna trima*

e) Crown disease

f) Paraquat

(20 marks)

(6) Answer two of the following:

a) Why urea and dolomitic limestone are seldom used as fertilisers for mature oil palms.

b) What important factors influence the cost of assisted pollination, and how can these be modified to reduce expenditure.

c) How do climatic conditions influence yields of f.f.b. (20 marks)

(7) EITHER:

Discuss the merits of various catch crops/intercrops in comparison with legume covers.

OR:

Compare the advantages of establishing road or rail transport of fruit bunches in a new oil palm planting in: —

a) hilly country

b) on peat soil

showing probable cost differences. (20 marks)

OIL PALM

PART II

(1) Draw a sketch of *either* a disc harrow *or* a disc plough labelling all the main parts.

Explain how your chosen implement works and list the jobs it can be used for on an estate.

What care and maintenance should be given to the implement you have chosen? (15 marks)

(2) a) List the full duties of your Estate Hospital Assistant.

b) Name 2 notifiable diseases.

c) Describe briefly the jobs that should be carried out in a line site to ensure that cleanliness and sanitation are of a high order. (15 marks)

(3) You are preparing your annual estimates. Give your annual estimate in detail for the following items: —(You should list the work you plan to do during the year giving the number of rounds, cost per acre, chemicals to be used and other relevant facts).

a) Weeding (mature palms)

b) Diseases and pests (mature palms)

c) Roads and bridges (mature palms)

d) Pruning and sanitation (mature palms)

e) Assisted pollination (mature palms)

f) Weeding (*1972* planting)

g) Manuring (*1971* planting) (20 marks)

(4) a) An incident occurred on your estate and upon investigation you have found out *so far* that:

Perumal (tapper) states: —

"I was tapping in my task in Field 60 when the tapping conductor, Mr Krishnan, came and abused me for slight wounding. He used many vulgar words and got very angry. He also slapped me. I was frightened. My brother was tapping in the next task and saw this".

Mr Krishnan (conductor) states: —

"I inspected Perumal's task and scolded him for bad wounding. He was impertinent".

Describe what further investigations you would make if any, and what action you would take to resolve the matter. What disciplinary action would you take and against whom?

(*N.B.*: The results of your further investigations, if any, are left to your imagination, but you *must* detail the results of your investigations in this case so that the examiner can evaluate your answer.)

b) You are manager of an estate which consists of: —

3000 acres of mature palms (3–12 years old)

1000 acres of immature palms

2 line sites

A workshop.

Give a fully itemised list of your management staff, subordinate stafl and labour requirements for this estate. (20 marks)

(5) Describe *clearly* and *concisely* the processing of f.f.b. from the time of arrival at the mill to the time the end products are ready for despatch. Give a flow diagram. (15 marks)

(6) a) List 5 uses for palm oil.

b) *EITHER*

List the major *palm oil exporting* countries in the world.

Which country is the biggest single producer of palm oil in the world?

What do you understand by the term f.f.a.?

OR

Describe briefly how palm oil quality is checked and controlled at a palm oil mill. (15 marks)

(Next examination date: 12 September 1973)

COCOA

PART I

(1) Describe the main climatic and edaphic (soil) conditions required for successful cocoa cultivation. Indicate means whereby sub-optimal environment can be mitigated by management practices. (20 marks)

(2) You are required to plan and supervise replacement of 100 acres derelict rubber with cocoa to be planted in September 1974 under special shades.

a) Provide particulars of the pre- and post-planting operations you would recommend up to the end of August 1975. Indicate appropriate timing of each operation. (10 marks)

b) Describe, with reasons, your choice of shade covers and illustrate planting patterns in relation to cocoa. (5 marks)

c) Specify and describe the cocoa planting materials you recommend. (5 marks)

d) Prepare detailed estimates of costings of the various operations separately for the period up to end August 1974 and in the following year. (10 marks)

(3) Write notes on the following: —

a) Trinitario cocoa, its centre of origin, relationships with other botanical groups and general features. (5 marks)

b) Factors which may influence fruit set and incidence of pod losses. (5 marks)

c) Factors influencing choice of cocoa planting density. (5 marks)

d) The optimum age of cocoa seedlings at planting. (5 marks)

(4) List the major pests encountered on cocoa estates in West Malaysia and describe the nature and significance of damage they inflict. Discuss appropriate control measures for each pest and the means whereby you determine when pesticides should be applied. (15 marks)

(5) Name the pathogens responsible, describe disease symptoms and discuss predisposing factors and control measures applicable to the following diseases: —

a) Stem canker (5 marks)

b) Vascular streak dieback (5 marks)

c) Thread blights (5 marks)

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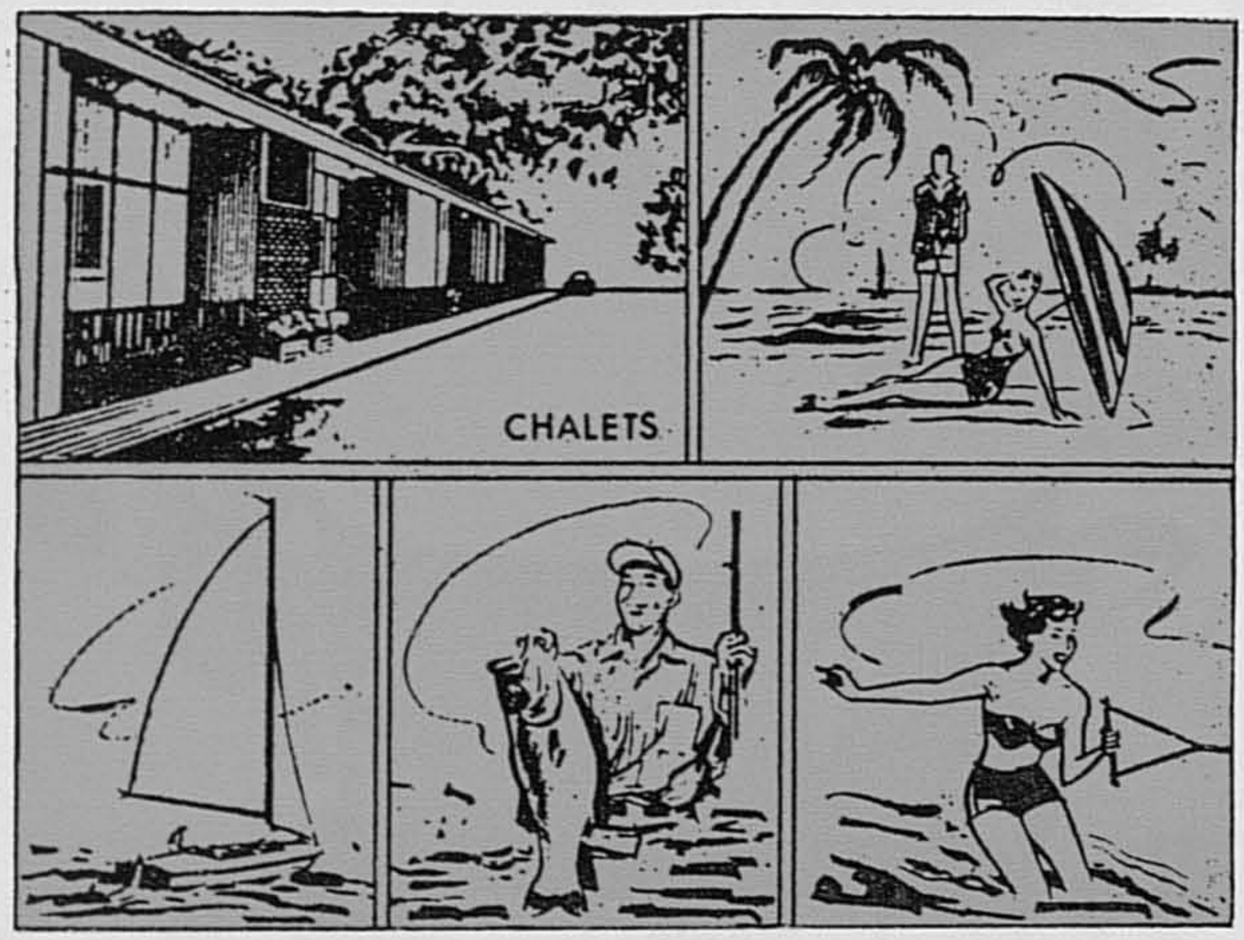

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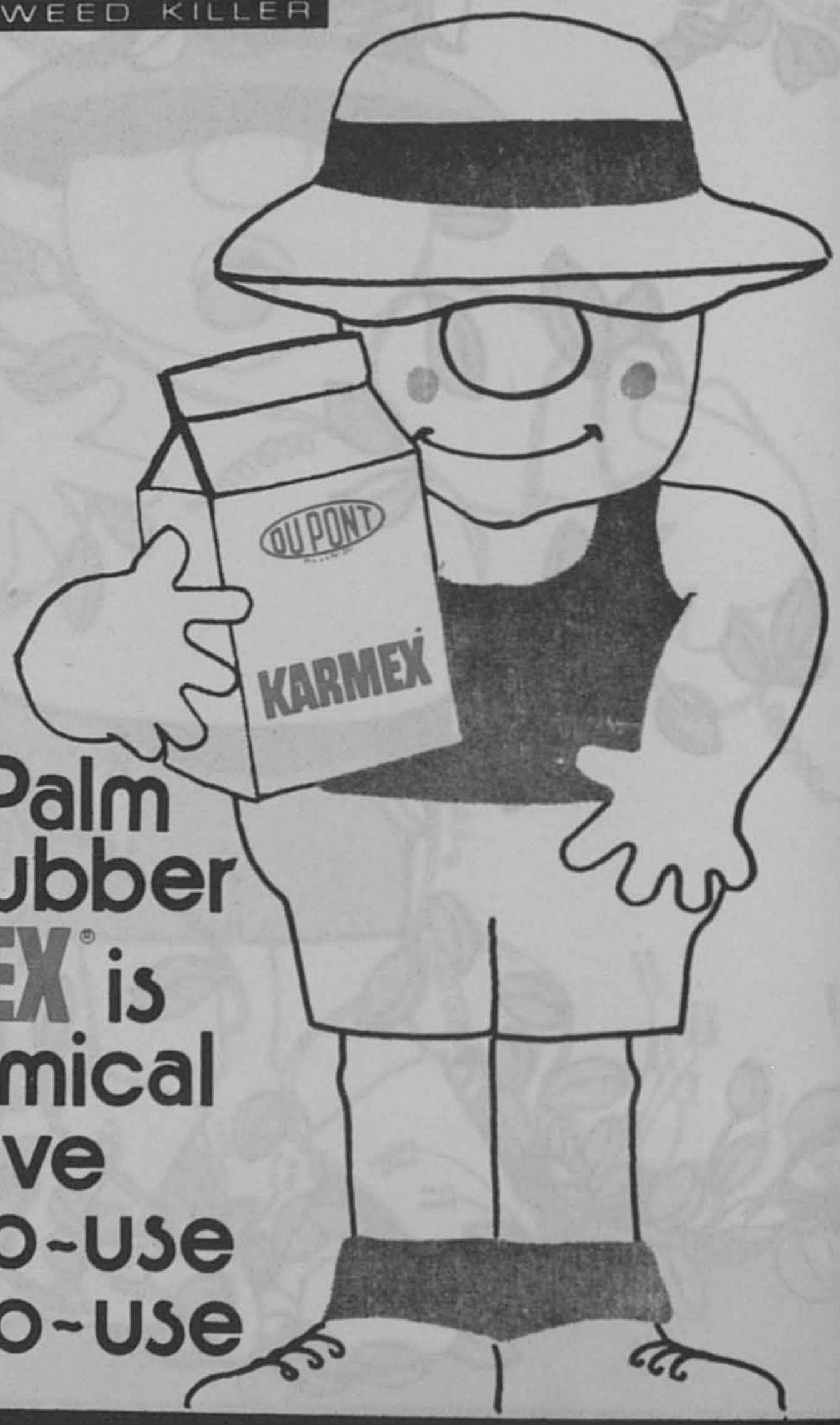

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GUTHRIE

COCOA

PART II

(1) You have been requested to advise on processing requirements and methods to be adopted on an estate which plans to plant 200 acres, 500 acres, 1000 acres and 1300 acres in successive years. Yield progressions of individual plantings are expected to be: —

3rd year from planting	—	250 lb dry beans per acre	
4th „ „ „	—	600	„ „ „ „ „
5th „ „ „	—	800	„ „ „ „ „
6th „ „ „	—	950	„ „ „ „ „
7th „ „ „	—	1050	„ „ „ „ „
8th „ „ „	—	1100	„ „ „ „ „

a) Calculate crops to be processed in each of the ten years following commencement of harvesting. Indicate approximate daily output capacities of processing facilities required to handle peak crops in each year. (5 marks)

b) Describe in detail how you would organise harvesting and transport of beans to the factory. Provide particulars of labour distribution and equipment required in year five. (10 marks)

c) Outline the fermentation and drying practices you would recommend and provide details of your choice of processing equipment. Indicate how you would phase its installation to deal with increasing crops. (15 marks)

d) Illustrate layout of the entire factory in year ten. The output capacities of both fermentation and drying equipment in each phase should be entered in the diagram. (10 marks)

(2) Write short notes on *four* of the following:

a) Temperature curve in fermentation and its manipulation. (5 marks)

b) Comparative merits of sun and mechanical drying. (5 marks)

c) Factors which influence the 'shell' content of cocoa beans. (5 marks)

d) Precautions to be taken in storage of cocoa beans. (5 marks)

e) Fine flavour cocoas. (5 marks)

(3) Describe in full detail the duties of an assistant manager looking after an area of cocoa similar to that described in question 1 above, assuming all except the final planting are in bearing. Give in note form a normal day's work for an assistant manager looking after this area.

(4) Write notes on: —

a) Elegibility of labourers for sick pay and workmen's compensation benefits. (5 marks)

b) Conditions required by the labour commissioner in respect of new labourers' lines.

(5) Write notes on *three* of the following: —

a) Cholera (5 marks)

b) Purification of water supplies (5 marks)

c) Preservation of timbers (5 marks)

d) Precautions in usage and storage of pesticides. (5 marks)

ANNUAL GENERAL MEETING
and LUNCHEON

Saturday, 14 April 1973

at

COMMONWEALTH HOUSE
Damansara Heights, Kuala Lumpur

(For luncheon reservations see *Supplement)*

The monthly crop

'Buoyant sales have been achieved by all newspapers in the New Straits Times Press (Malaysia) Berhad group since the incorporation of the new company'. Searching the newspaper in which that statement appeared we found no mention of the sales of toilet soap which must have rocketed since it became necessary to go and wash the printing ink off your hands after reading *The Straits Times.*

Members' subscriptions for 1973 are now long overdue and this is the last issue of *The Planter* which defaulting members will receive unless they pay up smartly. And please—send the right amount. Every issue of this magazine contains details of the various subscription rates and if you've been a member for 4-and-a-bit years then you must pay the higher rate. Another point worth remembering is that *you* don't get your 1973 membership card until *we* get your subscription.

The Annual General Meeting and Luncheon are taking place on Saturday 14 April at Commonwealth House in Kuala Lumpur. Reservation forms for the luncheon are included with the Supplement to this issue.

The Malaysian Palm Oil Producers' Association have sent us copies of their handsomely produced *Technical Bulletin No 1—Introduction to the Malaysian Palm Oil Industry.* Apart from a strange spelling of 'epiphytic' this production cannot be faulted and is bound to engender interest in and enthusiasm for Malaysian palm oil. We shall be pleased to send a copy, while stocks last, to any interested ISP member.

Macadamia nuts have become a considerable industry in Hawaii where, being an exotic, they are relatively free of native pests and disease. A member, who has seen them growing there writes: "There are two species, but the one used commercially is the Northern species which, being oily, is more suited to the processing methods involving drying and boiling in coconut oil. The Southern species is a sugary nut better eaten fresh. The commercial nuts bear year round but with definite peaks. This is a disadvantage as nuts should not be left in the ground for more than a week.

To produce economic crops the trees need regular moisture, and irrigation seems almost essential. In their native habitat, Queensland, they are subject to a range of pests—in particular a moth—but these can be controlled.

Grafted trees are planted and several new varieties have recently been selected. It takes about 7 years before crops of economic value are produced, and crops in the range of 1000–1500 lb per acre are expected from modern varieties. Selling price is 25 cents Australian a lb.

Main investors in the crop are big companies (C.S.R. *etc.*) who are planning an integrated growing and processing operation. They can afford to await a return and hope for the bulk of the profit from processing.

Prospects for independent growers are not as bright, the main disadvantage being the long wait for a return, and the cost of 'stoop' labour to pick up the nuts.

The proprietor of a new Kuala Lumpur restaurant has put up a sign which reads: WISMA KOPI.

Well, if *he* doesn't know, how does he expect us to?

QANTAS is the only airline currently flying Boeing 747s into Kuala Lumpur's International Airport. "We will have to do something so that other airlines fly theirs here", Communications Minister Tan Sri Sardon told the press, but he gave no hint of the extreme measures his Ministry has in mind. It was left to *The Straits Times* to do this, with their headline: CRASH PLAN TO LURE JUMBOS TO SUBANG.

Conservation in Malaysia

by

P R WYCHERLEY

Our monthly series will be
resumed next month with

NATIONAL PARKS AND NATURE RESERVES

DATELINE KUALA LUMPUR

Roads, traffic and things — especially things

Since our last 'Dateline', roads, traffic, accidents and all related matters have been very much in the news and alas, do not seem likely to disappear all that quickly.

Chinese New Year holidays were notable for a record number of deaths on the road, and reading the newspaper reports, it is not easy to find a common denominator in the various accidents. Safety helmets for motor-cyclists and scooterists are to become compulsory wear on 1st April although legally required from 1st March. The response to this 'month of grace' as at mid-March looks so poor that either 1st April will see the roads almost free of these vehicles or the police will be booking offenders to the exclusion of all other duties. Perhaps there is a psychological barrier here since the press and most public spokesmen nearly always refer to 'crash helmets' rather than 'safety helmets'.

Speaking of the police contribution to road discipline, we now have a series of police posts (Pondok Polis) sited at apparently strategic points throughout Kuala Lumpur and the larger towns in the country. Unfortunately, they are not all manned around the clock and some of them are closed at times when, from a traffic offence point of view, one would imagine they could be functioning at full pressure. In fairness, it must be said that traffic matters are not the primary function of these posts, this being public relations, at which they have proved a notable success.

If however, we are thinking of action to promote road safety we must look outside the town and city limits; urban accidents mostly hurt the vehicles rather than the passengers.

Let's have a look at a number of possible causes, in the hope of finding where police action might be most effectively directed in the prevention of accidents.

SPEED. This is the factor most often quoted as causal, but speed *per se* is just as often less to blame than the driver's lack of ability; speaking of which brings us to.....

QUALITY OF DRIVING INSTRUCTION. There are of course Driving Schools, of variable quality, frequently a one-man show run by a coffee-shop proprietor. Husbands teach wives or *vice versa*; either way, according to psychologists, can be fatal—to the marriage if not the parties concerned. Seriously, it does seem

that both instructors and examiners in this country do not respectively impart and establish a sound grasp of road customs, etiquette, courtesy, manners—call it what you will. The commonest fault among drivers in Malaya seems to be IMPATIENCE; this is followed by a technical fault which should be stressed more in instruction: INSUFFICIENT USE OF THE REAR-VIEW MIRROR.

There is scant respect for the safety gap between vehicles; and who hasn't suffered from the compulsive overtaker (who doesn't understand what safety gaps are about) who 'steals' your gap as soon as you have created it? Or the same sort of character who infiltrates into it from a side road; both of these contingencies call for emergency braking, although there are times when one feels like bashing into the back of him if it weren't for damaging one's own car and the fact that (according to the world union of traffic court magistrates) the man behind is always in the wrong.

There seems to be some confusion about the use of flashing light signals and this is potentially dangerous, as is the driver who forgets to cancel the signal—or puts in on the wrong way! And flashing lights reminds us of meeting the Compulsive Overtaker coming head-on just around a bend on a fast stretch of road—you brake hard, he flashes his headlights; what does this mean? 'I'm sorry'? 'You've caught me red-handed'? 'I've lost face'? or what? So there's another lesson for emphasis by instructors—NEVER OVERTAKE WHEN APPROACHING A BLIND BEND OR CREST.

Getting back to flashing light signals on vehicles; when they were first introduced, the offside one flashing meant 'I am going to turn right shortly'. It has since acquired new meanings such as 'I am going to overtake at the earliest opportunity' or 'I am not proposing to overtake but consider it dangerous for you to attempt it', or 'Stay where you are. I have no intention of letting you overtake me'. The possible variations are such that a simple indication of a right turn must, for safety's sake be accompanied by a hand signal. Unfortunately, hand signals are out of fashion, probably as a result of the air-conditioned car. When one sees a left-hand drive car with its plate advising 'No hand signals' it is tempting to think that they might well be affixed to all cars as a warning. Let's bring back hand signals and regard the flashing lights merely as a reinforcement—after all they can go wrong.

Pedal-cyclists, mostly schoolchildren, should be constantly reminded of the law forbidding riding two or more abreast—it seems to have been forgotten in recent years. Chinese lady rubber-tappers cycling along with their latex are a common sight about noon on a rural road—at least two abreast and nattering away in complete oblivion of any other traffic—they often have head-scarves screening their ears from the sound of vehicles approaching from the rear—so give a good hoot when you come across this phenomenon.

DIESEL-FUELLED VEHICLES. Sometimes one cannot see to overtake even on a straight, clear stretch of road because the diesel-fuelled vehicle in front is emitting such a dense cloud of black smoke through his exhaust-pipe (situated just for'ard of the offside rear wheel) that visibility beyond the cloud is impossible.

If we must have diesel vehicles on the road then they should be *compelled* to keep clean exhausts; this is a simple matter of correct adjustment of injector nozzles. Being forced to travel behind one of these offending vehicles is much more distressing to most people than exhaled cigarette smoke to a non-smoker in a cinema and potentially much more dangerous, apart from health considerations.

On such a road as the Bentong Pass where overtaking opportunities are few, the prospect of inhaling this filthy effluent for twenty-four miles is a sure inducer of IMPATIENCE leading to a highly risky overtake with all that implies on the road in question—and many other roads, too.

Is diesel fuel really more 'economical' than petroleum spirit? Or have the world's finance ministers created the 'economy' by tax discrimination? Many of us petrol motorists would like to see diesel fuel confined to the railways and static engines and outlawed from the road—and what about loads above a certain tonnage having to go compulsorily by rail, at least for as much of their journey as possible? This might help the railways' economy as well as alleviating road congestion.

Surely unburnt diesel fuel pollutes the atmosphere more than unburnt petrol—and there's a lot more of it. There used to be a delightful view of Kuala Lumpur as one entered the city from the south, at the rise just before turning into Lady Templer Hospital. This view no longer exists, although on relatively 'clear' days, one can see the top of the UMBC building and the KL Hilton peeking above the pall of smog. This atmospheric layer is at its worst brownish ranging through yellow to black and grey and cannot all be blamed on Petaling Jaya's industries, whose permanent, private cloud does tend to drift towards the city rather than the airport, which is probably a small mercy. Although, come to think of it, if this were the case, some action might be taken towards abatement if not eradication. But this is getting off the subject; let us refer back to.....

SPEED. And, in particular, those little plates fixed to the back of vehicles which tell you their statutory speed limit. This is a section of the law more honoured in the breach than the observance. One 'bus company, with '35 bsj' on the back of all its buses runs an express service between Kuala Lumpur and Seremban which takes one hour—the distance is 43 miles, which means achieving speeds greatly in excess of the vehicles' statutory limit. Apart from the law-flouting aspect, this would not matter if the KL-Seremban road was a 'Federal Highway'—but it very much isn't. The standard of driving in the bus company concerned is high but it is a very unfair imposition on these drivers to require them to keep to such a timetable. But perhaps the most important point here is that when members of the general public see any law flagrantly broken year in, year out with the police turning a blind eye, then this must engender a lowering of respect for the law. A very dangerous rot could set in, especially where traffic laws are concerned. Talk of the KL-Seremban road brings us to the general subject of.....

ROADS. There is really no such thing as a minor road in a country as under-roaded as this. As soon as a road is tractable, lorries and buses are using it and the width should be such that two of the widest vehicles (buses are 8 ft) can pass each

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photo: Dozer/Grader at work on the Sungei Tong Oil Palm Estate, Trengganu.

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other without going on to the verge—often highly dangerous because of erosion at the road's edge, a soggy verge or a big drop to the verge. This means that for reasonable safety, no road should be narrower than 19 ft. If funds did not run to this, it would be preferable to leave a laterite surface rather than superimpose a narrower metalled strip.

SLOW TRAFFIC. Drivers of such vehicles as petrol tankers, earth-moving vehicles, bulldozer transporters, racehorse transports should be instructed to avail themselves of any lay-by or pull-in opportunity to allow faster traffic to proceed whenever they are causing a 'queue' to form. This would be yet another weapon against the build-up of IMPATIENCE. And what about bullock-carts? Do those we encounter on main roads pay road-tax? There is notice of a speed-trap entering Tanjong Malim from the south but the warning seems unnecessary as there is always a bullock-cart on this stretch which takes care of would-be speeders—I wonder if these bullock-carts (there must be more than one in the area) are employed by the police?

But sometimes the queue-causing vehicle is a 'clapped-out' saloon car dating from the late 40's or early 50's with, often, a driver to match. The system of official inspection of vehicles over 10 years old as practised in Britain could well eliminate hundreds of old crocks if introduced in Malaysia. Britain, having started with 10 or more year-old cars has now gradually worked down to 5 year-old ones and some joker has suggested that if this goes on, they might start inspecting them before they leave the factory.

ANNOYANCES IN URBAN AREAS. A number of little annoyances can contribute to IMPATIENCE inducing. Where there is a building site right beside the road (and there are many in KL and most towns these days) one often finds the contractor using part of the public highway for dumping his raw materials and, occasionally as a workshop for doing something with metal rods and a vice or extruding device actually set up on the road. Roundabouts at rush hours often have a traffic policeman or two to ensure fair play but also often not; would not traffic-lights operating only at rush-hours help to reinforce safety and eliminate the 'every man for himself' syndrome which so often builds up at such times?

We hear a lot of ambitious traffic studies for Kuala Lumpur with a view to adapting our bullock-cart age roads to modern conditions, tied in with town-planning and re-housing of squatters. But the eventual answer, if there is ever going to be one, seems to be a ring of car parks around all urban areas from which one may hire a two-man electric (battery-driven) car for use in the city centre. This may be OK for commuters but presumably city dwellers must keep their own electric cars and maintain their petrol-driven vehicles at a perimeter car-park—for out-station trips only.

Somehow, this all seems a long way ahead but we need not wait for the day of this traffic Nirvana—there is plenty which can be done now to alleviate the conditions which give rise to short tempers, impatience and bad road manners.

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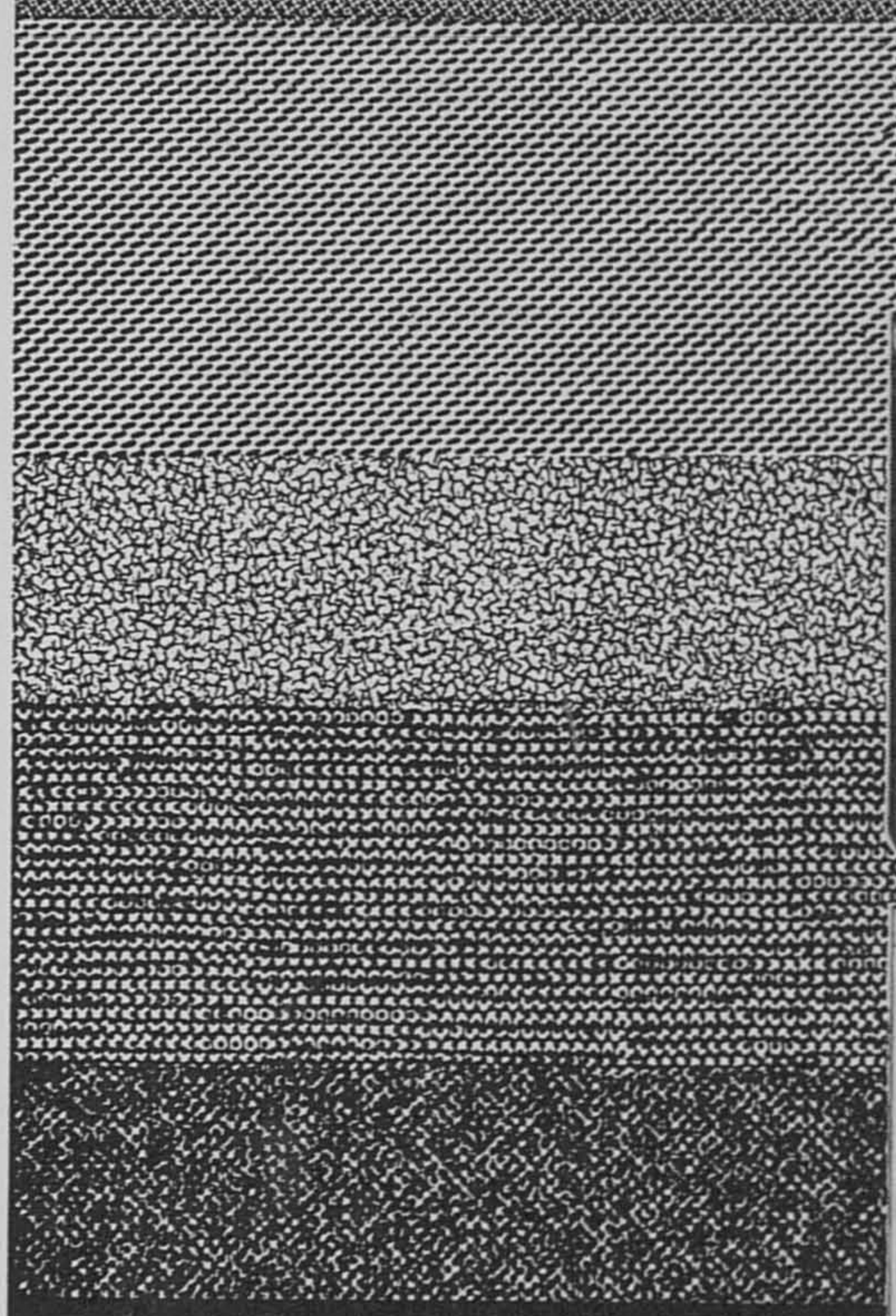

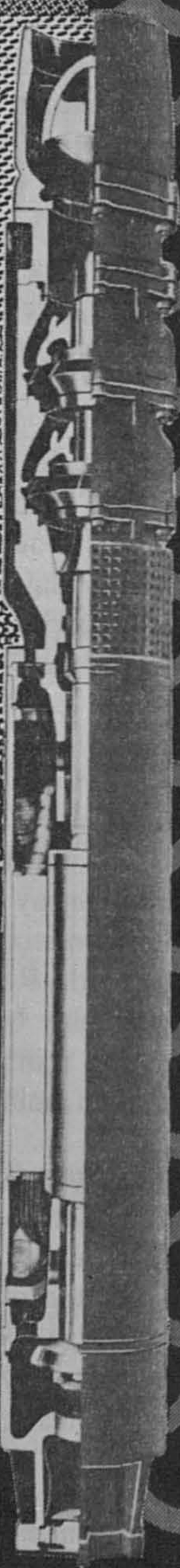

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Another potential danger is the dimness of the lamp bulbs in most traffic lights; in bright sunlight they frequently appear to be out of order and a 'free for all' ensues.

Probably the biggest traffic nuisance in Kuala Lumpur could be the one easiest solved, that is, bilateral parking and lorry loading and unloading. Surely the Monday, Wednesday, Friday parking on one side, etc. already functioning well in parts of the country could be introduced with great advantage to traffic flow in streets such as Jalan Bandar and, even more so, Jalan Rodger? If loading and unloading could be restricted to off-peak traffic hours in such non-thoroughfares in addition to unilateral parking, conditions must greatly improve. Patrons of the Mercantile drive-in bank always find the access very difficult to negotiate because of illicit bilateral parking in the already narrow way. Perhaps as this affects only a small proportion of the public, nothing will continue to be done about it. If this be the case, then the 'No Parking' signs placed there by the Municipality should be removed; otherwise it will be another case of a very public exhibition of disrespect for law and another step towards anarchy on the part of the driving public, or that part of it which is always ready for non civic-minded action.

One gets the feeling sometimes that the police are over-reacting to the appeal for better public relations by being a bit too 'soft'; all good citizens would like to see traffic discipline tightened up a bit in regard to some of the matters mentioned above. The police need not worry about their politeness and friendliness image; adding firmness need not detract from the former. The public would prefer to see prosecution of the law rather than the passive tolerance of its contravention. Laws which are too difficult to prosecute should be amended or thrown out altogether.

J. M. N.

Letters to the Editor

21 March 1973.

Dear Sir,

CONSERVATION IN MALAYSIA

Dr. P. R Wycherley is to be congratulated on his excellent work *Conservation in Malaysia* currently being published in series form in your magazine.

However, there is one paragraph to which I have to take exception; this concerns "Birds and Agriculture" sub-title "Capture for Release" page 72 paragraph 2, of the February issue. The author comments on the Buddhist belief of releasing caged birds for merit and laments that "Occasionally the caged birds released are aviary bred or imported birds which are untrained to survive in the wild, ..." Whilst not disputing that this *may* occur, it is in practice unlikely, as such birds would invariably be more expensive than the larger choice of local and cheaper birds. After all, merit gained is not related to the *amount* one spends on the birds but more in the merciful *act* of releasing caged creatures. As one who has spent his boyhood following his elders to the various temples on festival days and still occasionally visits such temples, I can say that the majority of released birds are domestic pigeons and *burong-pip*2; the latter appears to thrive exceedingly well in man-created environments as is evidenced by the large and increasing flock which for very many years can be seen around the Tiong Bharu housing flats in Singapore; in Malaysia these birds are more than likely to revert to the wild stage very rapidly.

I submit that wild birds, especially the more attractive and hence rarer owing to intensive trapping, such as the colourful members of the parrot family, are often caught for export and sale in temperate countries as exotic tropical birds. The daily papers are full of reports of animal smugglers being caught with camouflaged cages full of birds etc. under the most appalling conditions.

I further submit that "education in conservation" is better directed at such importing countries than at Malaysians, especially Buddhists. After all the Malaysian Constitution guarantees freedom of worship which one assumes includes its practices.

Yours faithfully,

A – 142.

Prospects for supplies of palm oil and palm kernels in 1980

(Abridged from FAO *Mon. Bull. agric. Econ. Statist.*, 1972, **21**, (4), 11–15)

Large areas of land have been planted with oil palms in recent years in a number of countries and planting programmes are continuing. This note, based on available information on the current situation and on plans for rehabilitation and planting, sets out alternative FAO forecasts of production in 1980 for palm oil and palm kernels and also examines possible implications for likely export availabilities of palm oil during the decade to 1980.

Reflecting mainly new plantings with high yielding material, world production of palm oil is expected at least to double over the period to 1980. Compared with an output of about 2 million tons at present, the range of the three alternatives presented for 1980 is from 3.8 to 5 million tons. Output of palm kernels will increase relatively less, rising from about 1 million tons at present to 1.5 or 1.8 million tons by 1980. Most of the expansion in output of oil palm products will take place in Malaysia and, to a lesser extent in Indonesia and West Africa.

Export availabilities of palm oil are likely to rise even more rapidly than output and a range of 2.3 to 3.4 million tons is given for 1980. Under the medium alternative, export availabilities are forecast at 2.8 million tons, which would mean an annual increase of export supplies of 200 000 tons in each year of the decade. With export availabilities of this magnitude, palm oil will have to win a considerably larger share of the total world fats and oils market and this will only be achieved with the help of a strong marketing effort.

Export availabilities of palm oil

In view of the fast rate of growth of palm oil production, remarkable increases in exportable supplies will occur during the decade. The nine countries listed individually in Table 1 accounted for nearly 90% of total production and for over 95% of world indigenous exports in 1970 and 1971. They are expected to account for over 90% of production in 1980. Therefore, possible world export availabilities in 1980 have been estimated on a basis of the estimated production levels and assumed domestic consumption in these nine countries, no account being taken of possible exports from other countries.

In the main African producing countries, palm oil is the dominant and often almost exclusively used oil for domestic consumption. It has been assumed that this high proportion of palm oil in total oils and fats consumption (from 75% to almost 100% depending on the country) will continue until 1980. For Colombia, it is likely that all output will be consumed domestically. For Malaysia and Indonesia, where domestic use of palm oil is currently quite small consumption will probably grow

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Table 1. World palm oil and palm kernel production—1970, 1971 and FAO forecasts for 1980

	Palm oil					*Palm kernels*				
	1970	*1971**	*1980 Forecast*			*1970*	*1971**	*1980 Forecast*		
			Low	*Medium*	*High*			*Low*	*Medium*	*High*
Main producers				thousand metric tons						
Malaysia	429	589	1800	2100	2500	92	124	360	420	500
Nigeria	508	500	570	650	770	298	310	400	450	530
Indonesia	215	225	350	450	550	47	50	70	90	110
Zaire	180	200		275		130	130		130	
Ivory Coast	50	67	220	250	280	19	23	78	85	92
Dahomey	45	47	85	100	115	94	80	80	90	100
Cameroon	54	56	80	95	110	45	47	65	75	85
Colombia	26	34		50		—	—		12	
Sierra Leone	53	60		60		59	55		70	
Sub-total	1560	1778	3490†	4030	4710†	784	819	1265†	1422	1629†
Other producers										
Western Africa	129	130		171		98	105		100	
Central Africa	24	25		30		22	23		26	
Latin America	56	59		77		55	56		57	
Others	1	1		12		1	1		5	
Sub-total	210	215	290†	290	290†	176	185	188†	188	188†
World total	1770	1993	3780	4320	5000	960	1004	1453	1610	1817

* Preliminary

† Totals obtained by assuming the same (medium alternative) production figure for all three alternative levels of production for countries for which only one forecast is shown.

considerably during coming years to provide up to 30% of total domestic requirements of all fats and oils in the case of Malaysia and to 15% in Indonesia.*

On this basis, the estimated consumption in 1980 of palm oil in the nine countries concerned would total 1.2 million tons. With the further likelihood that, in Nigeria, the achievement of the high output alternative would be accompanied by higher domestic consumption and no increase in export availabilities, the three levels of apparent export supplies resulting from the alternative output estimates in 1980 are as follows: —

Low	2.3 million tons
Medium	2.8 million tons
High	3.4 million tons

Malaysia is already the major exporter of palm oil, accounting for over 50% of world exports in 1970 and 1971, and its likely growth in output, coupled with the relatively low domestic consumption suggests that its share of the world palm oil market will increase further over the decade. Indonesia will probably be the next largest exporter in 1980, with Zaire and Ivory Coast also being of major importance.

Over the last decade as a whole, trade in palm oil grew at only 2.9 per cent per year while the comparative figures for trade in all oils and fats (including the oil equivalent of oilseeds) was 3.8% per year. However, exports of palm oil have shown a much more rapid increase in the last few years and, if all prospective export supplies of palm oil are to find a market, this faster rate will certainly not only need to be maintained but to be increased further. The lowest figure for export availabilities in 1980 (2.3 million tons) implies an annual growth rate of nearly 12% during the decade to 1980. The highest figure (3.4 million tons) gives an annual growth of over 16 per cent. Under the medium production alternative, the export availabilities of 2.8 million tons would require an annual increase in exports of nearly 14%.

If the total increase in export availabilities expected over the decade is divided to obtain an average annual increase, the resulting figures are as striking as the above growth rates. On the medium level of export availabilities, the annual increase in export supplies of palm oil would be about 200 000 tons; even for the low alternative it would average 150 000 tons and at the highest level, the average increase would be over 260 000 tons a year.

The share of palm oil in total indigenous exports of all oils and fats has varied between just over 5% to nearly 8% over the last decade, and no clear trend is discernible. However with increases in export availabilities of the magnitudes suggested above, the share of palm oil in total oils and fats exports will have to increase sharply if all available export supplies are to be sold. The approximate size of the increase in world trade of fats and oils shown for 1980 in the recent FAO projections study suggests that the share of palm oil in total fats and oils exports might have to

---

* In all cases, the projected level of total consumption of all fats and oils in 1980 has been taken from the *FAO* Agricultural Commodity projections, 1970–1980, Rome 1971.

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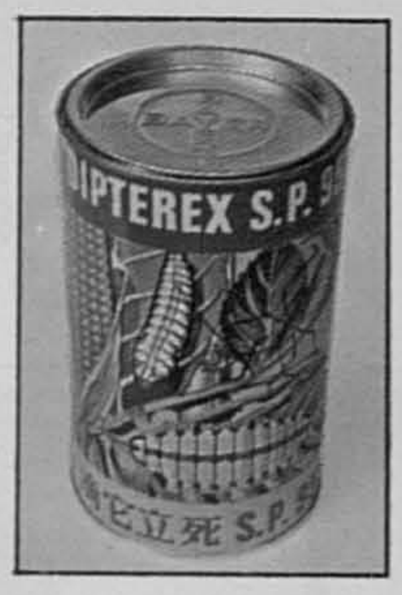

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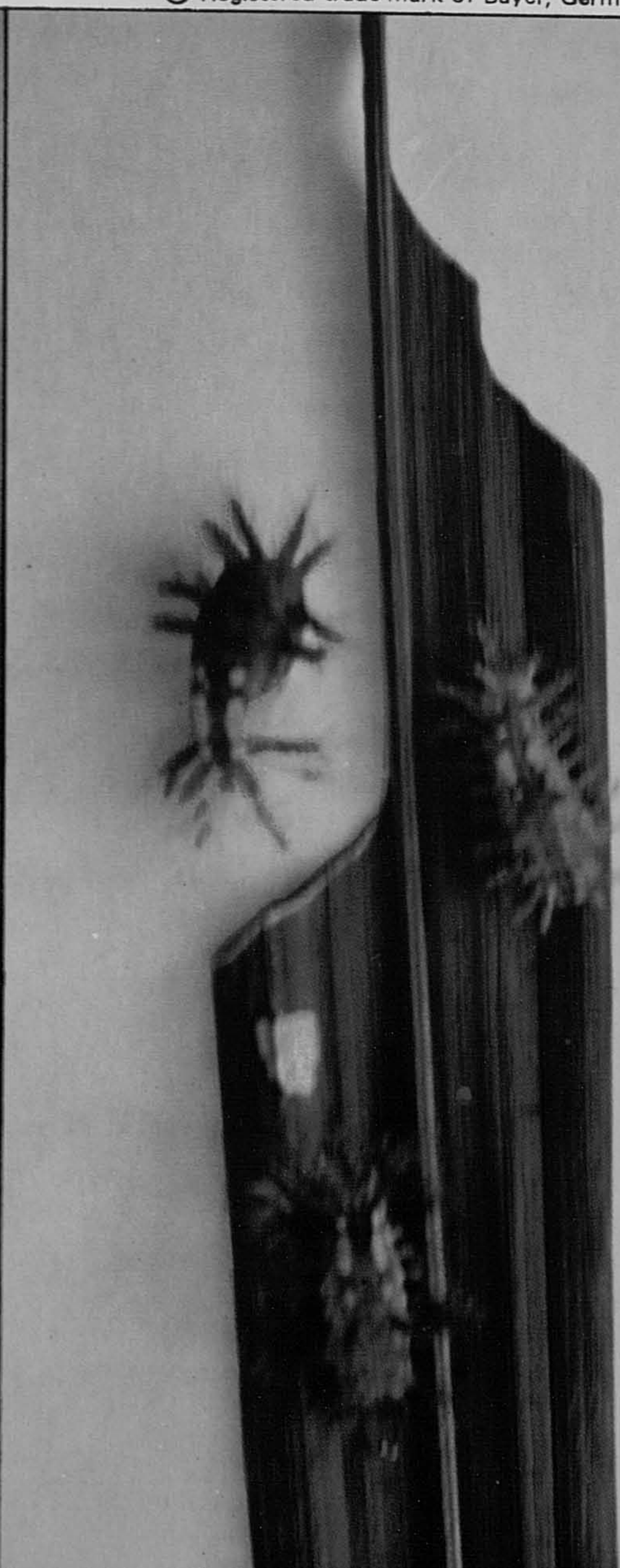

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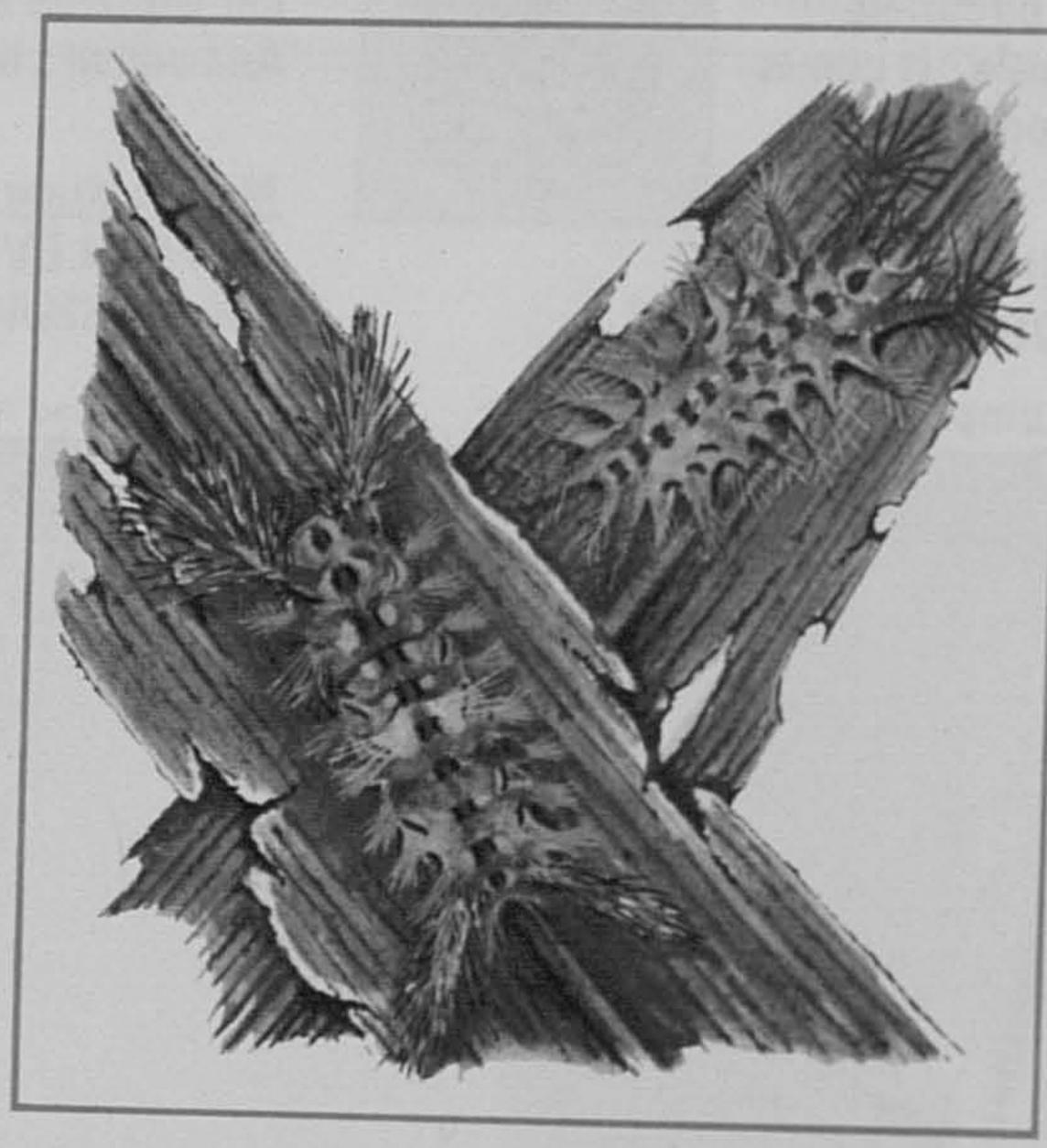

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double or even triple during the period and that, by 1980, palm oil might account for about a fifth of all fats and oil exports.

Under these circumstances, palm oil exporters undoubtedly face a considerable task in finding markets for the greatly increased quantities likely to become available during the decade. However, because the supply increases are assured and because production costs are relatively low in most of the newly planted areas, palm oil is likely to offer very strong competition to other fats and oils on international markets. In addition, the chemical and physical characteristics of palm oil allow it to be used for a wide variety of purposes and a considerable amount of work is already being carried out on quality control, processing problems and end-use research. Nevertheless, if palm oil is to obtain a greatly increased share of the market without too drastic a fall in price relative to other fats and oils, it will be necessary for producers and exporters to broaden existing markets both geographically—in the sense of searching out and developing new import markets—and technically—in the sense of extending the end-use pattern of this oil.

(Adapted from, and with acknowledgements to *Oil Palm News*, Tropical Products Institute, London.)

[That would be poor thanks for flying half-way around the world with us.]

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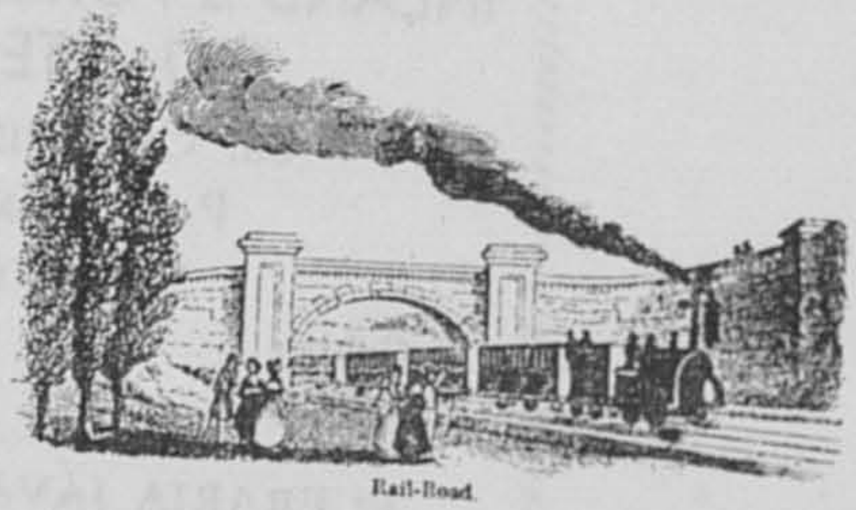

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4171 Williams, H O, "The Woodlands", Weston, Nr Crewe, Cheshire, U.K.

Returned from leave

4642 Gathorne-Hardy, S, Linsum Estate, Rantau, Negri Sembilan.

5701 Harness, I, Sogomana Estate, Pantai Remis, Dindings, Perak.

5491 Than, J L, Sabah Land Development Board, Ulu Dusun Scheme, P O Box 1253, Sandakan, Sabah.

Change of address

5596 Au Yong Siew Fah, Rengam Estate, P O Box 104, Rengam, Johore.

5374 Balchandran, K, Jendarata Estate, Teluk Anson, Perak.

4815 Blincoe, A D, Sepang Estate, Sepang, Selangor.

5653 Cheryan, Thomas, Craigielea Estate, Bukit Pasir, Muar, Johore.

4862 Chelliah, P. Pelam Estate, Kulim, Kedah.

4839 Cooper, B C, AISP., Senawang Estate Factory, Sungei Gadut, Negri Sembilan.

4614 Chang Choo Chau, AISP, Rengam Estate, P O Box 104, Rengam, Johore.

3469 Eakin, T R D, Seafield Estate, Batu Tiga P O, Selangor.

5656 Esa bin Haji Ahmad, Bukit Rajah Estate, Kelang, Selangor.

5643 Fernandez, E, Serapoh Estate, Parit, Perak.

5727 Hoare, D R, West Estate, Carey Island, Port Klang, Selangor.

5843 Jamaluddin Arshad, Bank Pertanian Malaysia, 165 Jalan Lengkongan, Tg Karang, Selangor.

4078 Ledingham, J G M, BEM, P O Box 2126, Kuala Lumpur.

5554 Megat Ahmad b Megat Yunus, Silabukan Settlement Scheme, P O Box 211, Lahad Datu, Sabah.

5179 Mahbob b Abdullah, AISP, Pamol Headquarters, P O Box 1, Kluang, Johore.

5545 Ng Nen Leong, Merlimau Pegoh Ltd, CEP Rengam Palm Oil Mill, P O Box 111, Rengam, Johore.

5320 Tan Han Chee, P O Box 517, Segamat, Johore.

5637 Tan, Peter, Kekayaan Estate, Paloh P O, Johore.

4143 Velsivanathan, K, AISP, c/o No 275/142 Jalan Brickfields, Kuala Lumpur.

5409 Visuvanathan, R K S, Subur Estate, Batu Karau, Taiping, Perak.

5458 Zulkifli bin Haji Nasir, Sungei Tukong Estate, P O Box 104, Masai, Johore.

3919 Morris, Moulay Idris (Haji), AMN., No 567 A Tanjong Bungah, Penang.

5789 Charl, Raj Singh, Melalap Estates, Tenom, Sabah.

5555 Loh Hang Pai, Ulu Bernam Estate, Ulu Bernam P O. Lower Perak.

Births

STILES: To Jane and John, Ason Rory in Cheshire on 28 February 1973.

BEK-NIELSEN: To Gladys and Bek a son on 10 March 1973, at Assunta Hospital.

Deaths

CHIN: Hon Lim, on 8 December 1972 in his home. (Life member—3715)

STIMPSON: A Stimpson of Tighanalt, Fochabers, Morayshire, Scotland, died on 12 March 1973. (life member—606)

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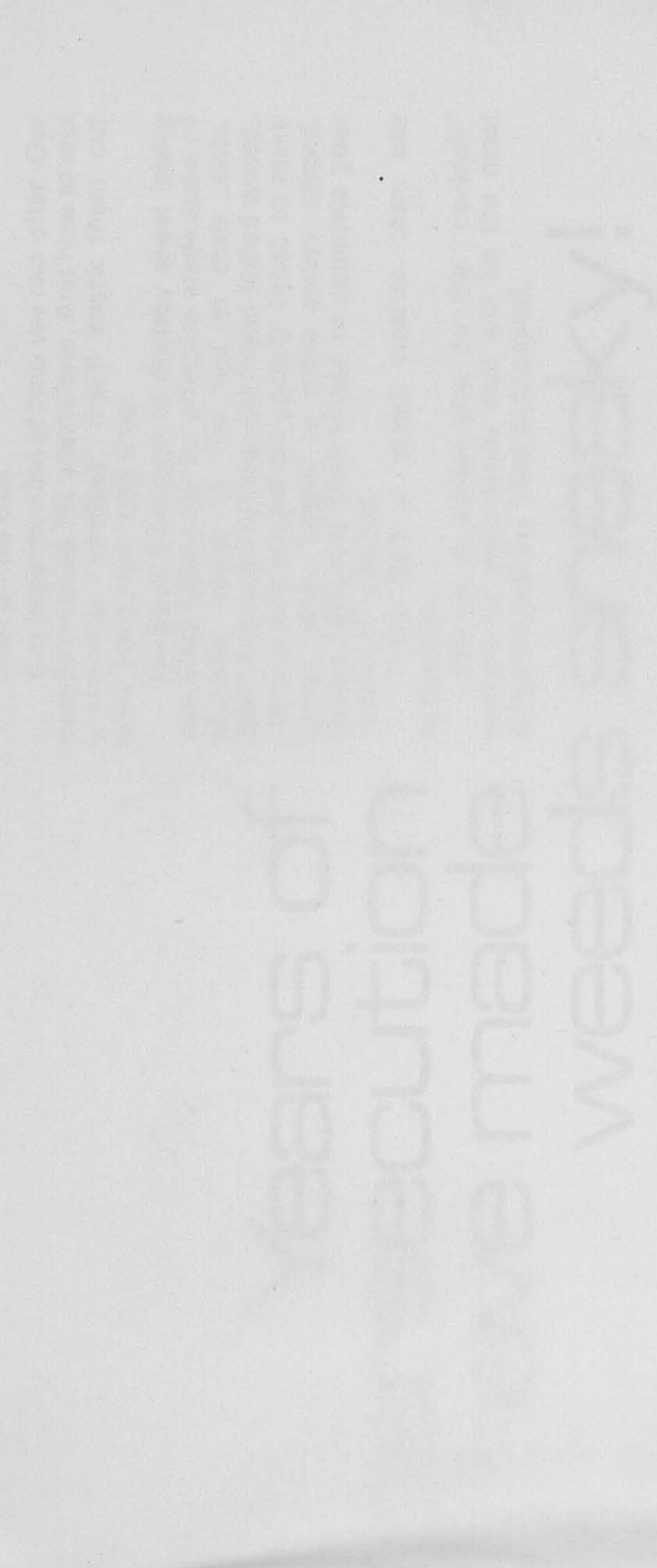
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