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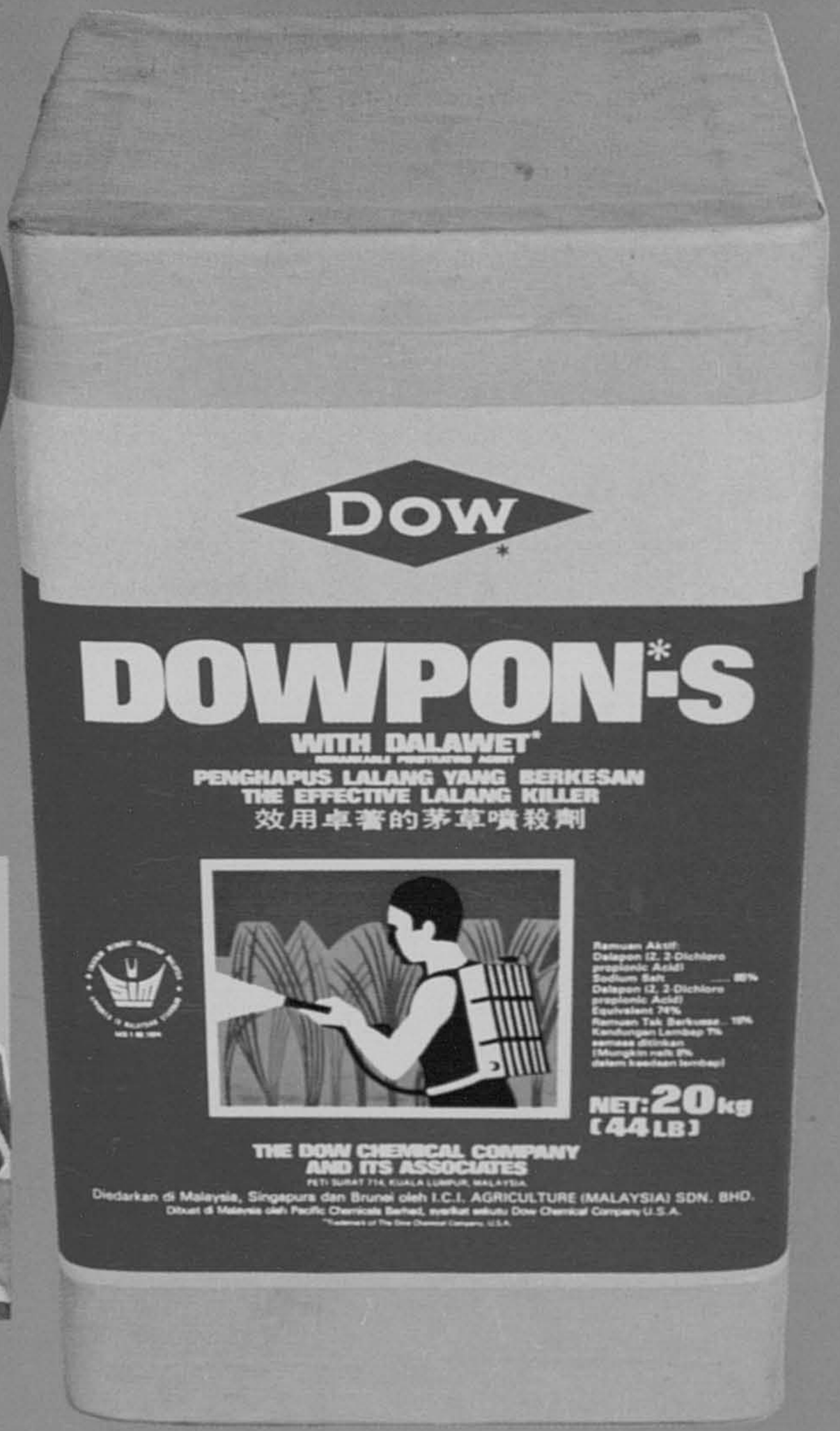
JUNE 1976
KDN 9432 Vol. 52, No. 603

# The Planter

NEW
20 kilo
BARU

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**Dowpon*-S** ialah satu-satunya racun rumput yang di-rumuskan dengan Dalawet*, bahan peresap luarbiasa yang membolehkan racun rumpai itu cepat menyerap ke akar pokok dan membunuhnya dengan segera.

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# The Planter

KDN 9432

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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 |
|---|---|---|
| **Category A** | | |
| *Ordinary Members employed as Managers, Assistant Managers etc. and normally resident in:* | | |
| Malaysia and Singapore | $ 48 | $ 78 |
| New Guinea and Brunei | $ 44 | $ 60 |
| Approved Overseas territories | $ 44 | $ 44 |
| **Category B** | | |
| *Ordinary Members employed as Executive Engineers, Estate Medical Officers, Research Staff etc., wherever resident* | $ 48 | $ 48 |

* Rates are proportionate for a part-year when joining.

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# Contents

**June 1976**

# The Planter

KDN 9432

MAGAZINE OF THE INCORPORATED SOCIETY OF PLANTERS

(1) *The Planter* is published monthly from the Society's Office at 1, Pesiaran Lidcol, Kuala Lumpur 04-06, Malaysia.

(2) It features original technical articles in tropical agriculture, for the benefit of the planter (in active service or practice), papers relating to the Society's Technical Education Scheme, and other contributions of more general interest.

(3) The magazine's current print order is 2000 copies and this is steadily rising.

(4) *The Planter* is read in some 51 countries*.

(5) Copies are exchanged with a wide range of agriculturally based institutions.

(6) Subscription copies go to 32 countries.

(7) Annual subscription is M$36, including postage by surface mail.

(8) Regular advertisers include national, regional and international organisations.

(9) Of particular interest to advertisers is the fact that the readership comprises largely executives and professional persons with considerable spending power.

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*Editorial:*

# PALM OIL–THE 'GIANT' LEAP FORWARD!

Armstrong, the American astronaut, was so overwhelmed about his successful moon landing that he said that the great journey began but with a small step.

The progress made by the Malaysian oil palm industry in regard to improving the quality of palm oil produced by this country can be likened to this odyssey—in terms of technology and tough-mindedness.

As a result, Malaysian palm oil has travelled a long way from the commodity's one-time usage as axle grease on (British) railways to be a component of shortenings, margarine and cooking oil. The spread of its versatility is steadily extending—with the widening spectrum of its uses, and some major surprises still in the offing.

This is perhaps the major 'message' emerging from the series of independent appraisals on Malaysian palm oil at the recently held international meetings held in Kuala Lumpur.

The 700 odd participants in the Malaysian International Agricultural Oil Palm Conference and the slightly smaller number who participated in the Malaysian International Symposium on Palm Oil Processing and Marketing which followed included a significant number of foreign participants—from some 28 countries where there is either an oil palm growing industry or increasing consumption of palm oil, especially in food products and cosmetics.

As the world's largest producer of palm oil utilised for an increasing number of edible uses, Malaysia is naturally keen to be on good terms with both the fellow growers of the oil palm and the consumers of the oil from its fruit bunches (and to a lesser degree, from its kernels too).

Thus, the series of meetings provided welcome opportunity for Malaysian industry, research, marketing and official circles to seek out the views of their counterparts abroad and brief them all about the local initiative regarding continual improvements to Malaysian palm oil quality in line with the expansion of its worldwide usage.

For, Malaysia's stake in the oil palm industry is considerable. Already, there are some 1,600,000 acres under oil palm cultivation throughout Malaysia, the anticipated production of palm oil in 1976 being about 1,432,000 tons.

These levels are expected to increase further, as Malaysia is programmed to have by 1980 some 1,917,000 acres under oil palm, with a total estimated output of about 2,448,000 tons of palm oil.

Not being content to be the mere exporter of crude palm oil, Malaysia is also set to process (fractionate, refine etc) such oil to increasing extents prior to export. The current picture of Malaysia-made products from palm oil include ranges of cooking and frying oils, vegetable ghee, margarines, shortenings and pastry fats.

According to senior specialists from well-known European and American food products manufacturing enterprises, the share of Malaysian palm oil in these products is expected to increase, with further improvements to its quality now becoming possible.

Tributes to the pioneering spirit of the Malaysian oil palm industry which has undertaken research and development efforts on increasing yield and improving oil quality since about 1911 have been paid. These efforts now stand augmented by the entry of the Malaysian Agricultural Research and Development Institute (MARDI) into the field of oil palm and palm oil research.

Significant research efforts now underway may result in Malaysia producing a palm oil with a greater degree of unsaturation, greater 'liquidity' and lower carotene content—all of which, until recently, were regarded by some as pipe dreams.

*The Planter* takes pride in reiterating the role of its 'namesakes' in facilitating these exciting lines of progress which, to Malaysia as indeed to the developing world, means a 'giant leap forward'—whether in the development of their natural resources or in harnessing 'home grown technology to levels at which the resulting expertise and know-how can compete with the best in the world.

Laurels belong in this realm to every concerned individual and organisation, including bodies such as the Oil Palm Growers' Council of Malaysia and the Malaysian Palm Oil Producers' Association. In course of time, these laurels will hopefully be shared by other industry organisations like the fledgling Malaysian Refiners Association and the soon-to-be-established Palm Oil Registration and Licensing Authority (PORLA).

*The Planter* extends warm congratulations to the organisers of the recent meetings which helped to prove beyond doubt what lies in store for those to whom challenges are but milestones in the path to progress and prosperity.

*Planter, Kuala Lumpur* **52**: 209–215 (1976)

# A preliminary report on exploiting rubber through puncture tapping[1]

LEONG TAT THIM[2], AZEEZ ABDUL RAVOOF[3] AND TAN HONG TONG[4]

## ABSTRACT

The puncture technique of latex exploitation of clone PR 107, using fifteen punctures at d/3 tapping frequency with ethrel stimulation gives higher total yield of rubber with higher sucrose content than the conventional tapping system of ¾ S d/3 without application of stimulant. However, the late dripping from puncture tapping is much higher than that obtained from the conventional ¾ S d/3 tapping.

Although the per cent dry rubber content (% DRC) of the latex from puncture tapping is consistently lower than that of the conventional tapping, there is no single incident where this value drops below the value of 30%. Therefore, it can be considered that this puncture technique has great potential in rubber exploitation.

## INTRODUCTION

Based on a small experiment involving only eighteen tapping, Tupy (1973) concluded that rubber can be tapped successfully by using sharp needles. An attempt was made to test and develop this new technique of tapping to suit Malaysian conditions (Tan and Leong, 1975).

Before embarking upon an elaborate and systematic experiment, it was felt necessary to try out the puncture tapping first in a simple trial to see whether the technique works under Malaysian conditions.

## MATERIALS AND METHODS

The trial is in progress within an existing experiment on 'discard' trees of clone PR 107 (1960 Replant) at Tanah Merah estate from July 1974 with the following treatments.

---

[1] Part of a research project in progress towards Master of Agriculture Science degree at the University of Malaya.

[2] Experimental Officer, Agricultural Research Section, Chemara Research Station.

[3] Supervisor of this graduate research programme and Lecturer in Plant Physiology, Faculty of Agriculture, University of Malaya.

[4] Head of Agricultural Research Section, Chemara Research Station.

| | *Method of tapping* | *Tapping cut or no. of punctures* | *Tapping frequency* | *Stimulation* Monthly |
|---|---|---|---|---|
| A. | Puncture tapping | 15 punctures/ tapping | d/3 | (GEM 3.3 %) |
| B. | Conventional tapping (control) | ¾ S | d/3 | No stimulation |

A randomised tree plot design was used in this trial with twelve trees per treatment, sub-divided into three blocks. Each block was tapped third daily. The crop (latex + late dripping) was collected and weighed in bulk individually for each treatment. Latex samples of each treatment were obtained at regular intervals for determination of Dry Rubber Content (DRC) and sucrose content.

The puncture technique consisted of making fifteen punctures per tapping on the vertical band on the bark. The band which is 2 cm wide and 100 cm long was scraped first and treated with Guthrie Ethrel mixture (GEM 3.3% ethephon) as shown in the panel diagram (*Fig. 1*). The subsequent bands, made at monthly intervals were placed parallel to the old ones at 1 cm from each other, and at 2 cm above the renewal bark of the old panel.

A second phase trial in the same area was similarly set up six months later to confirm the results of the first trial. It differs from the first trial in that the vertical bands were placed at a distance of 2 cm from each other instead of 1 cm.

## RESULTS

### *Total yield*

During the pre-treatment period, both treatments were tapped on ¾ S d/3 tapping without stimulation. The total yield (latex and cuplump) from trees intended for puncture tapping was slightly less than the control while the sucrose content of the latex was more or less the same (*Fig. 2*).

From the second month onwards the puncture tapping treatment out-yielded the control. The total yield from puncture tapping showed a consistent high yielding trend while that of the control remained more or less constant at a lower level (*Fig. 2*). Due to the suspension of tapping imposed by the Government to stabilise rubber prices from 24th December, 1974 to 8th January, 1975, the yield of January (15th December, 1974 to 14th January, 1975) was lower than those of other months (*Fig. 2*). This depression of yield obviously resulted in a slightly lower average yield (*Table 1*).

The differences in the components of yield such as latex and cuplumps (late drips) between the treatments was of the same trend as that of total yield. For example, the latex yield in the puncture tapping treatment was better by as much as 32% over the control, while the yield of cuplumps was as much as 270% over the control. In fact, the late dripping amounted to as much as 30% of the total yield in the puncture tapping treatment as opposed to only 13% in the control (*Table 1*).


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ETHREL is the proven Latex Stimulant, used very successfully in all natural rubber producing countries to either regulate tapping schedules and save labour costs;

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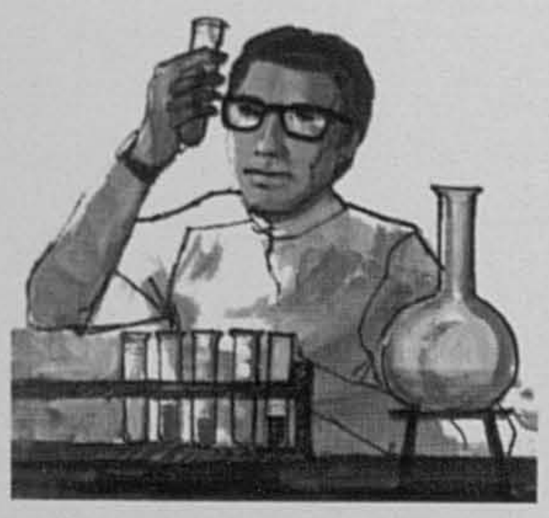

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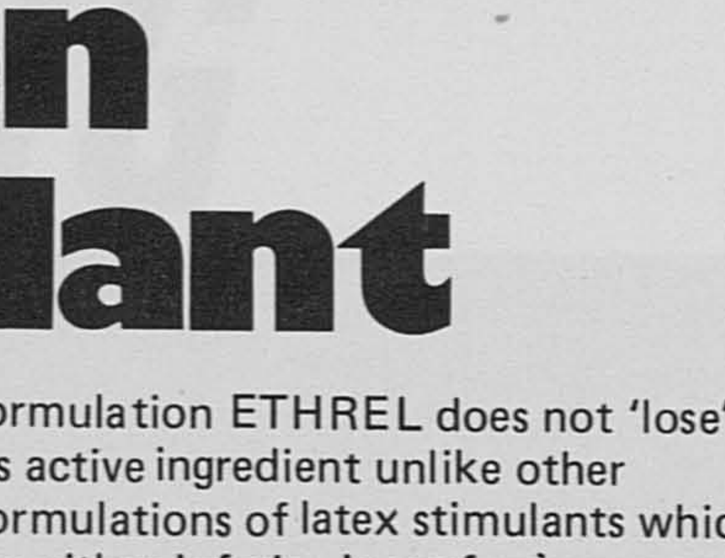

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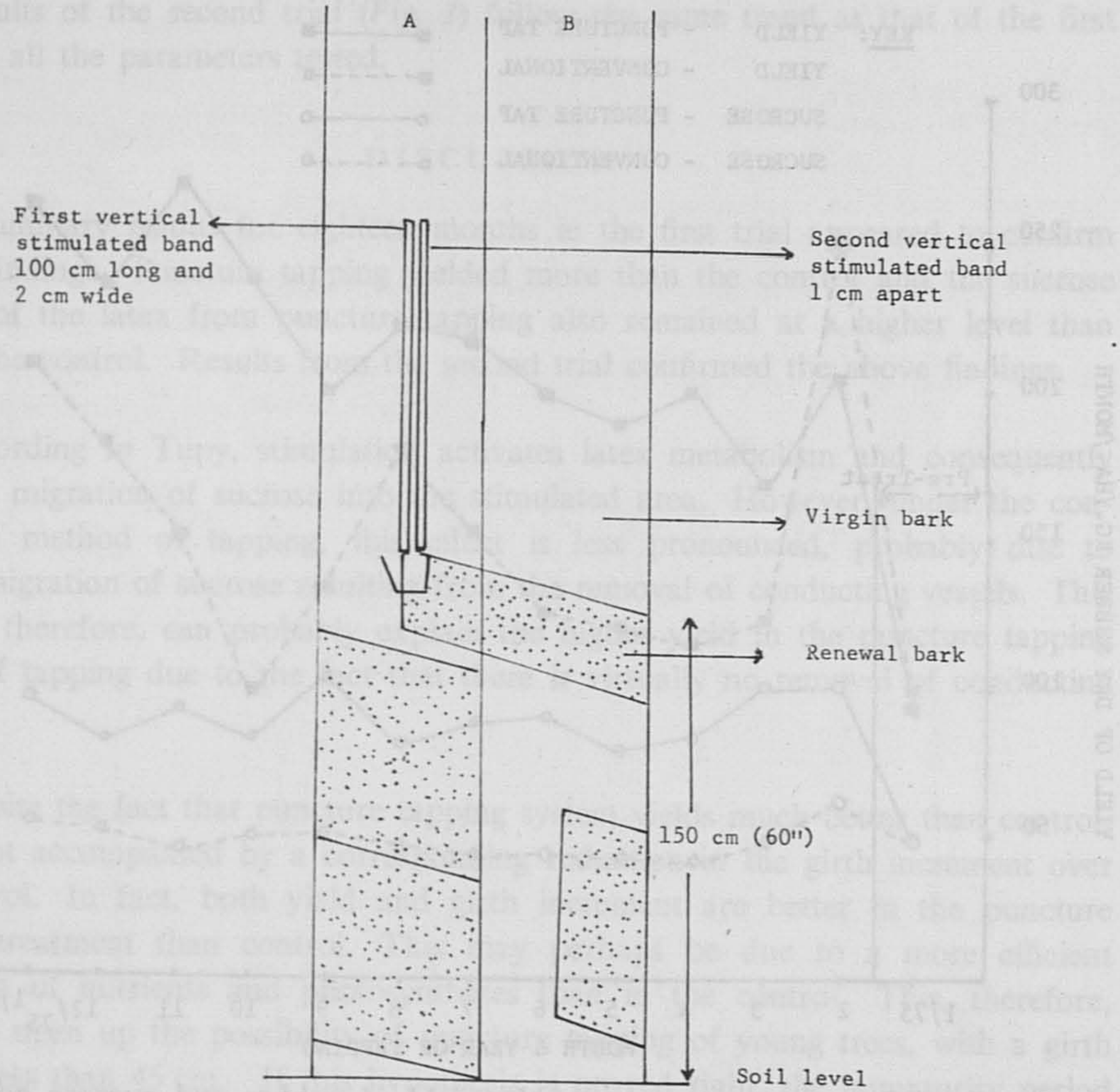


*Fig. 1. Diagram showing the first and second vertical band on the virgin bark (Tree planted in 1960).*

*Table 1. Effects of treatment on yield, % DRC and sucrose content, average of 18 months.*

| *Treatment* | *Yield (kg/ha/month)* Latex | Cuplump | Total (Latex + Cuplump) | *% of Control* | *% DRC* | *% Sucrose* |
|---|---|---|---|---|---|---|
| Puncture tapping | 148 | 64 (30.2) | 212 | 164 | 32.3 | 0.71 |
| Conventional $\frac{1}{4}$S d/3 (100%) | 112 | 17 (13.2) | 129 | 100 | 38.3 | 0.39 |

*Note :* ( ) figures in brackets indicate cuplump as % of total yield.

*Dry Rubber Content (DRC)*

The puncture tapping treatment has produced lower DRC of the latex than the control. However, it should be noted that although the DRC of the latex of the puncture tapping treatment was lower, it was much higher than the accepted minimum of 30% during the entire period of eighteen months of exploitation.

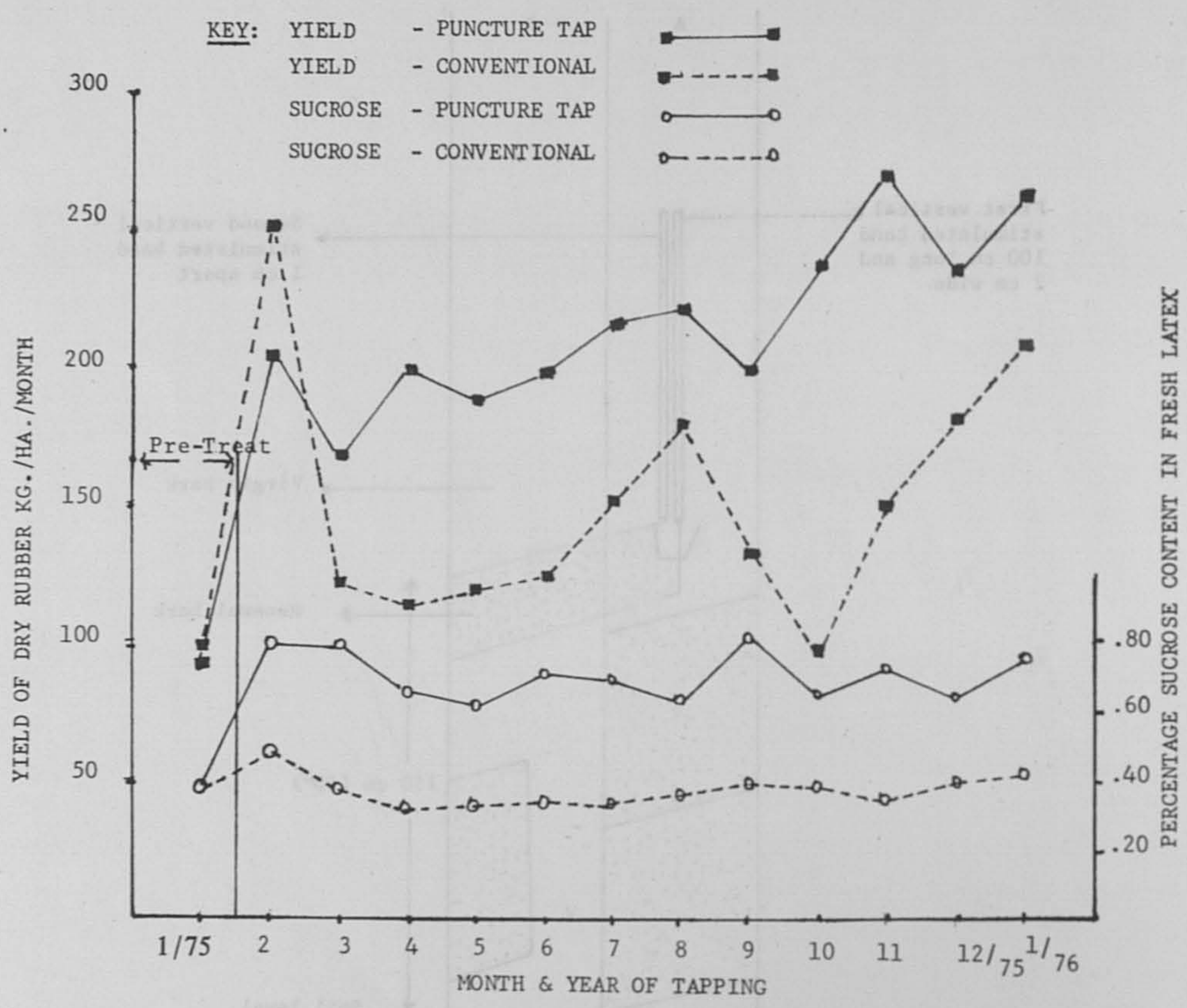


*Fig. 2. Effects of treatments on the yield of rubber and sucrose content.*

*Sucrose content*

The sucrose content of the puncture tapping rose after the first month of exploitation and thereafter it remained at a much higher level than the control.

*Girth*

The trees subjected to puncture tapping treatment consistently recorded better girth increments than the control in all the blocks (*Table 2*).

*Table 2. Effects of treatments on girth increment over 15 months (cm/tree).*

| *Treatment* | *Mean annual girth increment* | | | | |
|---|---|---|---|---|---|
| | *Block I* | *Block II* | *Block III* | *Mean* | *LSD* |
| Puncture tapping | 3.12 | 3.17 | 2.50 | 2.93 | 0.94 (5%) |
| Conventional ¾ S d/3 (100%) | 2.10 | 2.05 | 2.17 | 2.11 | 0.78 (10%) |

The results showed that there was not much difference in the technical properties of these two types of rubber. Rubber from both treatments would qualify as SMR 5L.

Results of the second trial (*Fig. 3*) follow the same trend as that of the first trial, for all the parameters tested.

## DISCUSSION

The preliminary results for eighteen months in the first trial appeared to confirm Tupy's findings. Puncture tapping yielded more than the control and the sucrose content of the latex from puncture tapping also remained at a higher level than that of the control. Results from the second trial confirmed the above findings.

According to Tupy, stimulation activates latex metabolism and consequently increases migration of sucrose into the stimulated area. However, under the conventional method of tapping, this effect is less pronounced, probably due to limited migration of sucrose resulting from the removal of conducting vessels. This concept, therefore, can probably explain the higher yield in the puncture tapping system of tapping due to the fact that there is virtually no removal of conducting vessels.

Despite the fact that puncture tapping system yields much better than control, this is not accompanied by a corresponding reduction in the girth increment over the control. In fact, both yield and girth increment are better in the puncture tapping treatment than control. This may perhaps be due to a more efficient utilization of nutrients and photosynthates than in the control. This, therefore, may also open up the possibility of puncture tapping of young trees, with a girth of even less than 45 cm. If this hypothesis is proved right, the immaturity period of rubber trees can be significantly shortened by as much as 12 months with tremendous economic advantages.

### *Work in progress*

Based on these early conclusions confirming the superiority of puncture tapping, a more sophisticated experiment is already in progress to find out the optimum length of the vertical band, number of punctures, method and frequency of ethrel stimulation, the best placing of the vertical band, sequence of tapping and clonal responses.

As this trial has also indicated the possibility of puncture tapping of young rubber trees, investigations involving trees of various girths are also in progress.

*Acknowledgement.* The senior author would like to thank the Director, Operations Division and the Controller, Research Services of Chemara Research Station for permission to publish this paper. Special thanks are due to the field assistants, staff of the Agricultural Research Section, Statistical Section and the Laboratory Section for their assistance and to the Technological Laboratory at Chemara for the analysis of the rubber.

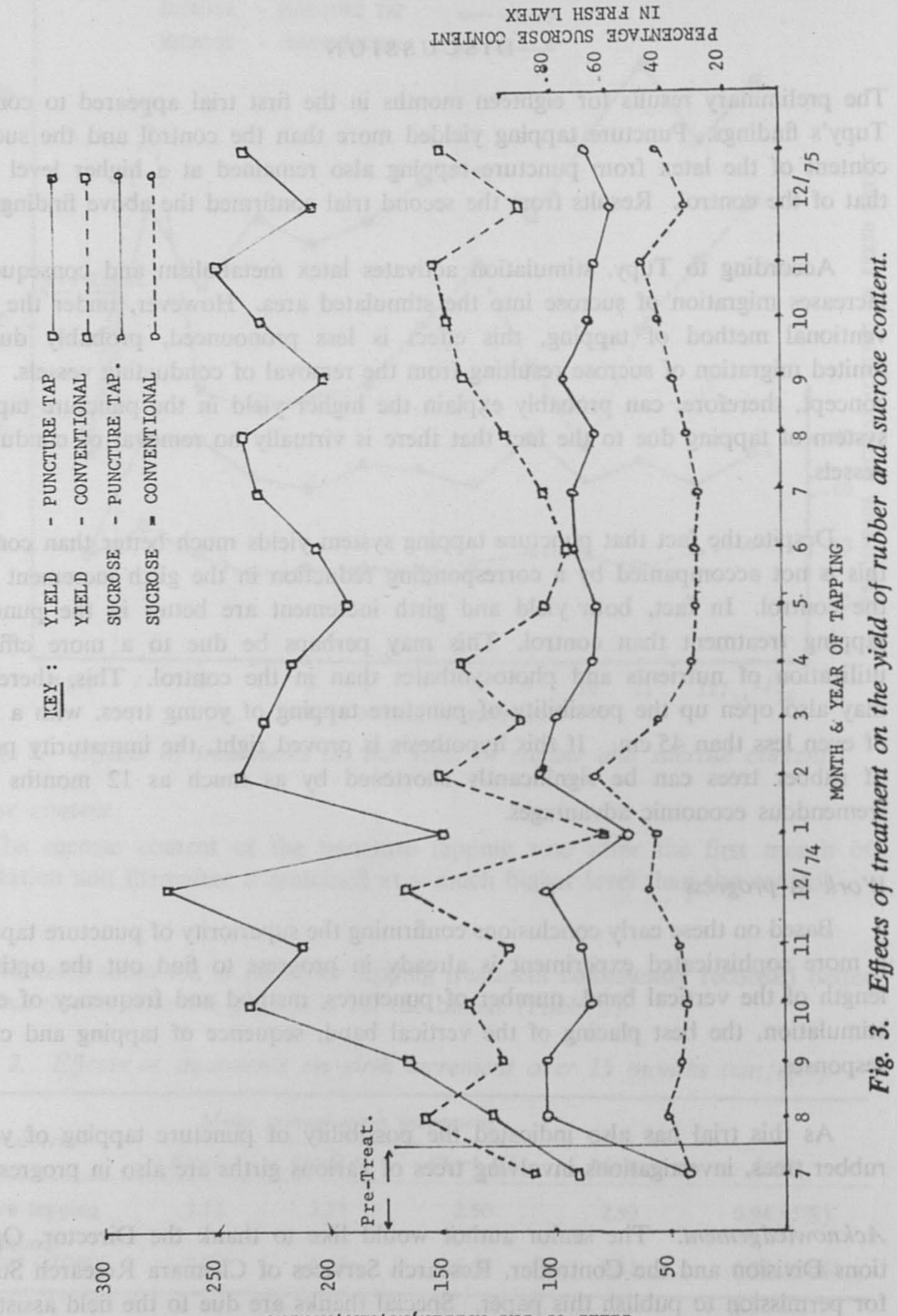


*Fig. 3. Effects of treatment on the yield of rubber and sucrose content.*

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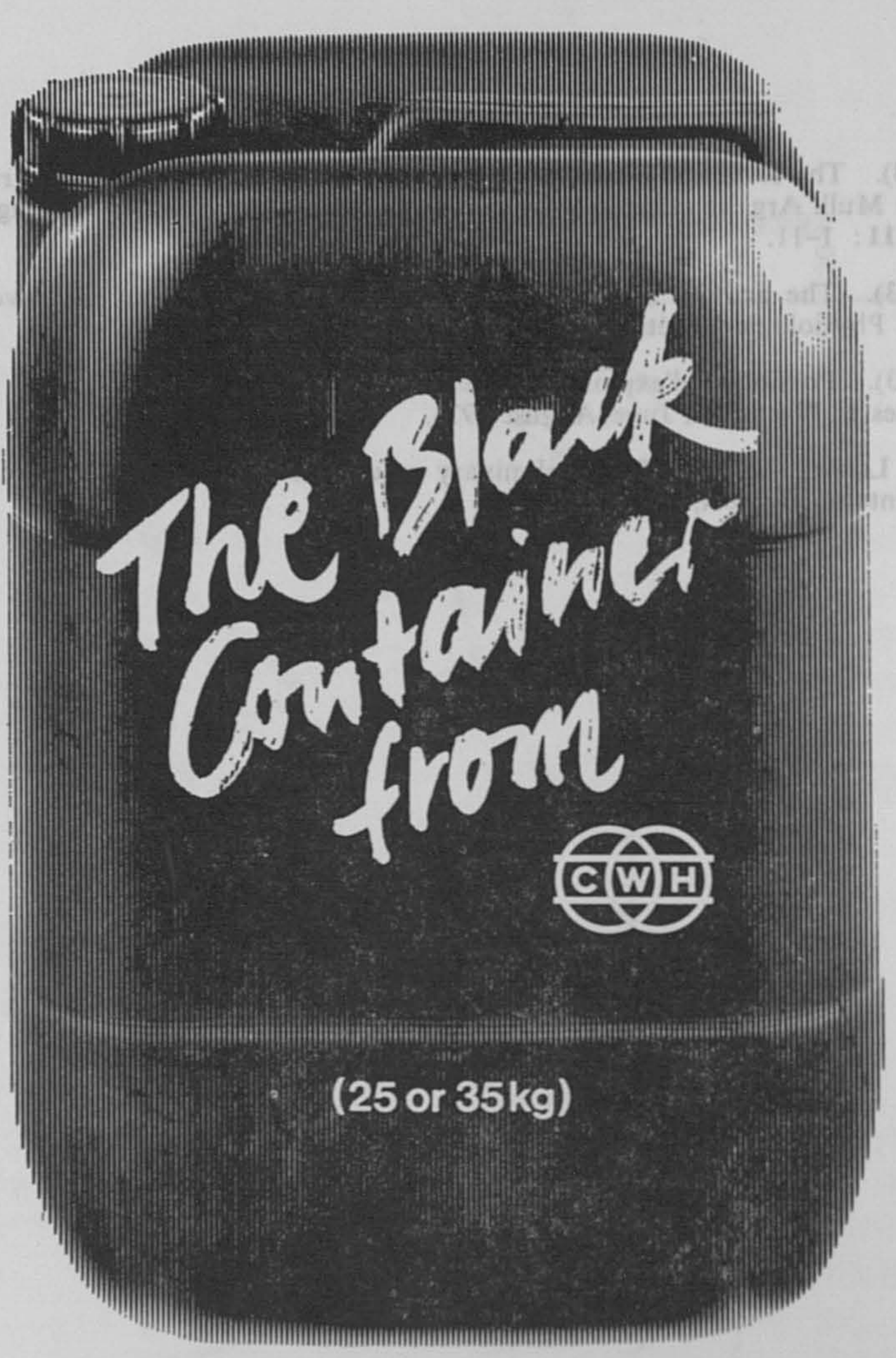


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*Planter, Kuala Lumpur* **52**: 216–225 (1976)

# Porcupine – a major pest in oil palm clearings from jungle in Central Johore

K. CHANDRASEKHARAN, B.SC., A.I.S.P.* AND G. C. EDMONDS†

## INTRODUCTION

Injurious pests of the oil palm include insects, mites, birds and mammals. Attacks by pests have been studied and emphasised only when an alarming outbreak of pest attack has taken place. When the word rodent is mentioned in relation to oil palms, first thoughts are of the rats and not the porcupine. The latter however is a far more efficient gnawing animal.

Published works on porcupine attack and control in Malaysian plantations are scanty.

It is the intention of the writers to try to deal as extensively as possible with the porcupine problem encountered by them and their colleagues in the Kuala Lumpur Kepong Berhad jungle development in Central Johore where 28,000 acres of virgin jungle was cleared for oil palm plantation between the years 1972 to 1976.

Timber extraction, felling, burning and clearing upset the life pattern of many jungle habitants. Many of them presumably moved deeper into the jungle away from the jungle clearing, but the porcupine for some reason known to itself stayed along the jungle fringes and the young oil palm became a source of food to them and they, in turn, became a pest to the management.

A total of 23,000 acres of jungle have been planted. The balance of 5000 acres is ready to be planted. All figures given of the extent of damage caused by porcupines relate to the first 23,000 acres planted up to September of the year 1975.

The number of palms totally damaged by porcupine at the end of September 1975 is 72,351. These palms have had to be replaced. The total palm damage is equal to approximately 1206 acres of palms and this is valued at about $101,304 ex-nursery.

Other costs would include maintenance of palms up to the time of damage, planting, fertilising costs etc. The total loss of palms due to porcupine attack works out at a loss of 49.5 palms per day for the "1972 to 1975" period. Before an analysis of the preventive methods used at the KLK "Jungle Complex" is made, let us take a closer look at the pest itself.

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* Lately of Landak Estate, Paloh, Johore.

† Lately of Kekayaan Estate, Paloh, Johore.

## THE PORCUPINE — *HYSTRIX BRACHYURA*

The porcupine is an interesting mammal, holding a high place in the opinion of local gourmets, that dwells in the Malaysian jungles. It is characterised by a body covering of stiff quills, which are modified hairs and three species namely *Hystrix brachyura* (Linnaeus), *Atherurus macrourus* (Linnaeus) and *Trichys lipura* (Gunther) are found in West Malaysia.

The specie considered here is *Hystrix brachyura* (Linnaeus) commonly called LANDAK RAYA and this differs from the other two species in size and in colour of quills which are black and white. The quills are sharp and pointed except for the ones at the tail section which are "hollow modified quills". When the porcupine is disturbed it shakes these hollow quills thus producing a rattling noise.

There is an old belief that a porcupine can shoot its quills at an adversary, this is not true. What actually occurs when the porcupine, a timid animal, is attacked is that it will endeavour to run away but if cornered it will stop sharply with its quills bristling out and a hotly pursuing dog or other animal gets itself impaled on a few quills.

Tigers and leopards often get a quill impaled into their front paw when they try to turn the porcupine over in order to attack the unprotected underparts of the body, and the paws, swollen and infected, are often the initial causes of such animals becoming maneaters.

The head and body measures about 700 mm while the weight is about 8 kg. The porcupine spends a great part of the day sleeping and is active at night. However, it cannot be said that it is active exclusively by night.

The porcupine is a herbivorous animal and confined to the ground. Its usual diet comprises of tubers, such as tapioca, wild ginger, sweet potatoes and fallen fruits, and succulent stem such as that of the young palm. It is noted that the porcupine also gnaws on the bones of dead animals, probably to sharpen its teeth and to feed on the marrow (Wood 1968) and also if enough juicy fruit (*e.g.* papaya) is available, free water will probably not be drunk. (Medway 1969).

Information on the breeding habits of the *Hystrix brachyura* is virtually nil. But in the case of another porcupine namely *Hystrix cristata*, of the same family, the mating takes place at night and has rarely been observed. In Uganda the explorer Gromier watched the mates nuptial display by the light of a torch. The crest was erect and the back and tail quills were flicked up and down with a peculiar clicking sound. This was accompanied by a grunting not unlike that of a pig. After two months gestation the females give birth to two or three young, which are born without quills. These appear gradually, replacing the initial fur. (Larousse 1967). In the case of *Hystrix brachyura* the normal litter is one but two and three have been recorded.

The facts on the number of young ones in the litter have been established by the authors by the number of embryoes found on post mortem examination of gravid females shot by hunters and by the number of young ones seen following the mother while hunting.

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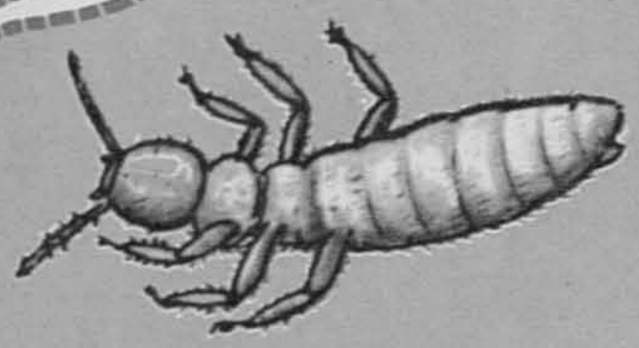
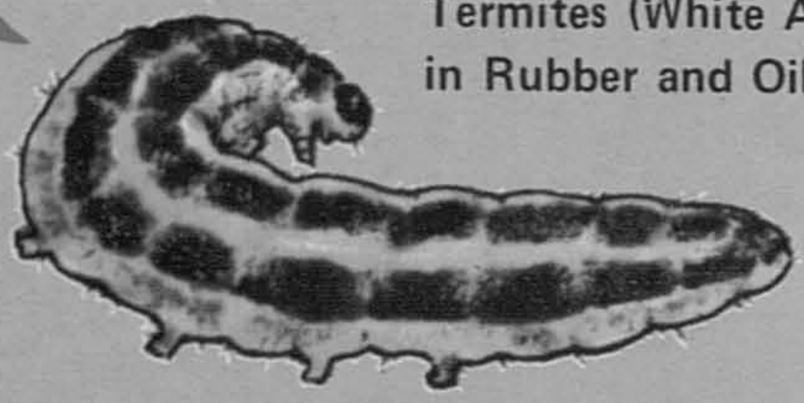
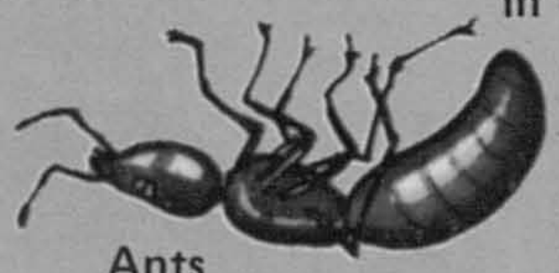


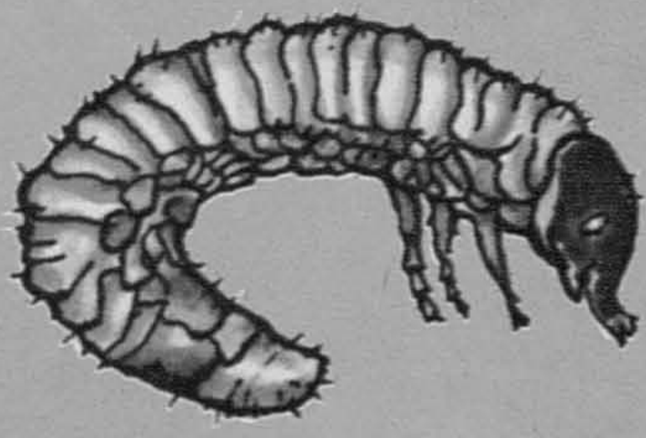
Termites (White Ants)
in Rubber and Oil Palm.



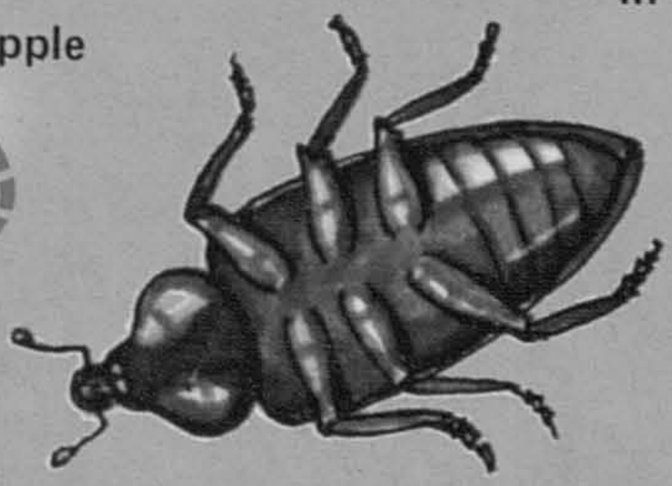
Cutworms and Wireworms
in Vegetable.



Ants
in Pepper and Pineapple



Cockchafer Grubs
in Rubber and Oil Palm.



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# ROUNDUP* NEWS 1976

# Additional recommendations for new Roundup* uses.

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Monsanto's Product Development team explained that additional recommendations for Roundup now extends the uses of this unique herbicide.

### Same product: Extended uses

Roundup's success in lalang control under rubber has been firmly established. Continuous research into applications now makes it possible to recommend Roundup for:-

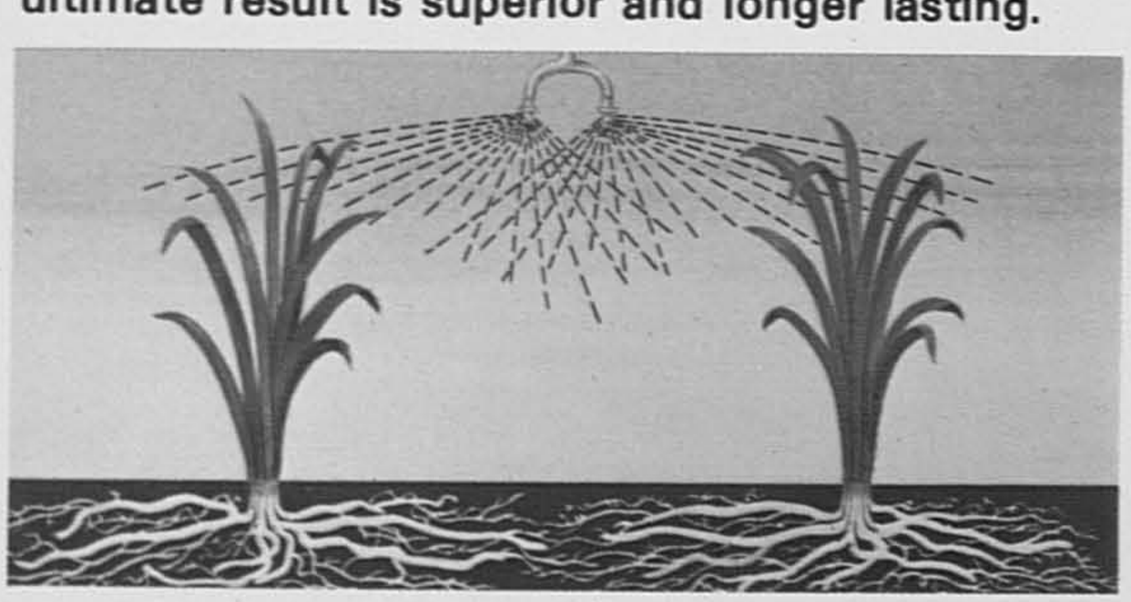
* Paspalum conjugatum and Ottochloa nodosa control in mature rubber.
* Lalang control in all stages of rubber.
* Lalang control in pre-plant areas for rubber and oil palm.
* Lalang control in non-fruiting (i.e. immature) oil palm.
* Lalang wiping.

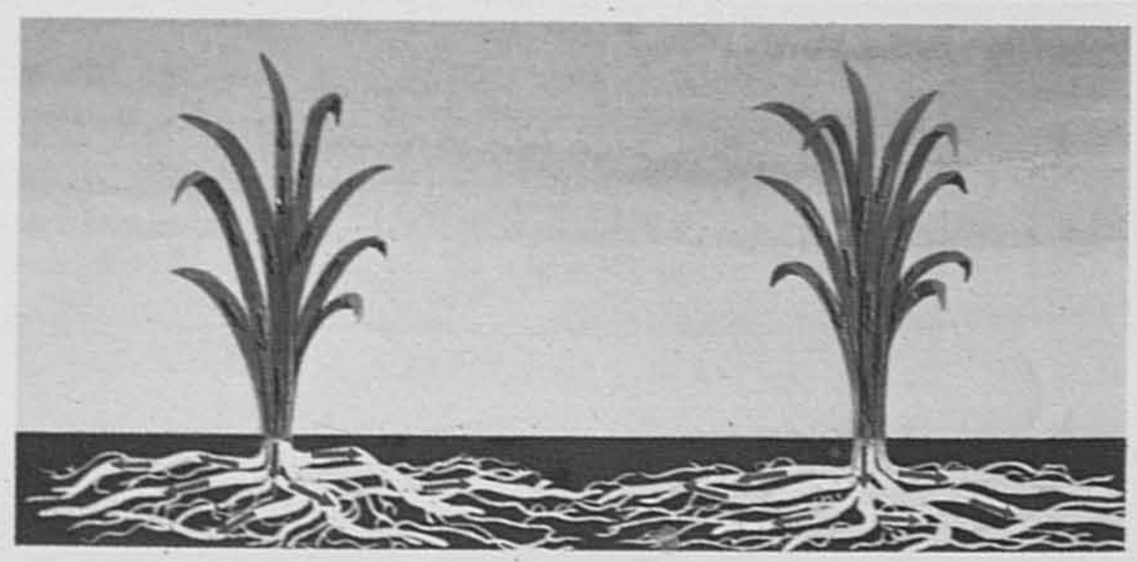
### One-shot treatment

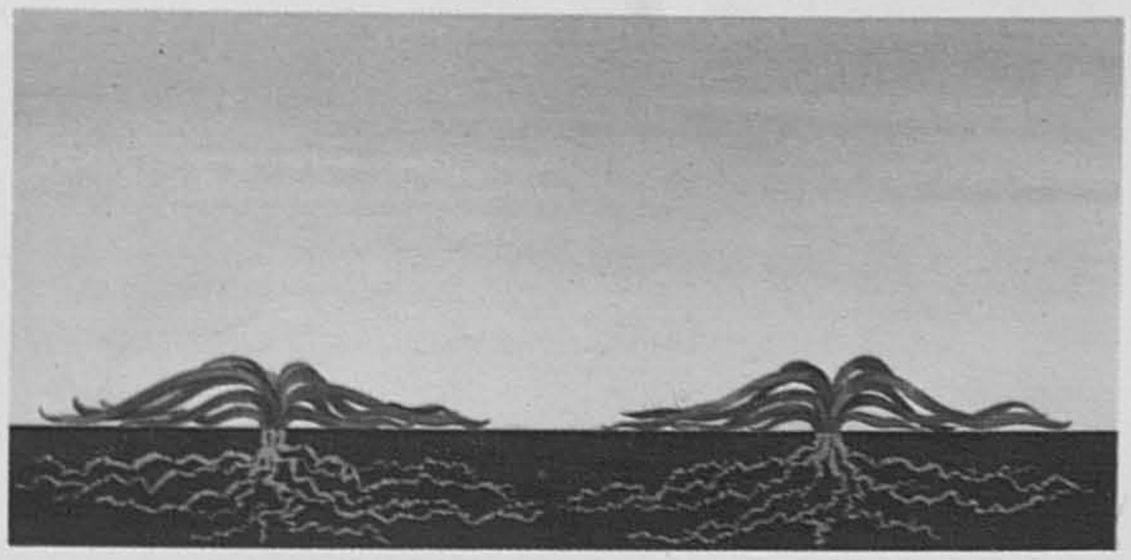
As planters have found, Roundup is effective with **a one-shot treatment.**

### "Translocation" the basis of Roundup's effectiveness

Roundup works itself from the leaves into the root system **to destroy the entire weed** and not just the leaves. It is a **translocated weedicide.** The initial effects of Roundup may become evident later than in the case of contact weedicides which only burn the leaves. **But its ultimate result is superior and longer lasting.**



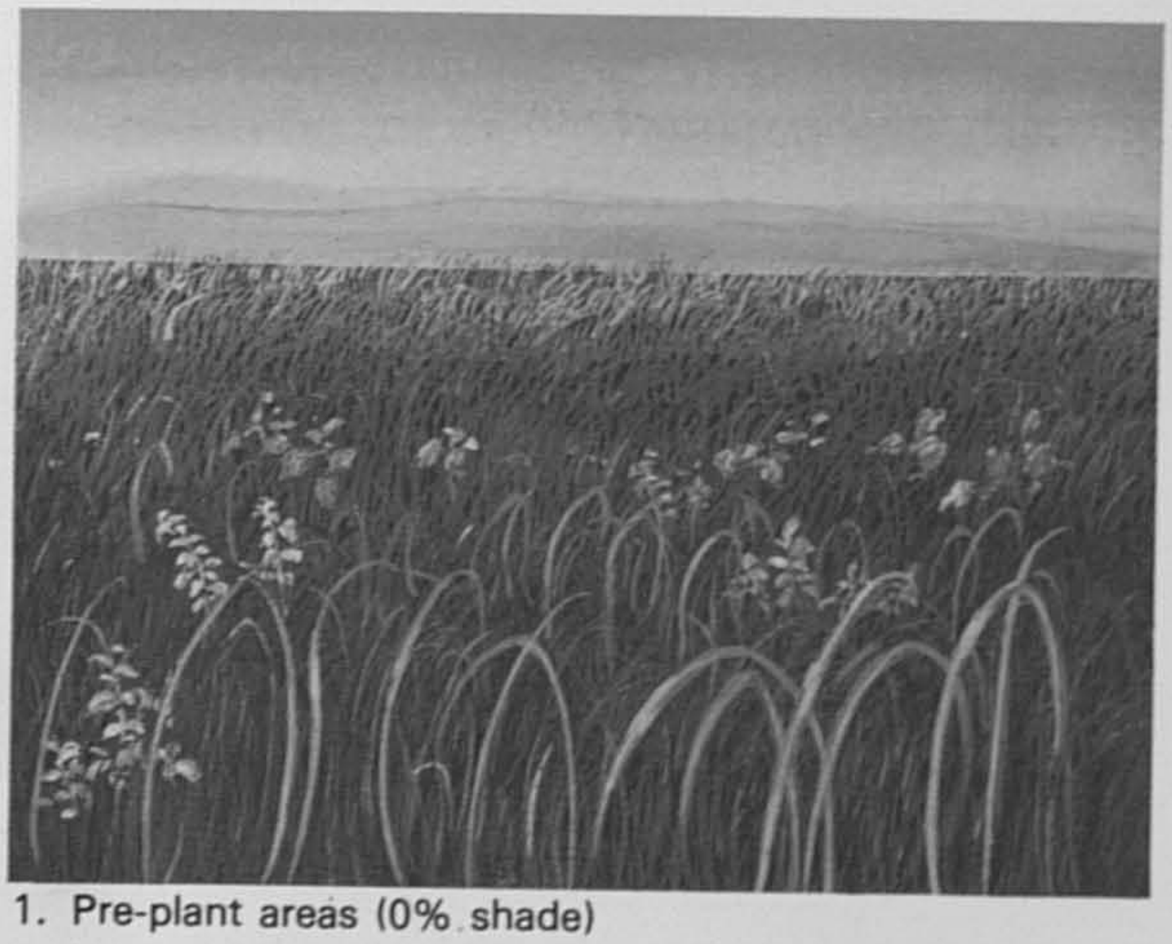




# Roundup discovery: Shade is the key to weed growth and vigour

Monsanto found that shade is a determinant of weed growth and vigour. In open conditions, weeds are tougher and less susceptible towards weedicides than those weeds growing under shade. For optimum results, Monsanto's Product Development team therefore suggests dividing your weed problem areas into percentages of shades. This will enable planters to judge more accurately the appropriate dosage rate of Roundup to use.

The picture below show the four broad divisions of shade which field survey indicates that planters and their experienced field staff can easily differentiate and use as a practical guide.



1. Pre-plant areas (0% shade)

2. Very Young Rubber (0% — 30% shade)

3. Young rubber (30% — 60% shade)

4. Mature rubber (60% plus shade)

**These extended uses are the result of continuous research and testing Monsanto conducts to establish additional applications of Roundup in all areas of weed control.**

You can expect recommendations for further uses of Roundup from Monsanto in the years to come.

**Continuous research for extended uses.**


ROUNDUP.

POSTEMERGENCE HERBICIDE BY Monsanto

As stated earlier, the porcupine is generally a nocturnal animal and it usually comes out at night in search of food.

It attacks the palms either directly at ground level or it first digs 1–6 inches into the ground before attacking the palms bases. The fibrous leaf bases are gnawed off and the succulent cabbage, or heart and internal tissues that could be eaten. (Chua 1968).

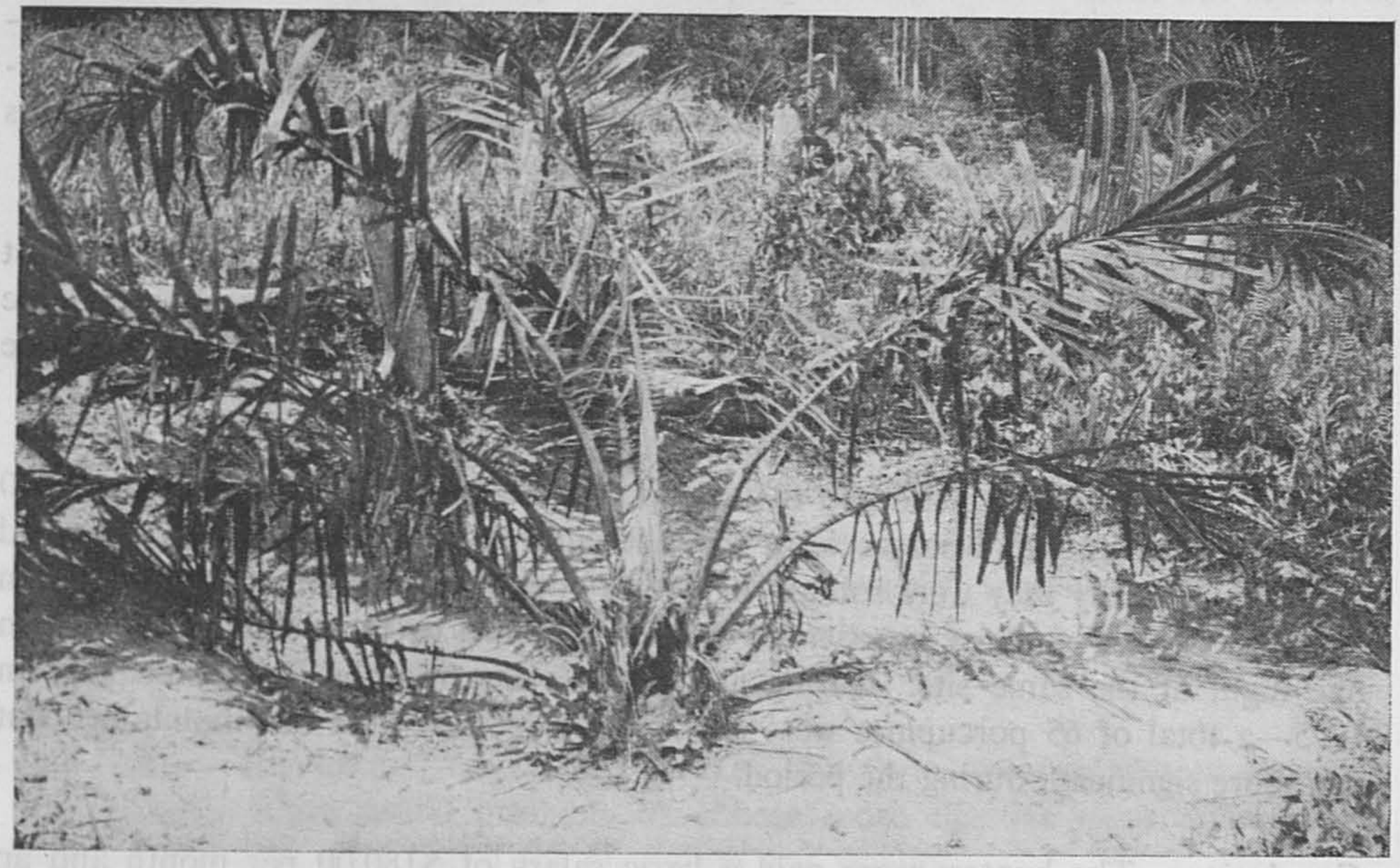


*Fig. 1. Typical porcupine damage.*

It was observed that the porcupine would eat a group of 4 to 6 palms in a night—depending on the age of the palm. They would return the next night and eat another group of palms or continue on the same palms eaten the previous night. This continued process of coming back to the same area, on an established path was a great help to our hunters.

At times very young palms were dragged away from the planting points before they were eaten. Once the centre of the meristem is destroyed the palm dies (Chua 1968). They preferred young palms of 1 to 2 years but occasionally 3-year old palms have been attacked.

## CONTROL METHODS THAT WERE ATTEMPTED

Various methods were used to control the porcupine. We would like to point out at this juncture that the methods used were all under practical field conditions and not in any form of experiments or controlled trial. As, so often is the case, when an agricultural problem is present there is no time to assess the most effective control and immediate action is imperative.

The analysis of these methods are given below:

## METHOD I — HUNTING

*Introduction:* Although time and man hour consuming this method was one of the most effective means of controlling the pest. The 'jungle complex' has approximately 27 miles of jungle boundary and a total of 7 hunters were employed. These hunters used 12 bore shot guns using number 4 load cartridges and hunting lights.

*Procedure:* Roads have been made along the jungle border for dual purposes—demarcation of boundaries and to facilitate patrolling. The hunters used motor-cycles whilst travelling from one post to another. The hunters work on a roster basis in order to ensure the boundaries are patrolled everyday.

*Limitations:* There were some shortcomings. (a) There was a shortage of efficient licenced gun holders willing to hunt porcupines. (b) Only after the porcupine attacked a palm or an area was it possible for authorities to ascertain it as possible 'site' for porcupine damage.

*Results:* It was soon established that the porcupine ventured out as early as 7.30 p.m. on a dark night, whereas on a moonlit night it came around 1.00 a.m. and 3.00 a.m. Usually they were solitary or with a young one but they seldom came in a group, though we have experienced cases where two or three have been shot in one night at the same site. During a period of nine months of records kept in 1975—a total of 65 porcupines were shot. Early records were not maintained but kills were significant during the period.

*Conclusion:* The hunters were paid a basic salary of $180.00 per month and an additional reward of $5.00 per killed porcupine was given as an incentive. Cartridges, batteries and even petrol was provided by the estate.

It would be of tremendous help if the Government made it easier for the estates to possess more gun licences and certainly greater success would have been achieved if more hunters had been available and the intensification of patrols could have taken place.

This method would probably be more effective if hunting dogs were used by the hunters to track down the porcupine. These dogs could be used during the daytime to spot any porcupine that may be dwelling beneath the cover crops or lying up just inside the jungle fringe. If the hunting is to be more effective as well as economical, then a fair knowledge of the behaviour of the porcupine in this country is vital and this knowledge can be fully utilised. This is obviously an area where research of a basic zoological nature is called for.

From the above records and data for the first nine months of 1975—the approximate cost for a single porcupine killed amounts to $180.00. The total of palms that were damaged by porcupine despite hunting and various other control methods used simultaneously for the same period, was approximately 18,000.

## METHOD II — FENCING AND TRAPPING

*Introduction:* Part of the jungle boundary was fenced with ½″ mesh chicken wire to keep out the porcupine and to trap if possible.

*Procedure:* Approximately one mile stretch of the jungle boundary was fenced up with ½″ mesh chicken wire measuring 2½ ft. in height. At intervals of approximately 5 chains at places and where it was not easy to fence, an opening was left in the fencing. At these openings, traps measuring 3½ ft, × 2½ ft × 3 ft. made out of B.R.C. netting was set. Tapioca, jackfruit or nanka were usually used as bait. Traps were also placed inside the field in a random manner.

*Limitations:* Due to the cost factor it was considered impracticable to fence the entire jungle boundary which as mentioned earlier was approximately 27 miles in length.

*Results:* The fencing was quite easily uprooted by the porcupine which indicated that the fencing only served to make it difficult, but not impossible, for the porcupine to proceed. A total of 3 porcupines were trapped, but the damage to palms continued. A total of 15 porcupines were shot by the hunters at these locations during the period while this method was in progress. A total of around 2000 palms were also damaged in this area and it should be noted that hunters still kept a check on this area. This indicated that porcupines were not easily lured to traps and their erratic movement made trapping difficult.

*Conclusion:* Fences and traps were checked daily and uprooted fences promptly reset. This method would probably have been more effective if stronger fencing material had been used and if the plantation was smaller.

One of our nurseries had a proper fence erected but even here the persistent porcupine damaged a few hundred palms. They gained entry by burrowing below the buried wire netting or finding an improperly joined section to break through. The usual points of entry at the nursery was through the drains. This made it easy for the hunter who had just to wait through the night before he spotted the porcupine.

As you can see from the above points that in small sections control was possible to a certain extent with the combination of fencing and hunting. It is felt that fences, whilst not impenetrable by porcupines, do deter them and by leaving openings they do tend to be led to points where a waiting hunter can deal effectively with them thus reducing the area of patrol required.

## METHOD III — POISON BAITS

*Introduction:* Attempts were made to poison the porcupine along the jungle fringes.

*Procedure:* Anti-coagulant poison baits were used. These baits measuring 6″ × 6″ were placed at the foot of the palms near the jungle fringes.

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*Results:* This proved a total failure.

*Conclusion:* We would like at this juncture to point out that other methods of using poison inside the fruits such as Nanka-Durian were not tried. The reason being, that this method may kill other protected herbivorous animals, and with many of these in the area it was considered that these should not become casualties when only the porcupine represented a problem. In all our efforts we were attempting to come up with a selective control.

## METHOD IV — WIRE COLLARS

*Introduction:* Attempts were made to prevent the porcupine from reaching the palms.

*Procedure:* $\frac{1}{2}''$ mesh chicken wire guards were put around each palm. To make it more difficult for the porcupine even two wire guards were used at radii of 6″ and 12″ from the palm bases respectively. Another form was by using double layer wire guards around the base of palms.

*Result:* Although this method had initial success it was not long before the porcupine uprooted the wire guard and had its feed. Initial success is recorded because at first the porcupine did avoid those palms with wire guards but just went deeper into the field for palms without guards.

*Conclusion:* One of the problems in this method was that the wire collars were not pegged securely enough due to reasons such as soil condition. We particularly mention soil because in areas where soils were soft or sandy and pegging was easy—it was also easy for the porcupine to uproot it. This was particularly evident during the rainy season when the soil was wet.

## METHOD V — CHEMICAL CONTROL

*Introduction:* Control of this pest with the use of poisonous chemicals painted on to palms was carried out. In this instance numerous factors had to be considered in the selection namely, the dosage level and effectiveness in killing porcupines and also the side effects on the palm itself.

Our main aim in using chemicals was to find a suitable chemical that would either kill the animal or act as a repellent. The following chemical combinations were tried: —

1. Zinc Phosphide, starch and water
2. Zinc Phosphide and Tenac Sticker
3. Temik 10G, starch and water
4. Temik 10G and tenac sticker

We would have liked to have tried Barium Carbonate in this situation but was not available at the time.

(a) *Zinc Phosphide*

*Procedure:* Various combination of zinc phosphide with starch and water were mixed and painted on to the base of the palms. These palms comprised the first five rows along the jungle fringe. Similar tests using various combinations of zinc phosphide and tenac sticker were carried out. A cost of around 10 cents per palm for palms direct from the nursery was involved.

*Results:* During the first two to three weeks the porcupines avoided the treated palms but went deeper into the sixth row and beyond and attacked the palms. After the initial two to three weeks the chemical did not deter the porcupines from feeding on the treated palms. This method was tried during the dry and rainy seasons. Proof of treated palms being damaged by porcupine was explicit—there was no proof that a porcupine was mortally affected by the chemical.

No signs of toxicity was noticed on the palms.

(b) *Temik 10% Granular—an Aldicarb pesticide*

*Introduction:* Temik 10G is a granular systemic carbonate pesticide for the control of night flying beetles, grasshoppers, nematodes etc. It is usually applied in the soil and rapidly absorbed by the root system. It is yellowish brown in colour and has a "Mercaptan Odor" (Technical Information on Temik 10G 1970: 1971).

*Procedure:* It was tested in the following proportion 1 lb. Temik 10G to 2 lbs starch and 1 gallon water, alternatively with tenac sticker. This mixture was painted on the base of the palms along the jungle fringes in the first 5 to 6 rows. A cost of around 12 cents per palm for palms direct from the nursery was recorded.

In certain areas an added protection of wire collars were also put around the palms.

*Results:* Initially the porcupine avoided these palms and went deeper into the field as in the case when zinc phosphide was used. The porcupine avoided the palms treated for about a month or more but there were cases of the porcupine attacking the treated palms being recorded. Unlike the case of zinc phosphide we were, at least in this case, able to find three dead porcupines not too far from the area attacked. This gives indications but is not positive proof that the chemical did have some of the desired effect.

No signs of toxicity to palms were noticed.

*Conclusion:* The control was not fool proof or positively proven but there was consolation in the fact that the chemical being grainy in texture after sometime was washed down to the soil. This in turn was absorbed by the palm and acted as an insecticide against apogonia beetle. However the writers believe that further investigation of this control is merited.

## METHOD VI — STAKE STOCKADE

*Introduction:* In the earlier plantings where the palms were over two years of age from field planting, we had a major problem in trying to keep the later supplied palms, which of course were much smaller than the rest of the field, from being attacked by porcupine. It was considered essential to get these palms established in order to permit them to make adequate growth before they were shaded out by the older palms.

*Procedure:* In desperation we decided that the only absolute safeguard was to erect a stockade around each palm. Stakes of 1″–2″ diameter, measuring 3 feet were cut and driven into the ground about 12″–15″ away from the palm, creating a complete stockade around the palm. The stakes were placed about 2″–3″ apart but no more.

*Result:* This time consuming operation is in the writers' opinion the only guaranteed way to keep the porcupine out for 12 months or more before the stakes rot away. This method is expensive as the cost per treated palm is in the region of $2.00 per palm. We have protected over 1000 palms by this method but consider the expenditure warranted as in most cases these palms have been supplied twice and in some cases three times.

## GENERAL CONCLUSIONS

No fool proof method in the control of the porcupine was devised. Though all methods were as far as possible simultaneously put into practice—the damage continued due to each method's limitations.

The last method described, using stakes did definitely keep the porcupine out but it was only useful for the older areas where the continued damage due to porcupines warranted supplying and these palms had to be protected from further damage.

This method would not be too practical in areas being newly planted, as it would be too expensive to put up stakes around every palm planted along the jungle. It must not be forgotten that the porcupine went deeper into the planting when it found the palms along the jungle boundary protected.

A need for a chemical repellant is the only logical answer to a problem of this nature. A repellant that can be painted on to the palms at the nursery prior to planting is the only practical method that will have any control over this animal.

The killing of these animals by using chemical poison or hunting is not the answer as, the long term effort of conservation of wild life, must also be borne in mind.

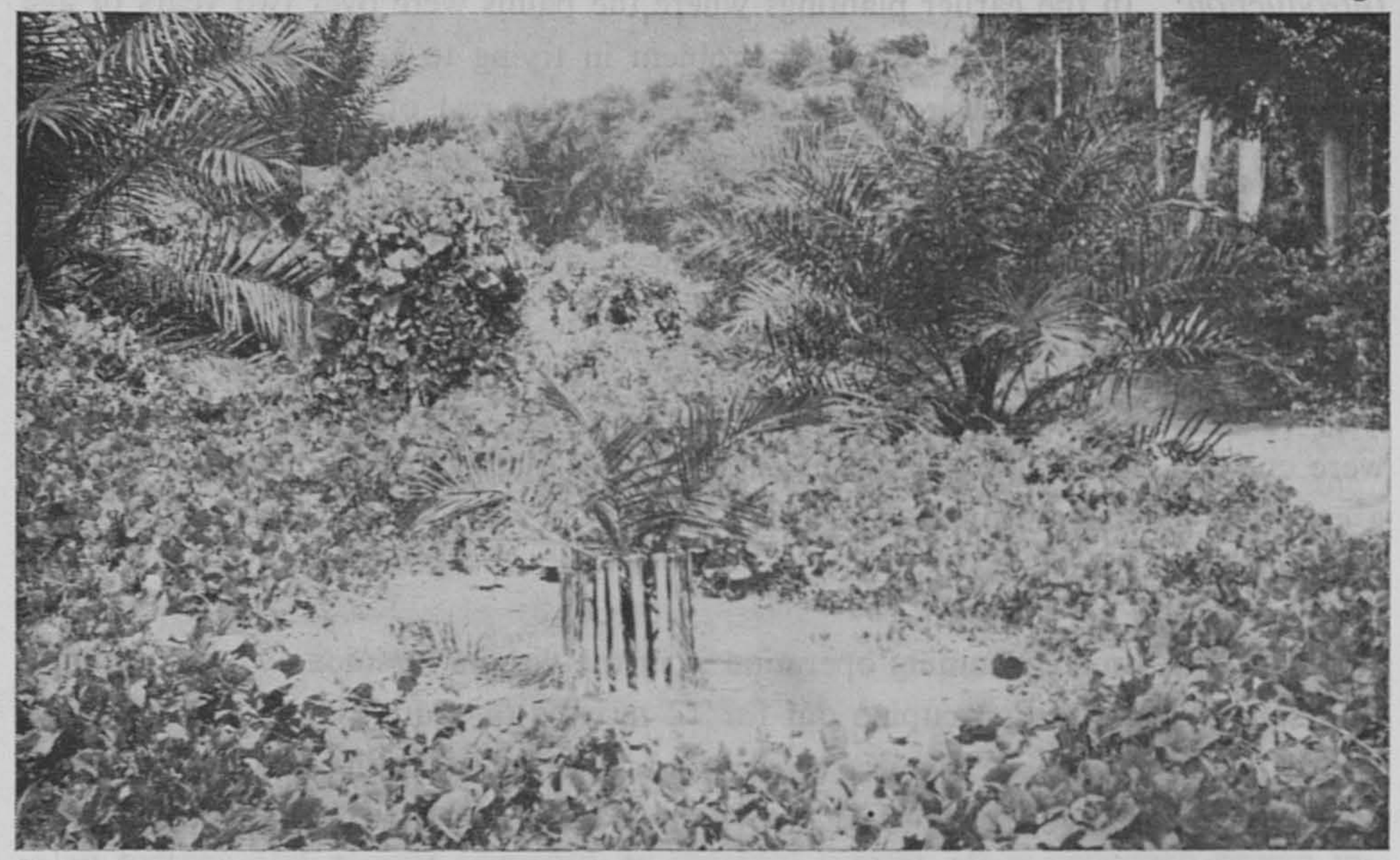

*Fig. 2. A "stockaded" supply palm on a jungle boundary.*

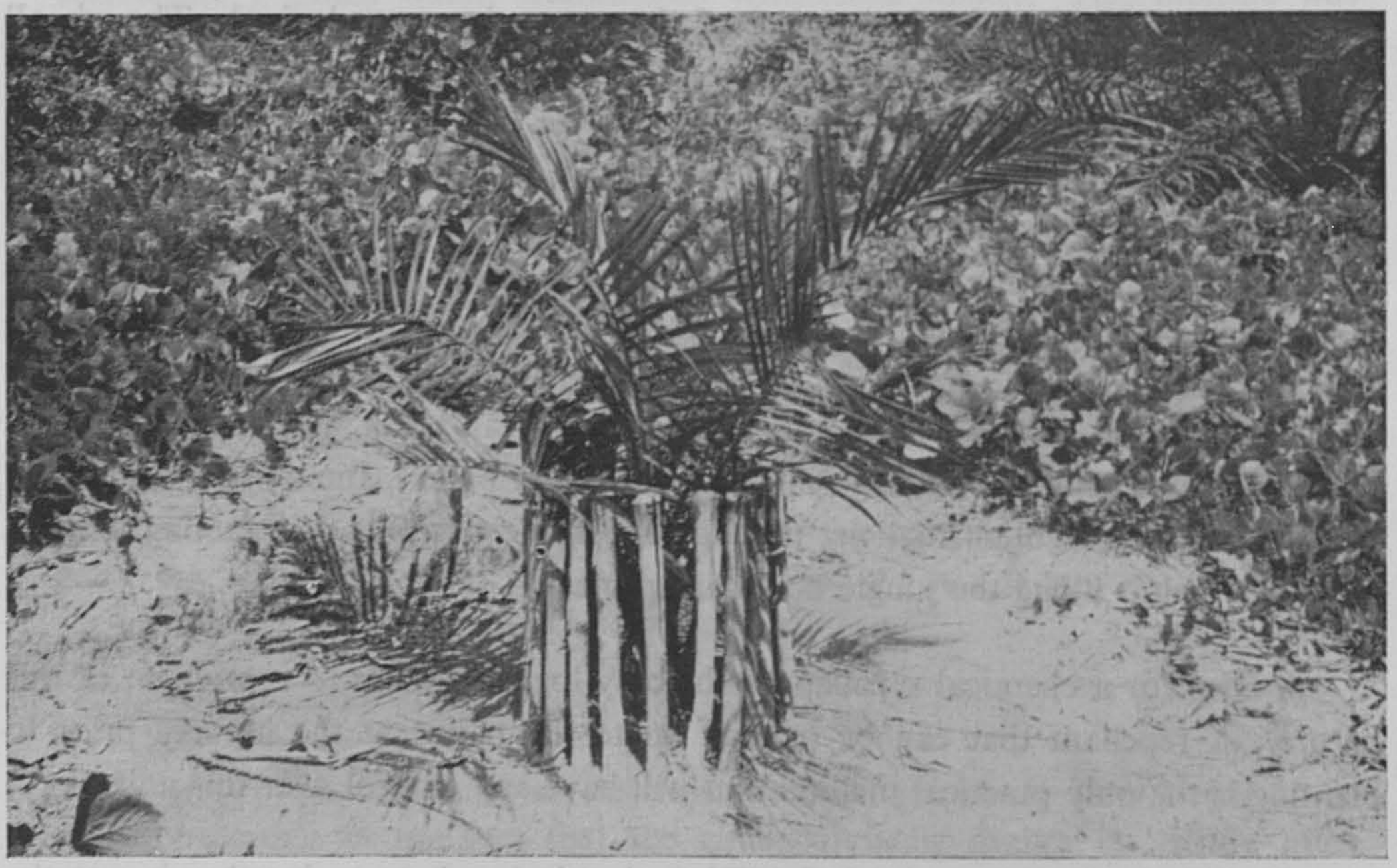

*Fig. 3. Close up of the "stockade" protection.*

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Vast amount of jungle clearing is being undertaken by the private sector and government bodies. In the majority of these recent clearings the porcupine is a major pest. Though the damage itself is most prevalent in the first three years, it is extensive enough to warrant a study for an effective chemical repellant. The authors are of the opinion that more basic information on the common Malaysian porcupine is needed and with the help of our country's pest experts, zoologists and chemical companies, this pest problem can be solved.

Whilst elephants have been cited as a major pest of palms, and have undoubtedly done much damage, the authors feel that the porcupine, whilst far less sensational and newsworthy as a pest, is by far the most significant in economic terms to areas where palms are being planted up from jungle. It is feasible that young palms provide a food source adjacent to jungle where the porcupine can live in its normal habitat but feed outside it. This could act as a stimulant to its breeding rate and also raise its natural survival rate, due perhaps to its natural predators, of which we know very little, being driven away by the oil palm development. Having suffered in these areas both from elephants and porcupines the authors feel that they speak with authority when they feel that porcupines present a far greater problem to deal with.

The authors would welcome any information from any source that will be of help in achieving a control of this very expensive pest problem and hope that this paper may stimulate further work on this subject.

*Acknowledgements.* To the Board of Directors of Kuala Lumpur Kepong Berhad for their permission to print this article. Mr. J.E. Duckett for all the encouragement and assistance and to the Managers, Assistants and Staff of Kekayaan and Landak Estates, who were involved with this problem.

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Wood, B.J. (1968). The extent of vertebrate attacks on the oil palm in Malaysia. Reprint from Second Malaysian Oil Palm Conference, I.S.P., Kuala Lumpur, page 14.

Vast amount of jungle clearing is being undertaken by the private sector and government bodies. In the majority of these recent clearings the porcupine is a major pest. Though the damage itself is most prevalent in the first three years, it is extensive enough to warrant a study for an effective chemical repellant. The authors are of the opinion that more basic information on the common Malaysian porcupine is needed and with the help of our country's pest experts, zoologists and chemical companies, this pest problem can be solved.

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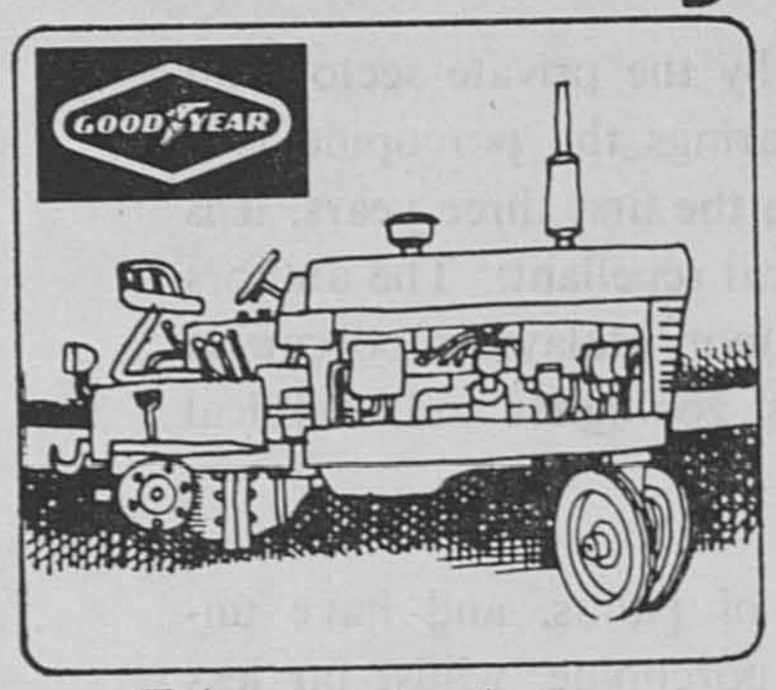


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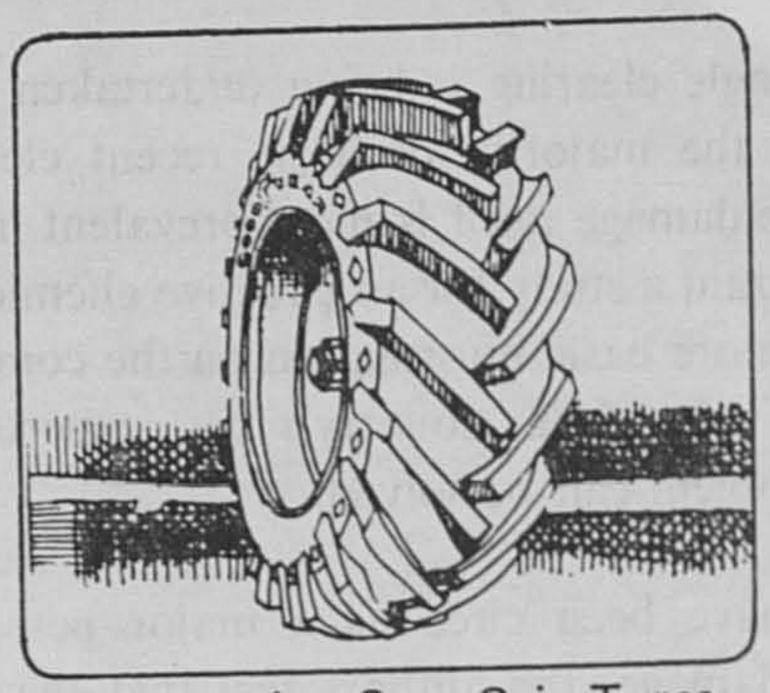

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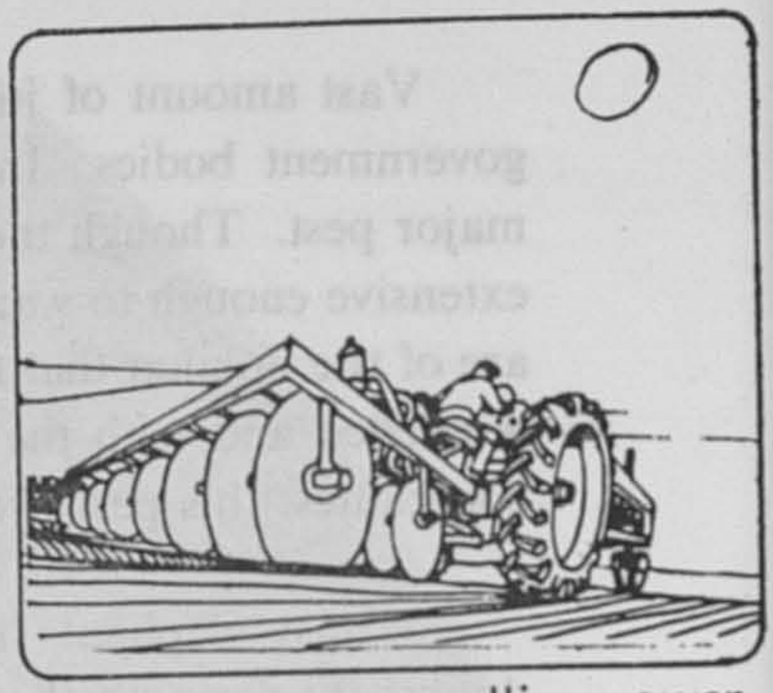

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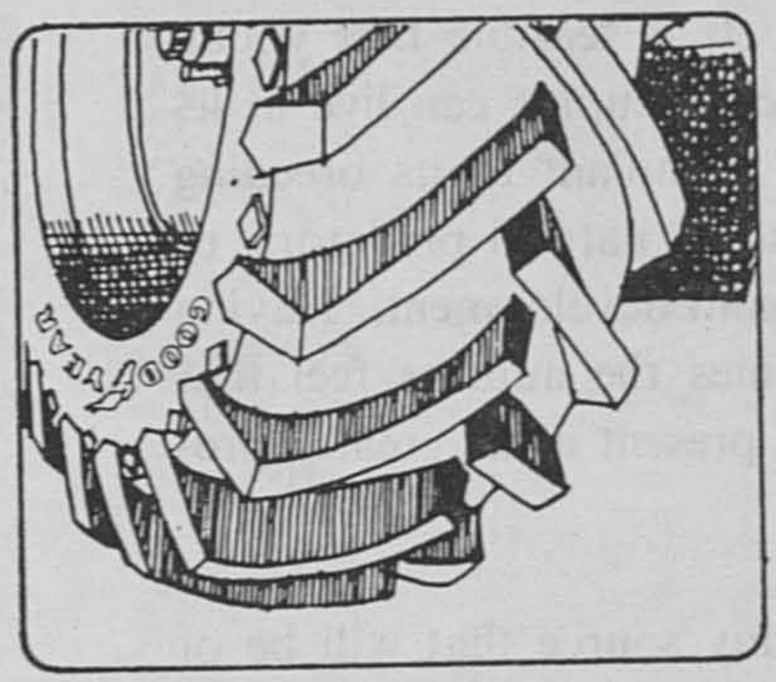
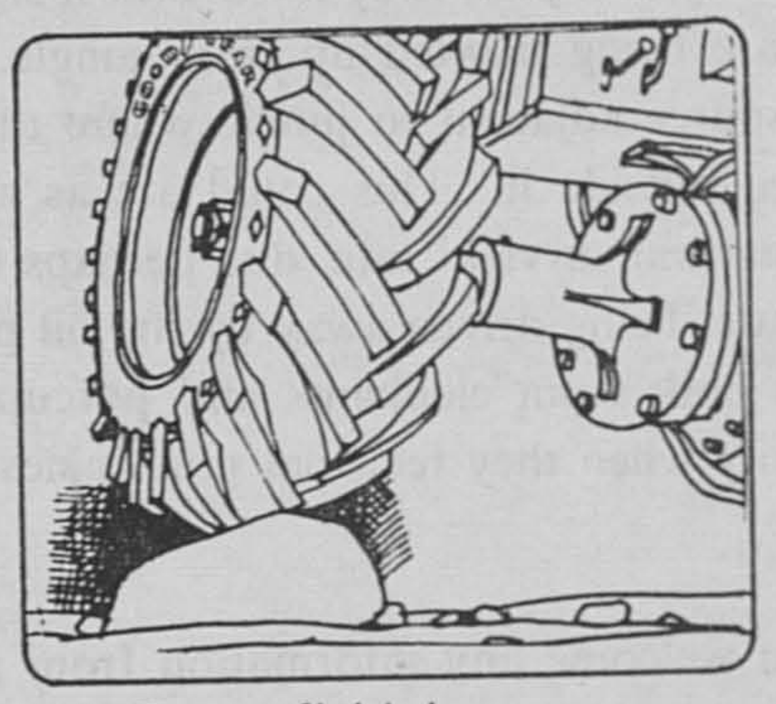



Reason: wedge-grip action.



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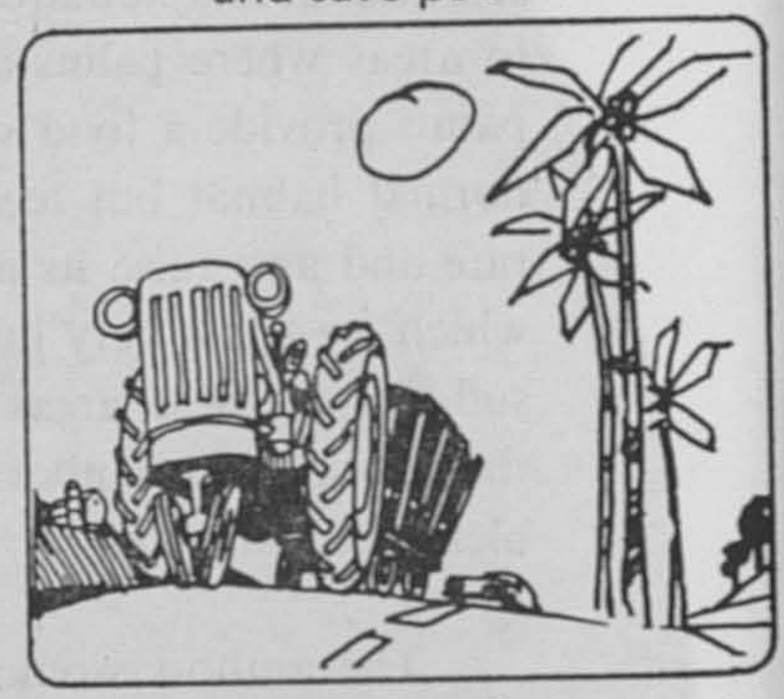

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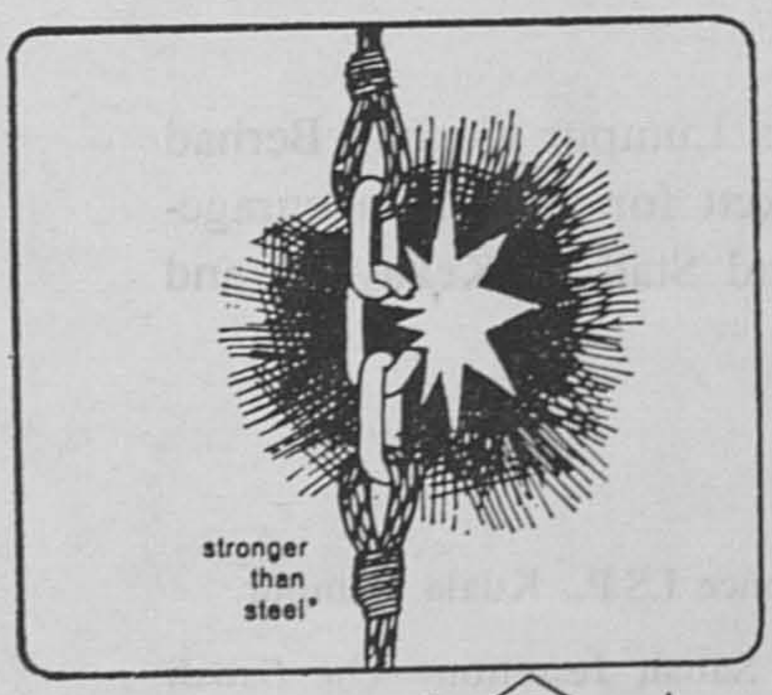


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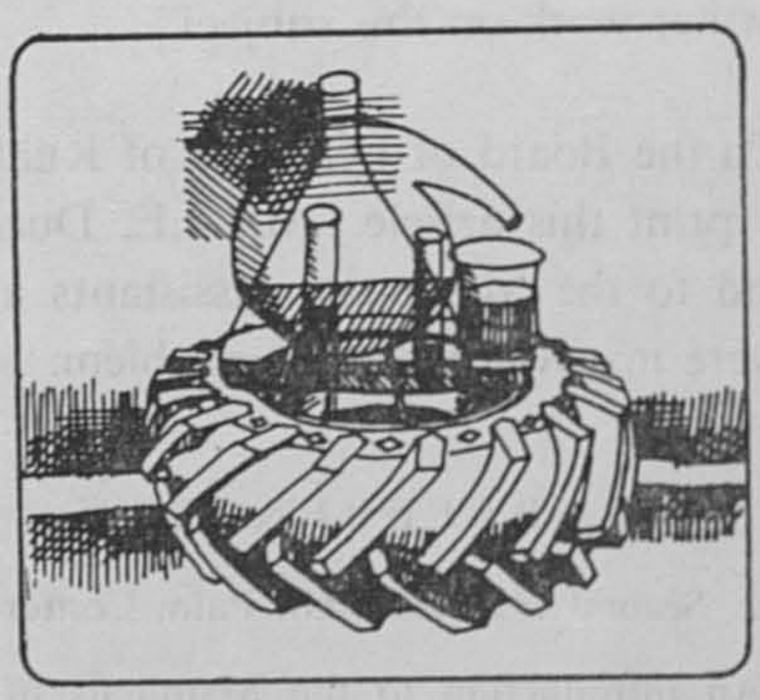

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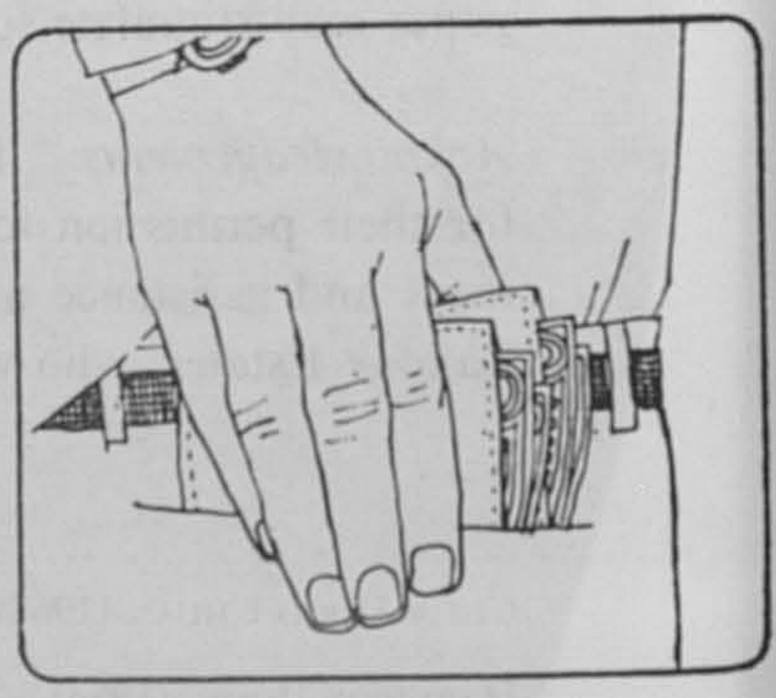

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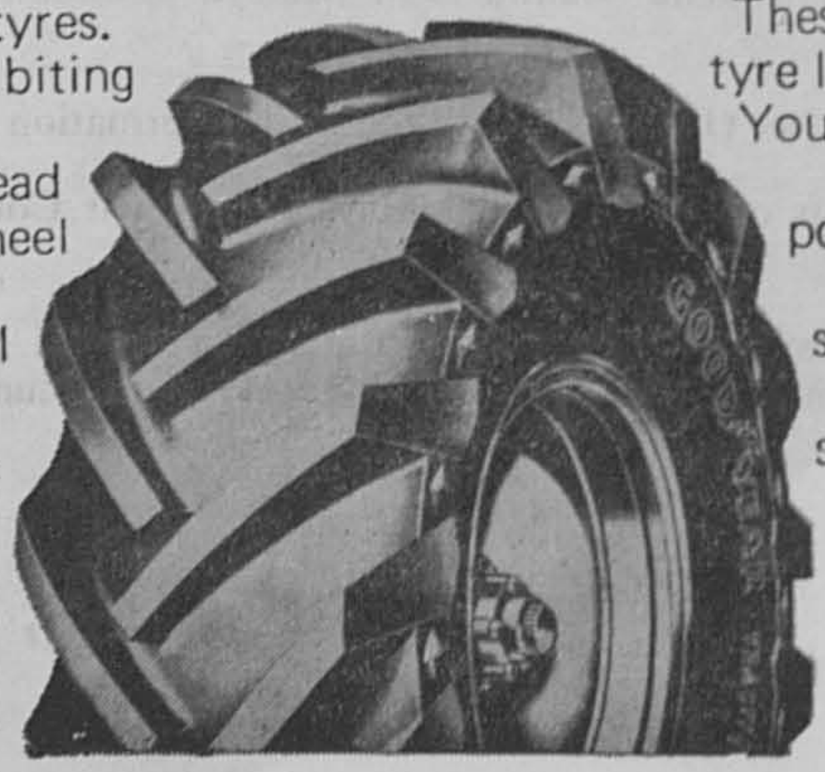


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*Planter, Kuala Lumpur* **52**: 226–237 (1976)

# Some notes on drug purchasing and medical record keeping in estate hospitals and dispensaries

DONAL R. O'HOLOHAN*

This paper proposes to deal with some of the very real problems which arise in the day to day running of medical services on oil palm and rubber estates. In subsequent articles I hope to deal with specific clinical problems and proffer advice, based on personal experience gained both as a practising physician and a visiting medical officer to estates, for the guidance of Estate Hospital Assistants (EHAs) in dealing with such problems.

The subject to be dealt with here is the very basic one of what might be termed "medical house-keeping" or even "book-keeping". There are still a very few estates or group of estates which have fulltime medical officers. The majority of estates do not have resident medical officers but, visiting medical officers (VMOs) who while theoretically on call for emergencies in fact only visit the estates at most once a week—in some cases monthly. Between visits, apart from possible telephonic communication, the estate medical services are managed wholly by the EHA. It is with this latter category of estates I am chiefly concerned here. Much of which follows will also be modified by such factors as the size of the estate, the number of Divisions (and hence 'division dispensaries'), the grade of EHA and the number of HAs on the estate. Other modifying factors will be the distance from the VMO's office, the proximity of government hospitals, transport facilities (*i.e.* access to the estate by good roads or in some cases by river only).

Medical services, like any other services provided by an estate, cost money to establish and maintain. It is often discouraging and indeed frustrating that whenever economies are decreed on an estate the first department to feel the keen edge of the economists pruning knife is the medical service. Prolonged and unedifying arguments ensue over the relative costs of drugs and sage advice is offered by some managements as to a change of supplier which might result in an overall total saving of $15–$20 per month. The more cynical VMO (medical men tend to cynicism) often feels this is a smokescreen exercise to show how zealous the management is over details in order to impress the Agent or the Company that not a cent is allowed to go unaccounted for, while at the same time errors in crop management or purchase of machinery running at losses of many thousands of dollars are accepted as inevitable risks involved in the business. This I know from experience and mention it in order to make the case that the medical services are not an afterthought in the general scheme of things in the industry nor an act of charity on the part of the employer. They are in fact an integral part of the framework of the oil palm and rubber industry. Having made this point I would hasten to add that the medical department in estates has no privileged position when it

* Visiting Medical Officer.

comes to giving an account of the standard of service it has provided. Like any other branch of the estate service, it must justify to the last cent any money spent and must further show that each and every expense incurred is necessary and of benefit to the estate (and thus the worker).

We are living in a period of inflation and rising costs (especially in the drug field) and are faced with a massive sales campaign on the part of drug companies to sell their products—literally scores of permutations and combinations of the same basic drug under different names and widely differing prices—and it takes an experienced hand to sort out the wheat from the chaff in the multitude of products which are proffered. Very few EHAs have this experience or knowledge of pharmaceuticals to make a wise choice and tend to believe what is written on the wrapper around the medicine. Not a few doctors are taken in by the manufacturers blurb. Estate managers, by and large, are a down-to-earth, pragmatic breed of men who are, quite rightly, suspicious of changes in pattern of drug ordering and like to know why such and such a preparation is now being ordered. What is it? How does it differ from the previous drug which was used for this illness? Why the difference in price and if it is dearer, is the higher cost justified? Has the VMO ordered or sanctioned the purchase of this drug? Is this drug really necessary and is there a cheaper, and equally effective alternative, These are the kind of questions that managers ask and are quite correct in doing so. In my experience whenever the VMO gives a professional opinion that the drug (or other medicine) is justified, managers never deny the request.

There are a few managers who try to cut down medical bills to a level which is quite unrealistic and there are also a very few managers who literally let the EHAs get away with anything any appear to exercise no control over drug ordering. Paradoxically I would prefer (if we must consider the extremes) to deal with the former type of manager. The latter encourages EHAs to be thriftless and arbitrary in their drug ordering, careless in the keeping of records and even corrupt in that there is no certainty that the ordinary labourer is getting the benefit of the incurred expenditure on drugs. In such cases the VMO must take a share of the blame but then in view of the fact that he is not resident on the estate and there is no controversy, or delay, on the day of signing the indent he takes the easy way out. If the VMO is conscientious and demands an account of prescribing, he gets no thanks from the careless manager who resents the extra work involved in regular stock-taking and book-keeping. He is even "punished" by the EHA who makes a point of loading the VMO with unnecessary, trivial cases at each visit and thus delaying him on his rounds. More of this later.

The over-zealous manager who fights every item on the indent is, as I said, paradoxically a more satisfactory man to deal with. He is vitally interested in what is going on and wants to know what value he is getting for the estate's money. He is therefore a man who is meticulous and will insist on proper book-keeping (see below) by the EHA and will by his very nature see that what has been purchased is used correctly and accounted for in due course. As interested, if "tight-fisted", manager of this calibre can be convinced of the need for a definite policy to be

formulated for the purchase of drugs and equipment for his estate. He is co-operate with, and following the advise of the (interested) VMO can provide a sound and effective medical service for his estate, often with a wider variety of drugs at an over all lower rate, than the manager who does not communicate with his VMO and who leaves ordering largely in the lands of the hospital assistant and the office staff. All the preceding has been leading up to the matter in hand.

What then are the proposals I would suggest to provide the basic ground-work for formulating a policy for stocking (and restocking) estate hospitals and dispensaries)?

The first step is proper communication between the manager and the VMO. The manager on his part must recognize that the VMO has no personal pecuniary interest in drug purchases and his advice is (or should be) quite objective. With his experience (he is usually in general practice) the VMO knows of the great variety of drugs available on the market and also knows that the same basic therapeutic agents may be available at widely differing costs. The VMO is also in a position to advise that while it is desirable to have some more expensive items on hand the cost of these can be offset by eliminating unwise and unnecessary purchases of some items or by choosing cheaper alternatives of the same quality.

The VMO on the other hand must recognize that the manager is the final authority on the estate and must answer to his Agent or Company for all his expenditures. In these days of inflation estate managers are under great pressure to cut down *unnecessary* expenses and it is not unreasonable for managers to query costs and even, tactfully we hope, query specific purchases. The VMO must remember that he is paid by the Company to be medical adviser and must avoid the twin pitfalls of harbouring the delusion that he is the White Knight championing the threatened right of the sick to medical treatment irrespective of cost and that of letting the management be the sole arbiter of medical policy. Neither stand is necessary. The VMO should be an impartial adviser whose duty is to see that proper medical services are maintained—both for the full benefit of the worker and at reasonable cost to the estate.

## FORMULATING A BASIC POLICY OF DRUG (AND EQUIPMENT) PURCHASING

As the majority of estate hospitals and dispensaries have been established a very long time we are not starting from scratch and we can therefore from the outset have a good idea of how much drugs and other medicines are consumed over a period of, say, a year. At this stage we should (the manager, the VMO and the HA) have a stock-taking exercise. The first step is to ask ourselves what the scope of the estate medical service should be. Estates which have hospitals will in addition to treating the ambulant out-patients also have to cater for in-patients. Therefore more serious cases requiring more treatment and back-up services will be dealt with and the therapeutic armamentarium required will be larger (and more costly) than the estates which only have dispensaries to treat out-patients. The basic approach remains however the same.

A study of the Annual Health Report of four different estates reveals that in each case the most common conditions treated over the year were respiratory infections, wounds and minor injuries, intestinal parasites and gastro-intestinal upset, muscular pains and fever in that order (O'Holohan, 1972). The next major complaint, the reporting of which depends to a good extent on the keenness of HAs to check haemoglobin and weight, is anaemia and subnutrition.

Taking these several groups of illness it is well to ask ourselves if we are stocking our dispensaries with the appropriate drugs and medicines to deal with these illnesses. Are we getting value for the money we spend?, are the drugs being used correctly and for the proper indication?, is there proper supervision to see that the drugs issued are in fact consumed by the patients?

In essence what we need to provide as basic necessities are drugs to deal with bacterial infection, pain, fever, wounds, parasites (intestinal and other), gastro-intestinal upset, anaemia and nutritional deficiency. There are many others which we will deal with in principle.

Before dealing with the basic drug requirements according to a systematic plan a few basic points in drug ordering and record keeping are offered (*see* Appendix A).

1. Drugs indent books should be serially numbered and in triplicate. One copy to the supplier, one to the estate office and the book copy retained by the H.A. in his office.
2. Each item to be ordered should be numbered and the total number of items finalised and ringed by the VMO, *i.e.* (10 items) and initialled by him. This is to obviate the suggestion that items may have been added after the VMO's signature has been affixed.
3. All items should be ordered in their original pack, factory sealed and with the manufacturers unchanged label upon the item. The practice of ordering odd lots of tablets, capsules and mixture must be avoided as it leads to suspicion of short weight, overcharging and other irregularities. It is cheaper to order in bulk and over the course of a few months it can easily be established how much of an item is needed. It must be remembered that in the pharmaceutical trade small lots are always more expensive than bulk or "hospital packs". Liquid medicines especially should be ordered in the original pack otherwise unscrupulous suppliers bill for the same item by weight on one occasion, imperial measure on another and metric on yet another with resulting confusion. *i.e.* Despite the present trend towards metric measurements many wholesalers supply liquid medicine by the pound. Their pound equals 12 ozs. (apothecary's weight—not 16 ozs. (avoirdupois). As an example it is short sighted, bad business practice and uneconomical to order one pint of mixture 'A' in the early part of January, 2 pints a fortnight later and perhaps a pint a week later. A straight order of 2 litres at the onset would be cheaper, easier to account for and is in its original pack. The same applies to ordering odd lots of, say, antibiotic capsules. If a review of the book show that over a 3 months period 1000 capsules are, on average, consumed then order a tin of 1000 capsules at the start of a 3-month period.

4. Decide which brand of each and every item is suitable from the point of quality, price and availability and stick to it. Do not reduplicate basic drugs under different trade names.

5. Specify clearly the make, strength and amount of each item ordered. Order liquid in litres, ounces or gallon (imperial).

6. In the case of ointments and creams clearly state the brand, strength and pack size. Never sign an indent form which orders "1 tube of cream x". This tube could be 5g, 10g, 15g or 50g. If this is not clearly stated on the indent and the indent and invoice are not strictly compared the estate may be paying for 50g tubes and getting 5g tubes. The implications require no elaboration.

7. If ordering BP generic drugs state the manufacturer's name so that you know what you are going to get and also know beforehand what the price will be.

8. It is my contention and experience that drugs whether in tablet, liquid or injectable form can and should be accounted for down to the last tablet, ounce or cc just as a bank clerk must account for every cent at the end of the day.

9. The hospital assistant must record every item of medicine he dispenses, at the time of dispensing, in ink and the total amount dispensed, to whom and when. This is not a difficult task and one is always suspicious of the H.A. who does not clearly record his dispensing. It should be possible to correctly audit hospital and dispensary accounts from a comparison of indent book, invoice and the HA's day book. If the management does not think this a worth while exercise in estate book-keeping then they have no right to query either costs or others.

10. Choose one wholesaler (after tendering to a few) and give him all your business after a firm undertaking as to what discounts he offers. Regularly check that these prices are being adhered to and if service is not satisfactory change your supplier. On an estate with a hospital where there is a relatively large turn-over of medicine discount of 15 to 20% should be obtainable.

11. Hospital assistants should be discouraged from dealing with drug firm representatives. The policy as to which drugs should be purchased should be set by the VMO and the manager.

12. In this day and age of prepackaged medicines, especially cough mixtures and tonics I cannot see the need for nor the wisdom of HAs making up stock preparations. The ingredients are costly in small amounts and the HA has not got the training to be an apothecary. It is cheaper and safer to buy such mixtures from reputable manufacturers.

## BRIEF NOTES ON RECORDING OF TREATMENT IN ESTATE DISPENSARIES

In essence all that is required is clarity, lack of ambiguity and faithful recording of the patients' complaints' the findings on examination and the treatment given. (the example in Appendix B is quite clear.)

Now for a brief, possibly negative, note on an alternative system of record keeping. The card index system. That is a separate (filling) card for each worker and dependant. Every once in a while an enthusiastic assistant comes up with the idea that the medical records should be kept on cards—"just like the hospital". In theory excellent, in practice most unsuitable for estates. A hospital is an institution whose sole *raison d'être* is the patient. If there were no patients there would be no need for a hospital. A large hospital may have a hundred thousand patient consultations in a year. A lost card, a patient registered more than once is a nuisance but nothing more. An estate is designed to produce rubber, palm oil or other products. The medical services are incidental, the number of patients small, the record facilities must be compact. If a permanent record of medical findings, treatment and disposal of patients is required then a bound, serially numbered book must be used. If an enquiry has to be made (as to injury or illness, and the findings and the treatment given) at a later date they are easily found in such a book (whether the investigation be an internal estate matter, a legal case or complaint by the union). A single card is easily lost or replaced by a fresh one with notes more acceptable to authority but an indelible entry in a log-book cannot be erased short of tearing out the (numbered) page or destroying the whole book. The implications are obvious and thus I feel the card index system is not to be recommended. This does not exclude a separate card system of recording infant and children vaccinations etc.

## CLASSIFICATION OF DRUG REQUIREMENTS ACCORDING TO SYSTEMIC DISEASE

This is a useful basic, not necessarily the best, system to classify the different types of drugs which may be required. In each case a basic therapeutic agent will be suggested.

### Disease of the respiratory system

*Basic antibiotic and bacteriostatic drugs*

*Tetracycline:* Do not choose the cheapest—go by the reputation of the manufacturer as inferior tetracycline is toxic—especially to infants and those with impaired renal function.

*Penicillin V tablet/syrup:* Good and effective preparations are made locally.

*Sulphonamides:* A small supply of the more expensive modern Sulfas such as "Bactrim" or "Septrim" should be available to be used under the VMO's instruction.

*Penicillin injection:* Are cheap but should usually be reserved for cases advised by the VMO.

*Ampicillin* is expensive but a small supply should be available for the VMO's prescribing.

*Chloramphenicol* is cheap but is potentially dangerous and should be used only on the VMO's instruction.

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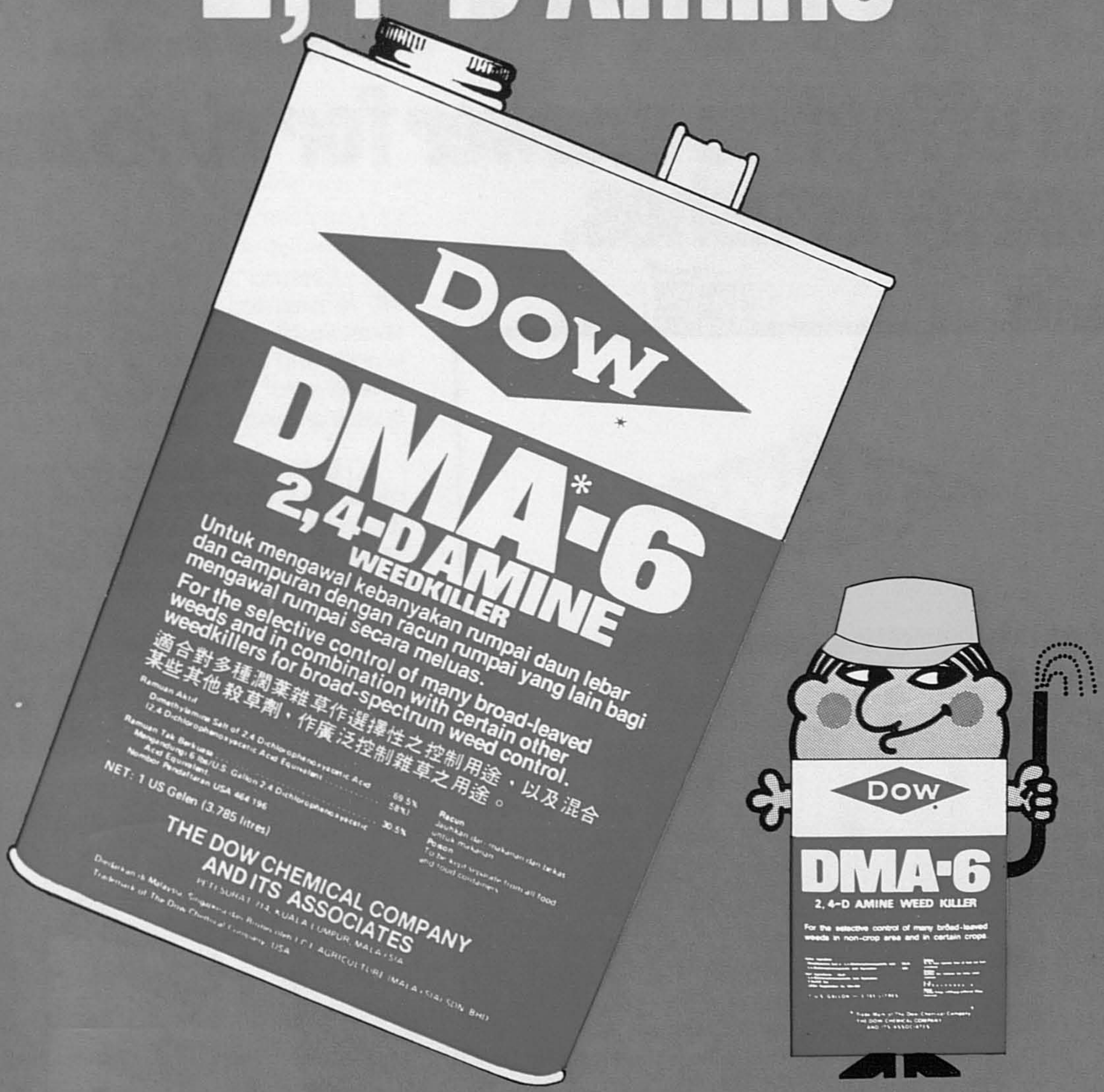





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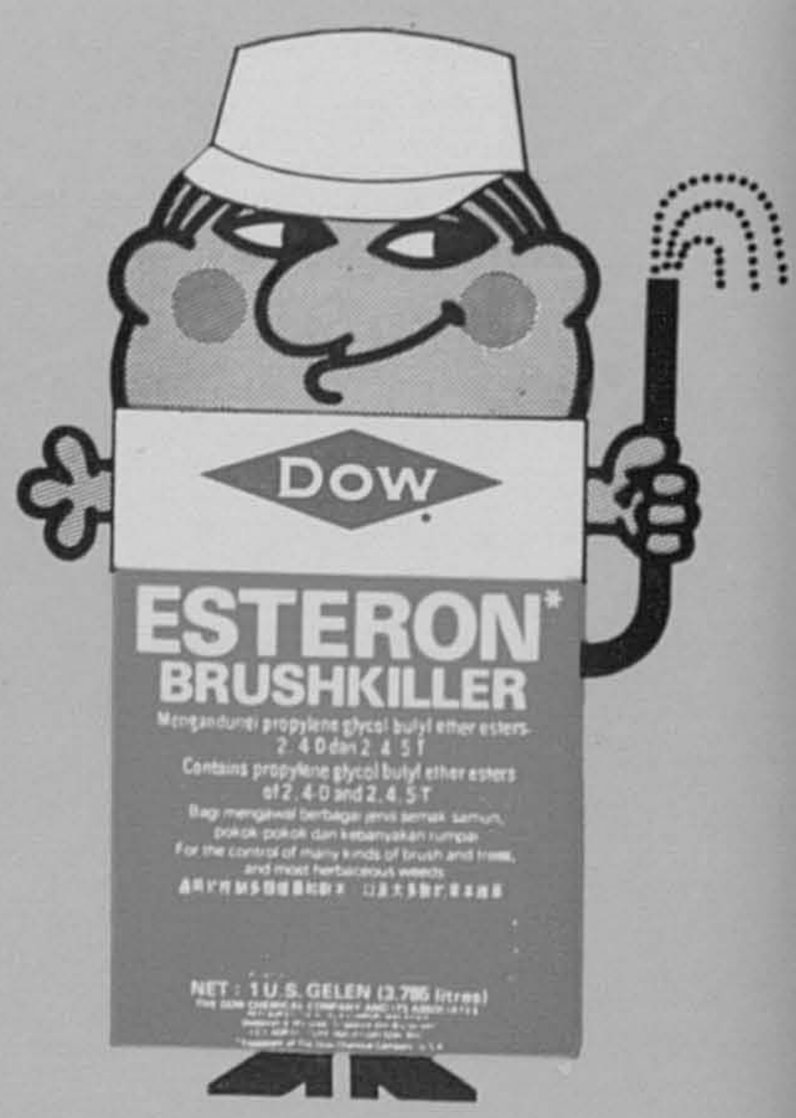


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*Streptomycin* should be reserved for proven cases of tuberculosis and only given on the VMO's instruction or as follow up on instruction from the General Hospital. The VMO should decide the other indications for the use of this drug.

*Cough mixtures* can be divided into those which stop or relieve a dry cough and those which encourage the flow of sputum in bronchitis. Cheap and effective mixtures are available by local manufacturers and one type of each category of cough mixture should suffice.

*Asthma mixtures and tablets* should be chosen with care and adhere to a limited variety.

*Aminophvilline injection* should be available for emergencies but the brand carefully chosen and this drug (by injection) used with caution.
The variety of antibiotics available is legion and the more exotic and expensive ones may be ordered to be held in reserve at the VMO's discretion to prescribe.

**Diseases of the alimentary system**

*Antacid tablets* come in a wide variety of sizes, shapes, prices and promises to work many wonders. Simple antacid mixtures and tablets should be chosen with relation to efficacy and cost.

*Anticholinergic drugs* will be necessary to treat chronic dyspepsia but long-term treatment should be decided upon by the VMO (or General Hospital).

*Antispasmodic tablets* are essential for colicky pain (including menstrual pains) and one good brand should be adhered to. Only a few need be dispensed in individual cases and failure to respond rapidly suggests further investigation.

*Antidiarrhoea tablets and mixtues* are in much demand and a very necessary requirement. Most cases in adults are due to indiscretions in diet and alcohol and an antispasmodic and kaolin will suffice. For the more severe diarrhoea a non-absorbable sulphonamide plus paregoric will be the answer. Amoebic dysentery and helminthic diarrhoea must be borne in mind. Treatment for the former will depend on finding the parasite under the microscope and Metronidazole in full dosage is the answer. For the latter a broad spectrum antihelminthic.

*Diarrhoea in children* is more often dietary, milk (lactose) intolerance or a symptom of constitutional disease, *i.e.* respiratory infection, otitis meda. Treat the underlying cause. A supply of non-lactose milk powder such as "Sobee" made by Mead Johnson or "AL–110" made by Nestle's is more useful than blind and ineffective antibiotic treatment. Severe gastroenteritis in children should always be referred to hospital if it does not respond to treatment in a few hours.

Intestinal bleeding, even that from haemorrhoids, is always best referred to hospital (between the VMO's visits).

**Disease of the cardiovascular system**

Drugs for heart failure, digitalis, diuretics, hypotensive drugs (chosen by the VMO) should be available but HAs should not undertake the long term-treatment of such diseases without first referring to the VMO or the hospital.

**Disease of the nervous system**

This particularly applies to epilepsy. For emergency treatment phenobarbitone by injection should be available (in DDA locked cupboard) but the further treatment should be initiated by VMO or General Hospital. Sedatives, hypnotics and tranquillizers (in locked cupboard) should be available in small quantity—again treatment not to be initiated by HA.

**Treatment of fever and muscular pains**

Soluble aspirin, paracetamol (for high fever a mixture of both is most effective) should be freely available. These are available from local manufacturers and are effective and cheap.

Drugs of the anti-rheumatic group—antiflammatory and analgesic—are in much demand on estates where labourers, who are exposed to inclement weather and early morning cold, suffer much from all varieties of musculoskeletal ailments. Such ailments range from muscular strains, to acute rheumatism, arthritis (both inflammatory and degenerative) and infective arthritis. It is essential to have adequate stocks of such antirheumatic drugs but one good, reliable and economical brand should be chosen and adhered to, except where the individual case does not respond then a second type of treatment should be available.

*Anaemia and subnutrition*

Much poor nutrition and consequent anaemia on estates is due to lack of education, lack of knowledge of suitable food and, regretably, waste of money on luxuries at the expense of proper feeding of children. In my experience those who suffer most are the children, women and older dependants. The working male is generally not undernourished. Worm infestation is blamed for much of the anaemia found on estates but this is more often the precipitating factor which tops the scale in the undernourished subject—this is not the place to go into the causes of anaemia but it can be stated from personal experience that unthinking prescriptions for vitamin tablets, tonics and vitamin B injections (which latter have their own hazards) run neck and neck with antibiotics in the realm of wasteful, thoughtless and uncalled for dispensing. Assuming a cause has been found for the anaemia, treat the cause and then treat the anaemia.

Deworming of children (using a broad spectrum antihelminthic) between the age of 3 years and 12 years has much to recommend it. Once a year is enough.

A basic iron preparation such as ferrous sulphate is adequate. In talet form 1 000 tablets cost about $12. This will treat ten adults (or children over 12 years) for one month. The commonest cause of patients not responding to oral iron is that they do not take the tablet (Davidson, 1966). Some few patients, it is true, are intolerant of oral iron but they are a very small minority. Most estate labourers are deficient in folates (possibly the Tamil diet) so folic acid 5 mg twice a day should be added to the iron. Folic acid is cheap—less than 1 cent per tablet.

Riboflavin (Vit. B2) and Pyridoxine (Vit. B6) are very cheap and when given to anaemic patients will help any associated vitamin deficiency. Cheap and active vitamin B complex tablets are locally manufactured and will balance the rest of the vitamin and nutritional deficiency. Cod liver oil capsules are cheap and will supply the fat soluble vitamins. I feel that multivitamin tablets are a waste of effort as the cheaper varieties have a little of every thing and not enough of anything to make a difference. I have mentioned vitamins at length despite my strictures on wastage. My objection is to the purchase of exotic, expensive (no doubt effective) vitamin preparation which often cost 30 cents a capsule. One month supply of thirty such capsules for one person costs as much as would supply ten persons with an ordinary brand of B complex for the same period. The ordering of such preparation should be discouraged as the benefit goes to a privileged few, executive and office staff, and this pushes drug costs up—or more serious are bought at the expense of the general labourers if the estimates are not to be exceeded.

Young children need iron in liquid form. This is more expensive than the tablets form but this cannot be helped. I would suggest that ferrous sulphate liquid should be given. So called tonics are expensive and usually ineffective as what is principally needed is iron and such tonics do not contain enough iron. A particular well-tried brand of liquid vitamin should be chosen for the children and adhered to. It should not be necessary to point out that long courses of iron and vitamins should not be launched upon without evidence of actual iron and vitamin deficiency. Vitamins and iron are in addition to, and not substitutes for, proper feeding. The question of educating the workers on proper feeding is outside the scope of these few notes.

## SUMMARY

For obvious reasons it has not been possible here to specify drugs by name. However the principles of selection have been indicated. All that is required is an interested VMO and manager and the hospital assistant will co-operate. The management should provide clerical assistance in record keeping and include the drug stock in its annual audit if the frequent exhortations to economise are to be taken as a sincere desire to prevent wastage but still provide effective medical service. If on the other hand the management does not, or cannot, find time to liaise with the VMO and jointly plan the estate hospital/dispensary service it can only be concluded that, as some cynics aver, the estate medical services are regarded as a nuisance which must be tolerated but whose nuisance value must be kept to the minimum—cost wise.

## CONCLUSION

I have indicated the principle upon which wise drug ordering may be based. If the drugs are carefully chosen the next step is correct record keeping. If correct, legible and unambiguous notes are made of dispensing, then only can accurate stock-taking and auditing be undertaken. I recently attempted to 'audit' the daily treatment book of an estate and found that the task was impossible. Over a period of a year *there was not a single instance of the total amount of drugs dispensed to an individual patient recorded.* Only the name of the drug and the amount per dose. Under these circumstances it was quite impossible to balance the amount of drugs purchased with the amount dispensed. I recommend this exercise to cost-conscious managers—the implications are thought-provoking.

I was shocked to discover on questioning our different HAs that they neither know the cost of (most) of what they ordered but furthermore never saw the invoices when these come for payment—these bills went to the office and were never compared with the indent.

The VMO on his rounds should check the EHA's dispensary day book to see that the records are clearly kept and in the prescribed form. The form and content of the stock book likewise should be checked by the VMO but the detailed audit of both should be undertaken by the management—the VMO is there to advise and clarify the medical terminology where necessary.

Finally the VMO should, in his annual report, unequivocally comment on (a) the adequacy of the EHA's keeping of the dispensary day book and drug and medicine stock books and (b) the extent to which the HA has carried out estate policy in drug policy in drug indenting and stock taking.

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## APPENDIX "A"

*Example :*

The Wrong way to indent.

Please supply—

1. 1/2 lb/Whitfield ointment
2. 300 capsules of Tetracycline
3. 5 tubes of Hydrocortisone cream
4. 600 tablets of Aspirin
5. 2 lbs. of "X" cough mixture
6. 2 pints of Castellanis paint.

*The Correct way :*

1. 1 lb. (16 ozs.) of Whitfield Ointment
2. 1000 Capsules of "B" Brand Tetracycline 250 mg. (original pack)
3. 5 × 5G. tubes of "Y" Brand Hydrocortisone cream
4. 1000 tablets of Soluble Aspirin ("Z" Brand) original pack
5. 1 litre (original pack) of "S" Brand cough mixture
6. 1 gallon (Imperial) Castellanis paint.

(6 items)

*initial by* V.M.O.

## APPENDIX "B"

*A SUGGESTED FORM OF RECORDING TREATMENT AND DISPENSING IN THE DISPENSARY DAY BOOK.*

W = worker. D = Dependant.

*Note:* All entries to be, in ink, legible. State dose and circle ( ) the total amount Dispensed. Under-line Name and Drug.

| *Name* | *M/F* | *Age* | *W/D* | *Race* | *Division* | *Time seen* | *Presenting complaint* | *Findings on examination* | *Diagnosis (if known)* | *Treatment* | *Remarks* |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Maniam, S. | M | 30 | W | Indian | Home | 7.00 a m. | Cough, sore throat, fever. | T. 101° Septic tonsils, chest discomfort. | Tonsillitis and bronchitis. | *Tetracycline* 250 mg q.i.d. (16)<br>*Cough Syrup (name)* (3 ozs.)<br>*Soluble Aspirin* 2 q.q.h. (20) | 2 days leave |
| Ahmad bin Joned | M | 6/12 | D | Malay | Factory | 7.15 a.m. | Diarrhoea and vomiting. | T. 103° Dehydrated. Chest clear | Gastro-enteritis. | *Terramycin Injection* (50 mg.) I.M.I.<br>*Junior Aspirin* (2) tabs. stat. | Refer to Hospital |
| Wong Har | F | 40 | W | Chinese | Home | 7.30 a.m. | Laceration left leg. | 3″ cut left calf. | Cut from knife. | 4 sutures inserted wound dressed with Isodine,<br>*Tetracycline* 250 mg. q.i.d. (16).<br>*Paracetamol* 2 p.r.n. (10) | 2 days leave |

*Note:* Leave a space of 2″ between *end* of each day's entry and start of next day for easier recording of total day work.

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# Future Trends in Oil Palm Research*

B. J. Wood†

Over the past 40 or 50 years, yield expectation in South East Asian oil palms has risen from an average around 10 to 14 tonnes FFB/ha (4–5½ tons/acre) to over 20–25 (8–10) with more increases in prospect, and research has played a major part in making this possible. Where does research go from here in its aim of aiding increased profitability, both in the short and longer term?

The main lines are obvious—first, on the agricultural side is the need to increase crop even further (or prevent losses), and/or to reduce inputs, in order to reduce the cost of production in terms of return on investment. As time goes on, the latter must be more accepted as not only financial capital, but ecological capital too, in other words, optimum production from scarcer land and other resources. Considerable progress has been made in recent years along the lines envisaged in earlier papers on research needs (Bull, 1967; Gray & Turner, 1968), though many of these lines remain open for further achievement. The major new emphases that have arisen are mostly on the technological side concerned with improving the quality and composition of the oil. This work will aid in reducing manufacturer's costs, and increase the range of possible uses, thereby increasing the producers' income.

The fields in which research is going in oil palm to further these general aims is too vast to give adequate coverage in a short paper. Even in a book on the subject, currently at the press (Corley, Hardon & Wood, in press), there are inevitable gaps in coverage of the very wide range of activity, whilst to be up-to-date on detail is impossible in any review, with so many rapid developments taking place. Nor is it possible to say much about the men and organisations doing oil palm research. Traditionally this has involved a limited number of people from a few centres, but with the increasing importance of the crop, more government, quasi-government and private organisations are doing oil palm research around the world.

It is my intention here simply to pick out some important aspects of oil palm research and headline them. Though the points must necessarily be given separately, the interplay between them may be considerable. Some aspects of research will show short-term benefits, others are more basic—but how far can the mind be stretched into the future without seeming impractical, or fanciful?

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* This article was originally published in the Proceedings of the Balai Penelitian Perkebunan Medan 1976 Oil Palm Seminar, Medan, 23–24 February, and it was suggested that it might be of interest to readers of *The Planter*. In order to avoid a multiplicity of references to the same theme, I have not updated it, despite the Oil Palm Conference and Palm Oil Symposium of June 1976, where some of the themes were elaborated or given new emphasis; the main lines for progress remain much the same Minor alterations include the removal of two paragraphs of specific relevance to Sumatra, and the addition of three references.

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*Nutrition*

This is usually the major agricultural cost, and the heavy dependence of fertilizer production on fossil fuels is likely to make it even more expensive. Phosphates in particular, are among the world's finite resources and easily available supplies may run out within the foreseeable future. Increased efficiency in use is essential. Organic fertilizers may play a part. Recycling of waste bunches, the application of factory effluents, both rubber (Tan *et al*, 1975) and oil palm, and the more efficient cultivation of nitrogen fixing soil improving cover plants are all being studied. The word legume would recently have been the only appropriate one here, but new work shows that many plants can develop an association with the nitrogen-fixing bacteria, without nodulation (Dart & Day, 1975), and it may become possible to encourage greater nitrogen-fixing by bacteria in oil palm stands—a prospect well worth some consideration. Conventional cover growth has room for improvement in cost of establishment (*e.g.* by herbicides), better preservation (*e.g.* by control of insects), and in enhancement of nitrogen-fixing ability.

Monitoring of need for, and assessment of likely benefit from mineral fertilizers could no doubt be improved. Minimal and best leaf levels of elements are widely accepted but yields may be improved over what is shown by them. Recent work suggests that optima may differ in different soil environments. Additional measurements, such as vegetative, might usefully be added and other tissues may be more sensitive than leaf 17. Foliar analysis never was intended to be a measure in isolation, but it can be expected gradually to integrate even more fully with other factors. The palm's potential is limited by its environment and this varies from time to time—especially with rainfall. The optimum fertilizer input in one year is not necessarily the optimum in another—an average is aimed at, so that in some years some fertilizer is wasted and in other years the palms could profitably have used more. Equalizing the limitations, *e.g.* by irrigation may greatly assist in more efficient (as well as higher) production.

Aerial application, to help even distribution, is being investigated (Wood, *in press*), and this would enable more frequent application of lower quantities. The exact optima in this respect, too, require more detailed study. Research is considering the possibility of selection towards a plant less productive in itself, but a more efficient user of fertilizers.

*Breeding*

Great strides have been made, mainly in selecting Dura (female) parents. The recent introduction of new plants from outside the region will enable their genes to be incorporated, and extend the chance for improvement (Hardon & Thomas, 1968). The male pisifera parent cannot be tested for its own performance, because it is female sterile and produces no bunches, but progeny testing is coming to full fruition, and pisifera parents can now be selected more closely, enabling further moves forward. The introduction of palms hybridised with the South American oil palm may have an impact on oil quality (see below), and there is evidence from S. America that they are resistant to certain diseases (ATAC & Coldesa, 1974). Blocks of hybrids are being planted quite extensively in several areas.


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PERCETAKAN MAJU, K.L.

So far, breeding has been from palms planted at conventional spacing, which perform well themselves, *i.e.* have competed well for resources. Recent thinking suggests that a palm with a high bunch index, *i.e.* one which produces more fruit for a given amount of leaf area, even though it may not produce a high total yield itself, may be able to give greater production per unit of land if planted closer (Hardon *et al*, 1972).

Tissue culture is being worked on (Jones, 1974). By permitting cloning, to select from a very limited range of high grade palms, and cut out the "averaging" effect of production of seeds, it could revolutionise breeding approaches, either directly or from seed gardens of multiple parents of a few clones. Already, young plants (though of no special pedigree) produced by this method, are planted in soil in the nursery in Malaysia (Corley, *pers. comm.*).

*Agronomy*

Forecasting yields accurately could have important financial implications, though most of the methods tried so far are bedevilled by limited accuracy. An ability to flatten yield fluctuations would be beneficial, leading to better utilisation of the capital involved in building a mill. Selective castration could be a means to this (Corley & Teo, *in press*), as it appears to throw palms into yield cycles that might be manipulated between different areas. Investigations are in progress on this possibility.

Spacing leaves many questions for resolution (Corley *et al*, 1973). Would it be possible to have a sensitive system of determining spacing, geared to soil type and other conditions? Is it economically best to have maximum crop early (closer spacing) at the expense of some later, and if so, how much better and what is the exact optimum in a particular situation? Systematic spacing (fan design) is a possible route to answering questions on the subject in a limited area (Goh, *in press*). It will permit simpler trials to investigate the interaction of spacing with other factors, such as bunch index (see above), fertilizer use and so on.

Pollination is a major constraint on productivity, and yet much is unknown. No efficient distribution system, except directly to individual bunches, has been devised. The age of palms when it should be stopped, the best frequency etc. are not fully answered. There are considerable problems in doing the necessary experimentation, but work on a trial method and application technique should repay major dividends. The question of insect pollination still deserves some attention. The palm appears to be adapted to wind pollination, but insects undoubtedly play at least a casual role in some localities, and the aniseed smell is unexplained. An investigation seems merited (A.H. Green, *pers. comm.*; D.H. Murphy, *pers. comm.*).

Sensitive harvesting standard systems might be devised (Chan *et al*, 1972; Ng & Southworth, 1973), and could be adjustable to meet complex variations in the oil quality required, and labour availability. Hence the maximum amount of information on the subject should be accumulated.

Mechanisation may become more important as labour costs go up, and these will affect best yields. We should not lose sight of the fact that fossil fuels too will increase in price, and we must remain flexible to the opposite pulling of these two factors. In time, no doubt, methods of utilising novel sources of energy, especially solar energy, the most obvious safe and inexhaustible energy source, will play a part in production. A possible role for draught animals, scientifically employed, should not be dismissed out of hand, *e.g.* Wan (1973).

In pest control there is need to further develop integrated control mostly to avoid or deal early with insect outbreaks that could become devastating. Pest management approaches exist for pests in several regions (Wood, 1973; Mariau, *in press*). Methods are worked out for rat control (Wood & Nicol, 1973), but further population monitoring will aid in better deciding the best frequency of control, and the onset of resistance to warfarin must be closely watched for, and alternative methods devised against its happening. Many aspects of weed control require resolution, to reduce competition, maintain ideal ground vegetation conditions, and avoid harming the main crop (through insidious herbicide effects) whilst keeping labour use at the economic best.

Throughout, we speak of optima not maxima. The optimum fertilizer use is not to give the highest crop, because of the law of diminishing returns. The highest amount and quality of production will be achieved by a harvesting standard that is impossibly costly. We are looking for the best compromise in most operations, and the route to finding it becomes increasingly sophisticated, in terms of the type of trial (*e.g.* the systematic spacing trials mentioned above), and in both the analysis of results and their extrapolation to the field, all aided by that powerful tool—the computer.

## PROCESSING & TECHNICAL

### *Wastes*

The current disposal of many potential by-products of palm oil production often involves creation of pollution (although they contain no elements toxic in themselves) or wasteful burning, though they certainly have other valuable uses, *e.g.* as soil conditioners, animal feeds, and sources of usable energy. Research should look at the whole process of the mill and select promising materials and potential uses for development. Sludge, currently a pollutant, but which has an interesting animal nutrition content, is a glaring example (Stanton, 1974; Webb *et al*, 1975).

### *Processing Techniques*

Presently, processing technique is good, but no doubt improvement is possible. Much of the research has to be done by the machinery manufacturers, but the user can stimulate it. Capital investment is tremendous, and small reductions would be valuable, whilst reductions in transport and other costs would no doubt be possible with novel approaches.

*Quality*

The measures to minimise FFA development must continue in conjunction with ensuring quantity production. A considerable amount of work is being done on the dirt content, particularly metal contamination such as iron and copper, with the objective of reducing oxidation, improving bleachability, etc. There are many bogies to be laid in this area, and it is essential to be sure that the tests that become part of any standard requirements, are meaningful and reproducible, and also genuinely involve improve quality of oil for the consumer. The conditions for shipping require some attention; sometimes considerable deterioration takes place on the journey, but it is quite clear that this is not inevitable—witness the quite acceptable quality of oil from a ship recently arriving in the United Kingdom that had lain blocked in the Suez Canal for eight years (C.W. Thompson, *pers. comm.*).

*Composition*

There is a desire to move to a higher proportion of unsaturated fatty acids, presently around 50% in the oil, both to increase its liquidity, and to avoid those saturated components which are suspected of being associated in some way with degenerative heart disease. There are two major routes to this—breeding and fractionation.

In breeding, the hybrid with the South American palm shows a considerable rise towards higher unsaturated content (Hardon, 1969; Cornelius, 1975), and this needs to be explored in considerable detail. Tissue culture from particularly favourable palms would, of course, assume immense importance here, because considerable variation, both in quantity and quality of production, is a feature in these palms.

Fractionation allows the division of the oil into more liquid and more solid parts, and the proportions—can be governed within limits (Tjang & Olie, 1972; Tan, 1974). This may well be the best route, because at present the total yield of the hybrids is not generally sufficiently large to match that of the liquid oil part from high-producing *guineensis* palms, even ignoring the solid fraction. To find end uses for solid fractions poses a further problem to research—various possibilities exist. Perhaps, a combination of the two approaches, breeding towards a somewhat higher unsaturated content (Wuidart & Gascon, 1975), so that the relative proportions of the two fractions are improved favourably, and then fractionating, would be the best route.

## CONCLUSION

Research will be increasingly multi-disciplinary. In agriculture, there will have to be cooperation between the planter, agricultural research worker, agricultural engineer, economist, and marketing departments. On the technological side, engineers will have to collaborate with chemists, and people in marketing. Meaningful experimentation is expensive, but it must be done properly, by experts who know the crop and its product and who appreciate experimental methods. Otherwise, wrong results and false trails will abound. Though costly, this is still small in comparison with potential gains.

The importance of a continuous research effort cannot be overemphasized, and the temptation to make cuts in the face of temporary reductions in profits should be avoided. Research has many functions; in answering daily problems by experiment; by a gradual progress in existing lines of development; by an occasional breakthrough that cannot be forecast, but which can revolutionise certain aspects from time to time; and by the build-up of a fund of expertise.

Apart from the tremendous overall gains of recent years, in quantity, quality and efficiency of production, which affect everyone growing the crop, an organisation with close access to active research can reasonably expect a margin over its competitors who do without, perhaps in the region of 10%. This means, at present crops and prices (say 22 tonne FFB/ha/year Rp. 150,000/tonne of oil, 20% extraction), and allowing 15% replanting area, a mean of Rp. 50–60,000/ha extra income, as well as a reduced capital investment cost.

There is plenty of scope for improvement yet, and perhaps the only outstanding question now is, is this improvement needed? The oil palm is undoubtedly one of the most efficient users of sunlight to convert inorganic chemicals to edible oil, which is a major source of food to the earth's hungry population. Given a reasonable stable world, there must be a market for greater quantities of palm oil, to say nothing of the benefits of improving quality, utilising by-products and reducing the cost (economic and ecological) of production.

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In a general review paper of this kind, inevitably ideas are drawn from many sources, frequently unpublished, which cannot all be acknowledged I have tried to give a few references as a guide to the latest and forthcoming literature, but can give only a general acknowledgement to the many oil palm scientists and colleagues with whom I am able to discuss oil palm research.

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3. Fertiliser pumps, chains, bearings.
4. Structural member and pipe interiors with corrosive gas or fume environment.
5. Spare parts and small tools.
6. Structural member and pipe interiors with corrosive gas or fume environment, including salt air.
7. Mechanical equipment — including fertiliser spreaders, bin slides, drills and general agricultural equipment.

### HOW TO CONTROL PUMP CORROSION — WITH EUREKA FLUID FILM

Pour FLUID FILM liquid (A) into the intake, turn the pump over once or twice to make sure the liquid is coating the whole interior, then leave it. This way, the pump will be in perfect working condition. FLUID FILM stops rust, inhibits corrosion and lubricates moving parts.

### TWO FORMS OF EUREKA FLUID FILM TO MEET APPLICATION REQUIREMENTS

Liquid (A): Use for dip tank, roller, floatation or spray application.
Gel (B): Use for brush, roller or flow gun application.

Eureka FLUID FILM is available in aerosol cans, 5 gallon pails, and 55 gallon drums.

A product of the Eureka Chemical Company, San Francisco, USA.


## NEW FLUID FILM
### Penetrant-Lubricant

16 oz. Spray Can
Immediately upon spray application provides exceptional penetration and lubrication for all metal parts where sliding, hinging, bearing or threading action is required.

**LINDETEVES-JACOBERG (M) SDN. BHD.**

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|---|---|---|---|---|
| P.O. Box 369 | P.O. Box 126 | P.O. Box 207 | P.O. Box 1058 | P.O. Box 369 |
| Tel. 775511 | Tel. 513855 | Tel. 61793/4 | Tel. 647191 | Tel. 55611 |

KACE/LJ714

# The I.S.P. Schools Association

(Incorporated in Malaysia)

## REPORT OF THE MANAGEMENT COMMITTEE FOR THE YEAR ENDED 31st DECEMBER, 1975.

There was a profit for the year 1975 of $11,200.

Expenditure amounted to $305,600 against $270,600 in 1974. Our total income was $316,800 compared to $309,500 in 1974. Our profit was down as had been anticipated—1974 was an exceptional year—and the increase in fees in September 1975 is designed to carry us as far through 1976 as possible. Running costs as always continued to rise, the biggest increase being in rent for the Crag buildings which increased from $10,800 in 1974 to $36,000 in 1975. The Principal and Committee of Management continue to watch most carefully all expenditure but the financial effect of rising costs and a reduction in the number of pupils can be controlled only to a limited degree.

The comparative figures giving the percentage of Planters and Miners children attending Uplands for each term during 1974 and 1975 were as follows: —

| | | | | | |
|---|---|---|---|---|---|
| 1974 | Easter Term | 58% | 1975 | Easter Term | 56% |
| 1974 | Summer Term | 61% | 1975 | Summer Term | 55% |
| 1974 | Christmas Term | 58% | 1975 | Christmas Term | 54% |

These figures show clearly that Uplands continues to fulfill its role even though the numbers of planters and miners children currently show a drop.

During 1975 Government stopped Malaysian children attending expatriate schools. Though we have never had a large proportion of Malaysian children at Uplands this Government ruling did have a significant effect on our numbers and will affect our future recruitment particularly with the continuous Malaysianisation policy within the rubber and tin industries. Unfortunately the new industries have provided few pupils for Uplands, as most are in urban areas where day schools of one sort or another are usually available.

The staff, ably led by Mr. Drury continued to lead and teach our children. Pupils at Uplands are extremely fortunate in having so flexible a staff, routine and syllabus. The minute a pupil falls behind they are given extra coaching. The minute they require to learn more someone will help them. Our programme of outside visits and activities has been increased in spite of the problems of moving children up and down the Hill which are legion.

We appeal yet again to planters and miners to support Uplands. Come and see us, visit the school, talk to the staff and the children and see what we do. Have a meal with us and see what your children get to eat, or would get if you are a prospective parent. Incidentally we do not cut the food given to the children to cut costs as one planter I spoke to seemed to think! Truly more care is taken over food than in many many schools in Britain where the standard can be quite frighteningly low. Don't be hood-winked either into thinking that any school overseas is necessarily better than a school here. They are not, choose these days with extreme care, particularly in Britain, where waiting lists are things of the past and even the best of public schools are short of pupils.

Once again I must thank the Principal, staff and Management Committee for all their loyal help and support in 1975.

MRS. A. CRAWFORD,
*Chairman,*
Management Committee,
I.S.P. Schools Association.

# 'GRAMOXONE' IS UNIQUE!

* 'Gramoxone' has the unique quality of rainfastness
* 'Gramoxone' effectively controls a very wide range of weeds

SEAL OF QUALITY


'Cock's Head' agricultural products help Malaysia grow

# Report from Uplands School

A great many things are going on at Uplands.

Next term we are moving the Hillview children to the Crag. This we feel will be of real benefit to the little ones. They will have the full benefits of the whole staff, including Sister Chooi and the other facilities of the Big School. Expenses will be cut too by only having one central kitchen. However, the 5 to 7 year olds will continue to live, work and play together as a unit. They will occupy the dormitories closest to Sister and work in the Stannum Classrooms closest to the main hall and staff quarters. Nothing will be spared to keep this group together.

At the other end of the school we are investigating the possibility of providing lower secondary education up to English 'O' standard should there be a demand. Parents comments on secondary education would be most welcome. Please let us know if you want secondary education to 'O' levels for *your* children. We are considering day and boarding facilities for this group. We envisage Hillview being a secondary hostel should a demand exist.

I cannot emphasise too strongly that standards will not be sacrificed due to these changes or in the interests of economy. Classes will therefore continue as before. If the school is to provide a good education it is obvious that we must have good teachers and good teachers must be paid the proper rate for the job and there must be no cutting of corners.

The renovation work continues unabated this term with the installation of hot water showers in the dormitories. Contractors have already been appointed and the work should be completed before the end of term.

Speech Day is to be combined with Sports Day this year as an experiment. Parents have not previously been able to be present for our Annual Sports. If it does not rain, and it usually does rain on Speech Day, we hope that the double attraction will be a success.

(*Sgd.*) P. E. DRURY,
*Principal.*

**The wife's driving**

A husband remarked that his wife can see a blonde hair on his coat and yet not see the pair of garage doors ten feet wide. My wife drives the car in an advisory capacity. In fact, after a taxi ride through town the driver refused to take any money from her saying *"No need to pay me, madam. You did all the driving from behind"*.

So, to teach her a lesson, I sat beside her while she was at the sewing machine. I made a running commentary to her as follows: —

*"Don't you think you are running too fast? Look out, you'll sew the wrong seam. Mind that corner. Slow down. Watch your fingers. Steady There."*

*"What's the matter with you, I've been sewing for years"* said his wife.

*"Well dear, I just thought you might like some help as you help me with my driving"*.

I heard of a film actress speeding along the highway when a traffic cop caught up with her. He pulled out his notebook. She snatched it from him, autographed it and drove off.

I was about to overtake a woman driver when I noticed she had her hand out. Thinking she was intending to turn I slowed down. But she continued to have her hand out and not turning. I drove up abreast of her at the intersection and asked her. *"Why don't you turn after signalling you are turning?"*. *"Who was signalling?"* she demanded. *"I'm only drying my finger nails"*.

**The metamorphosis after marriage**

Women know that if they don't look after their figure no one else will but once they have made a catch they don't bother. *"My wife is far from her old sylph"*, says a husband, *"She no longer has the figure for a bikini—just the nerve. The flower of youth has gone to seed—and to pot. Once she looked like a siren, now she only talks like one"*. *"I got my new gown for a ridiculous price"* she said. *"You mean for an absurd figure?"* the husband asked.

*"Is your wife as pretty as she used to be?"* *"Oh yes, but it takes quite a while longer now"*. My wife is now living in a *food's* paradise. I tell her she shouldn't *chew* but *eschew*. She should go to some *length* to change her *width;* in fact, she should practice *girth* control. All the exercise she takes is moving food from plate to palate. *"Years ago you would have carried me over that puddle of water. You aren't as gallant as you were when I was a gal,"* the wife complained. *"No, but you are no longer as buoyant as you were when I was a boy,"* was the husband's retort.

When the doctor told me, *"I don't like the look of your wife"* I retorted, *"You too, doc?"* *"My wife is an angel"* said one husband. *"You are lucky"* said another, *"Mine's still alive and kicking"*. *"Oh no. My wife is alive too but she is an angel in the sense she is always up in the air, she has never got anything to wear, and she is always harping on something"*.

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# Social and Personal

## Awards

Datuk N.A. Kularajah, PJK, being conferred with D.P.M.T. by the Sultan dan Yang Di Pertuan bagi Negeri Trengganu on His birthday.

Congratulations to Dr. K. T. Joseph on his appointment as Professor in 'Land use study' by University of Malaya.

## On leave

4878 Lee Beng Huat, 33 Jalan Poh Keng, Penang.

4674 Leggatt, P., 40 Filshan Road, Saint Leonards-on-sea, Sussex TN380PH, England.

5689 Hansen, J.N., Lowside Farm, Bowbank, Middleton-in-Teesdale, Co Durham, England.

## Returned from leave

4204 Campbell, T.J., Regent Estate, Batang Melaka, Negri Sembilan.

3491 Macpherson, D.A., AISP, Segamat Estate, P O Box 501, Segamat, Johore.

## Change of address

4871 Abu Hassim bin Sa'at, Kuala Selangor Estate, Bukit Rotan, Selangor.

6034 Ahmad Tajuddin bin Mohd. Mustafa, Unitata Sdn. Bhd., Teluk Anson, Perak.

6203 Abdul Aziz bin Abdul Rahim, Ladang Fikri, Sungai Tong, Kuala Trengganu.

4653 R. Allcorn, Cross River State Rubber Plantations Ltd., P M Bag 1080 Calabar, Cross River State, Nigeria.

5811 Boon Yon Nyin, C. Melchers & Co., Chemical Dept., P.O. Box 376, Kuala Lumpur.

5064 Balachandran M., Rasak Estate, Batu Tiga, Selangor.

6391 Chan Yam, Asiajaya Sepakat (M) Sdn. Bhd., Sri Jaya, Maran, Pahang.

5810 Cates, A.H., Ancom Sdn. Bhd., ACC Division, P.O. Box 465, Kuala Lumpur.

5387 Chai Chant Tat, Malaka Pinda Estate, Alor Gajah P.O., Alor Gajah, Malacca.

3927 Douglas, N.A., 11 Bell Road, Beachlands, Auckland, New Zealand.

4631 Gajabalan, P., AMN, Lambak/Elaeis Estate, P.O. Box 510, Kluang, Johore.

6088 Gill, Kishan Singh, Bank Pertanian Malaysia, 45, Jalan Ibrahim, Johor Bahru.

5573 Hay, D.W.E., Sungei Tinggi Estate, Batang Berjuntai, Selangor.

5815 Kong Kim Ching, Steven, Ancom Sdn. Bhd., ACC Division, P.O. Box 465, K. Lumpur.

6358 Lam Hee, Bukit Paloh Estate, Paloh, Johore.

5884 Lau Kok Chin, Pamol Estate, P.O. Box 509, Kluang, Johore.

5363 Lee King Wat, AISP, Anak Kulim Estate, Kulim, Kedah.

5773 Mahadevan, P., Bahau Estate, Bahau, Negri Sembilan.

5920 Marz, H.R. Chevon Chemical International Inc., P.O. Box 7013, Airmail Exchange Office, Manila International Airport, 3120 Philippines.

3773 Martinez, J.D., No. 107, Jalan SS 2/18, Petaling Jaya, Selangor.

5186 Nesbit, D.P., Commonwealth Dev. Corpn., 33 Hill Street, London W1, England.

6287 Ong A. Ang, 1214 Batu 24¾, Chohong, Jasin, Malacca.

5944 Poh Syee Wha, Faculty of Economist & Resource, University Pertanian, Serdang, Selangor.

6055 Rosman bin Hussein, Sungei Samak Estate, Ulu Bernam, Perak.

6349 Sasheendran, B., Sungei Buloh Estate, Selangor River Division, Bukit Rotan P.O., Selangor.

5874 Singh Manjit, Kerilla Estate, Temangan, Kelantan.

6243 Tuah bin Haji Kassim, B P O P S, P.O. Box 661, Miri, Sarawak.

5088 Tan See Yeok, AISP, Kerilla Estate, Temangan, Kelantan.

6318 Tuan Ya bin Tuan Derahman, Tampin Linggi Estate, Rantau, Negri Sembilan.

Tan Han Chor, Adda Estate, P.O. Box 237, Johor Bahru.

5501 Veluppillay, C., Malaysian Co-operative Industrial Development Society Bhd., Semenyih, Selangor.

4262 Wyman, D.R.E., T.D. & M. Bhd., Padang Kubu, P.O. Box 10, Kemaman, Trengganu.

4789 Yap Thean Seng, 22, Jalan Brockman, Camy Park, Ipoh, Perak.

Low Eng Kiah, H & C Latex Sdn. Bhd., P.O. Box 205, Petaling, Selangor.

4879 Mohd Damanhuri b Hj Mohd Ibrahim, Juasseh Estate, Kuala Pilah, Negri Sembilan.

# Culinary Treasure

## CHEESE BISCUITS

4 oz. softened butter

4 oz. grated well-flavoured cheese

4 oz. plain flour

½ teaspoon dry mustard

pinch of salt, pinch of pepper

*Method:* Sift dry ingredients—plain flour, mustard salt and pepper. Mix butter with cheese, gradually work in flour. Roll mixture into small balls, place on baking trays. Bake in a moderate oven for 15 to 20 minutes. Cool and store in airtight tins. Makes approximately 3½ dozen.

# Advertisement index

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