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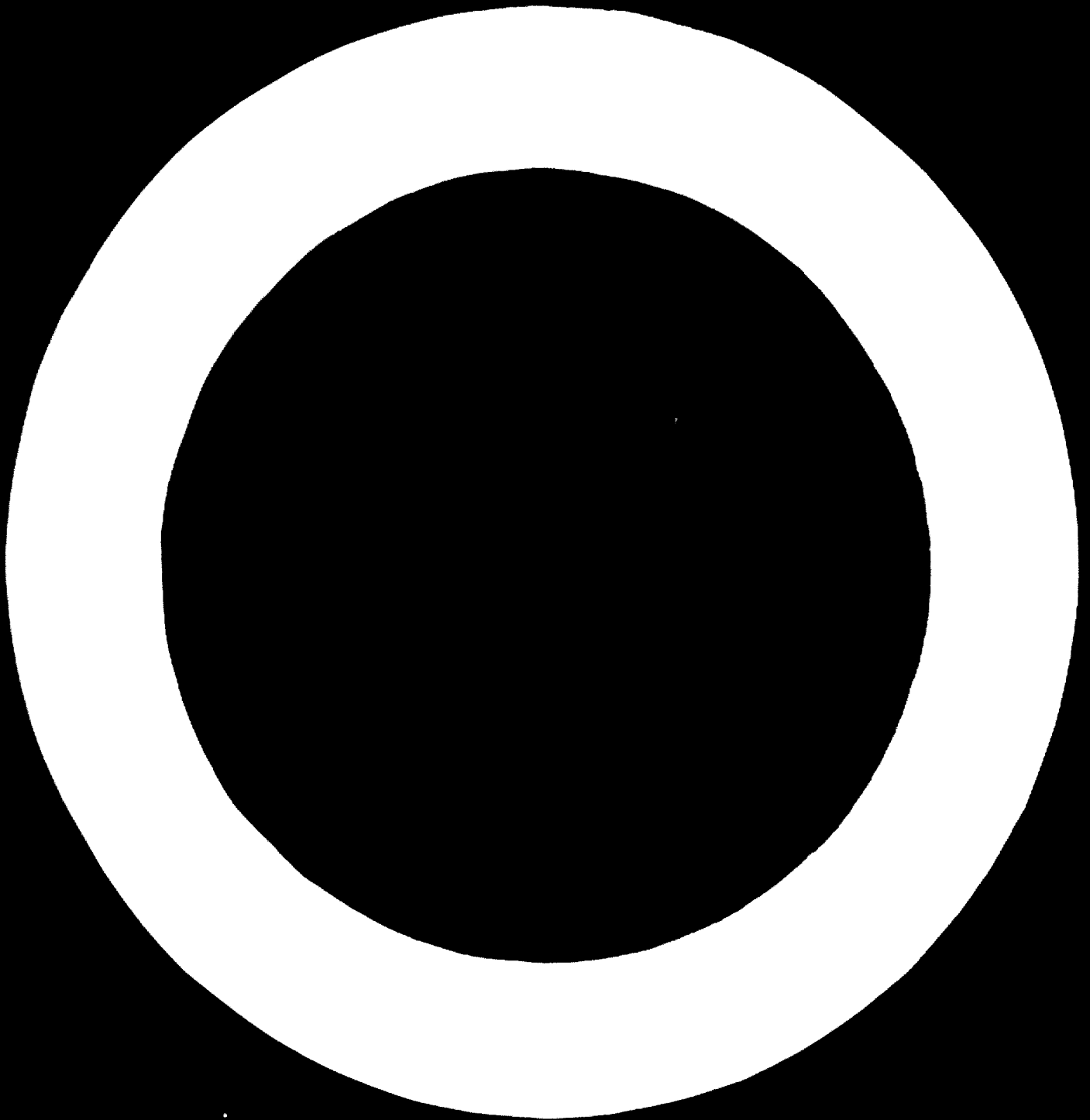
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Fancy
Leather Goods
Factory
for
Developing
Countries*

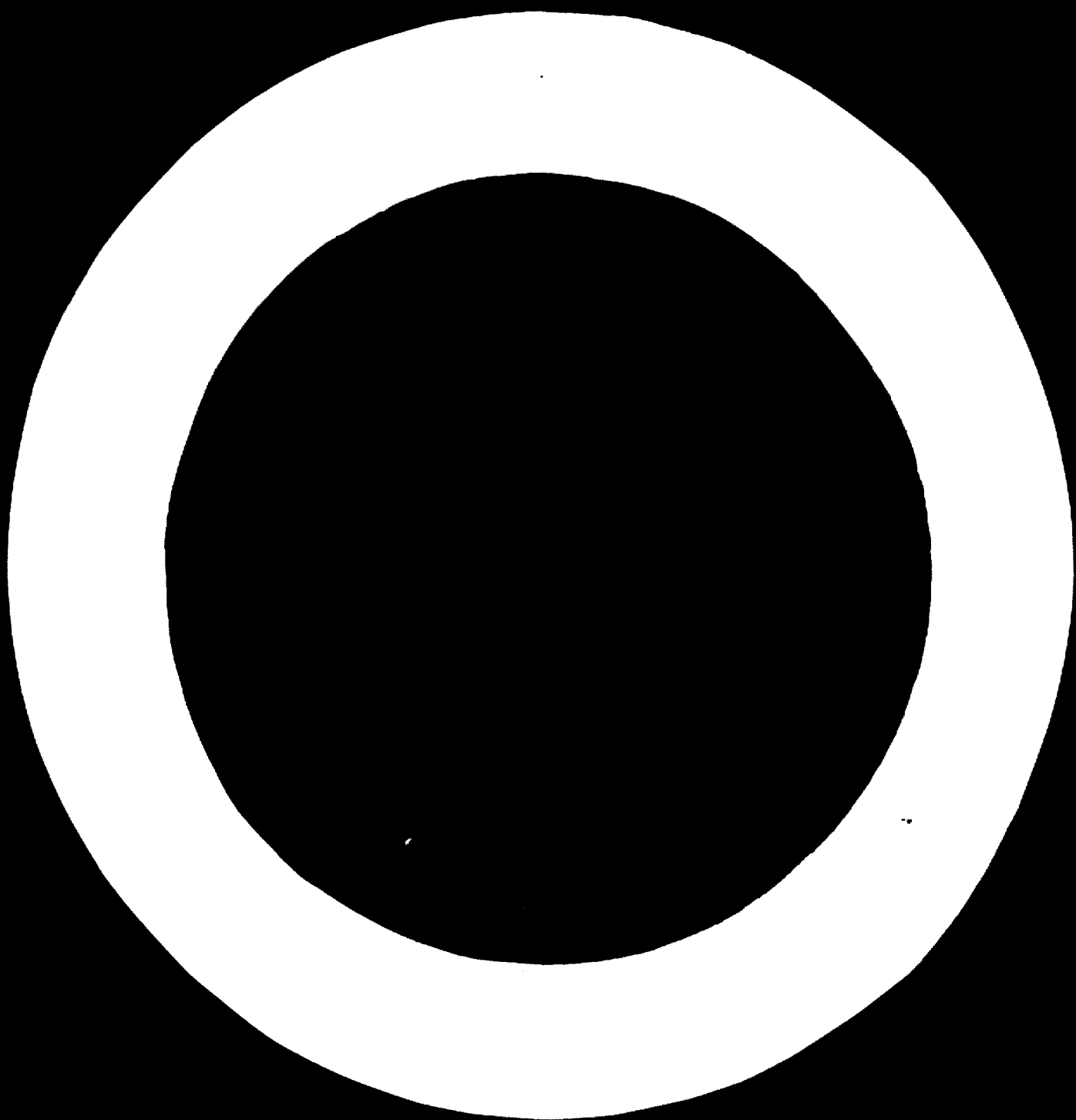


UNITED NATIONS

(44 p.)



**A FANCY LEATHER GOODS FACTORY
FOR DEVELOPING COUNTRIES**



**UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
VIENNA**

**A FANCY LEATHER
GOODS FACTORY FOR
DEVELOPING COUNTRIES**



**UNITED NATIONS
New York, 1972**

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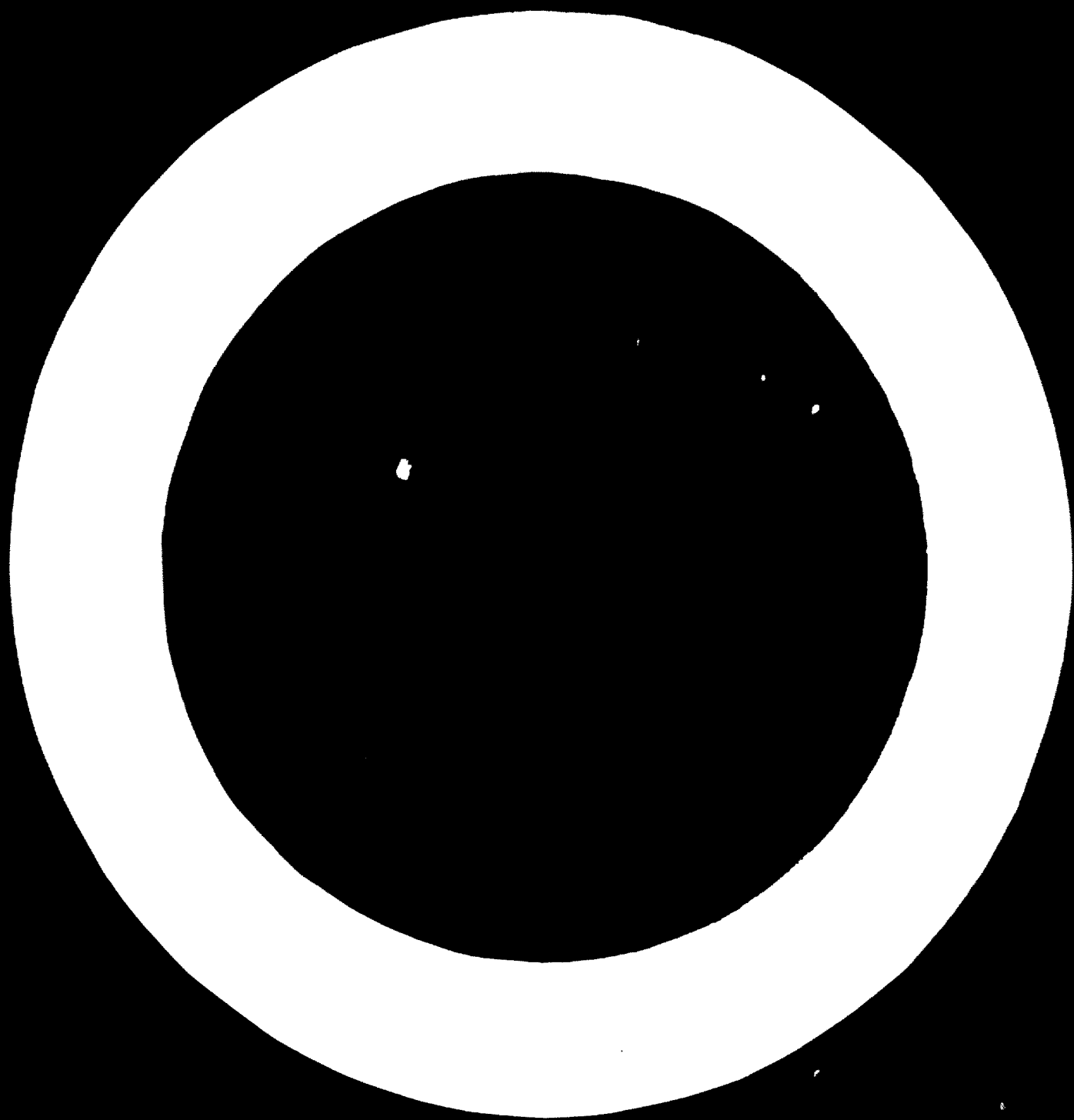
PREFACE

This publication is concerned with the establishment of a fancy leather goods factory producing four basic items—handbags, document cases, wallets and belts—from crocodile, lizard and python leather.

Chapter 1 examines in some detail the factory's requirements with respect to equipment, labour and materials. It outlines the processes to be used and presents essential data on the operation of the plant. Detailed production layout and flow charts are given, and costs and profitability are analysed. Quality control is considered as a means of avoiding wastage of expensive materials and of ensuring products that will be competitive on the export market. Chapter 2 discusses an expansion of the plant to double its capacity.

Although the data given are for a factory in a South-East Asian country, they can easily be used as a basis for erecting similar plants in other developing countries, though costs of construction and labour, reflecting local conditions, will vary.

This study was prepared by Jelko A. Rant from Ljubljana, Yugoslavia, as a consultant to UNIDO, for the Seminar on the Development of the Leather and Leather Products Industries in Developing Countries, Regional Project for Africa, held in Vienna from 22 February to 5 March 1971. The views and opinions expressed are those of the consultant and do not necessarily reflect the views of the secretariat of UNIDO.



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EXPLANATORY NOTES

References to dollars (\$) indicate United States dollars.

The following abbreviations are used in this publication:

- cm = centimetre
- dm = decimetre
- dm² = square decimetre
- kg = kilogram
- m = metre
- pc. = piece

INTRODUCTION

Leatherworking has been carried on since ancient times. Leather gauntlets, quivers and jewellery cases found in Egyptian graves dating back to 3000 B. C. give some indication of the great age of the craft. These articles, which may be regarded as early "leather goods", were manufactured by the same craftsmen who produced sandals and other kinds of footwear. Leather goods production remained a part of the shoemaker's work right up to medieval times, when it was taken over by the bookbinding trade, which was then growing in importance.

About two centuries ago, the leather goods section of the leather industry branched out on its own and began to expand in a number of European countries. Shoemaking machines were modified to suit the requirements of the new industry and gradually new machines and tools were introduced. However, even today the leather goods industry is only semi-mechanized. Much of the work must still be done by hand.

In 1845, Daniel Prützmann, a Viennese, devised a leather purse with a metal frame, a most important innovation. From then on leather goods production developed rapidly, and today it is an important industry employing tens of thousands of workers all over the world.

The term "leather goods" embraces such items as ladies' handbags, travelling bags and suitcases, attaché cases, document cases, billfolds, wallets, purses and belts. These articles may be manufactured not only from leather but also from textiles, plastics and artificial leather, or fibre and cardboard. When these same articles are made from such exotic materials as the skins of reptiles, rare birds and frogs, tortoise feet or fur, they are known as "fancy leather goods".

LEATHER GOODS IN DEVELOPING COUNTRIES

Most developing countries produce some kind of leather goods or fancy leather goods, partly for the local market but mainly for tourist consumption.

In Central and South America, big travelling bags with traditional Indian motifs inlaid by hand or simple presses are produced in large quantities and are very popular with the tourists. Interesting effects are obtained by adorning the bags with metal rings or buttons and long leather fringes. Vegetable-tanned cowhide is mainly used for these items.

In South America a great deal of alligator and snake skin is also used in fancy leather goods production.

North African countries produce the well-known camel-saddle stools, cube-shaped cushions, handbags, travelling bags, and small leather articles. The bags are embossed with Arabic motifs or historical or scenic motifs of the countries in which they are made, often painted in bright colours. Most of these articles are made from vegetable-tanned goatskins, sheepskins and, to a lesser extent, cattle hides.

In the West, Central and East African countries leather goods are produced from locally available goatskins, sheepskins and cattle hides. Fancy leather goods are made of crocodile, lizard, snake, and ostrich skins and monkey fur. Large travelling bags and suitcases are made of zebra fur. These leathers are vegetable-, semi-chrome- and pure-chrome-tanned. Some tanneries also use synthetic tanning materials.

The countries of South-east Asia are well known as producers of fancy leather goods from crocodile, lizard, and snake skins, tanned with vegetable, chrome, or a synthetic tanning material.

However, the production of leather goods and fancy leather goods in the developing countries, which is carried out mostly in small units, suffers from serious shortcomings, all of which cause substantial reductions in the value of the finished goods: the locally tanned leather is often of inferior quality; cutting patterns are usually made of old newspapers, instead of cardboard; leather is cut haphazardly, with scissors instead of cutting knives; linings are also cut at random; the cutting patterns used for the outer parts of the article are also used for the linings (causing them to wrinkle); the basic rules for sample-making and for preparing cutting patterns are unknown; bad thread is used; cheap plastic suede lining in expensive reptile bags makes the articles unattractive; and the metal frames are out of fashion and of inferior quality.

In addition, production is not properly organized; there is a general lack of management; cost accounting is non-existent, and prices are decided by looking at those of the competitors.

The chapters that follow provide basic information on the equipment, personnel, material and layout needed for a fancy leather goods factory. Figures are given for one year's suggested production of four classical articles (handbags, document cases, wallets and belts) made of reptile leather (crocodile, lizard and snake). Costs, prices, salaries, wages and rent are based on the average rates in a developing country of South-East Asia in June/July 1970.

REASONS FOR UNDERTAKING PRODUCTION OF FANCY LEATHER GOODS

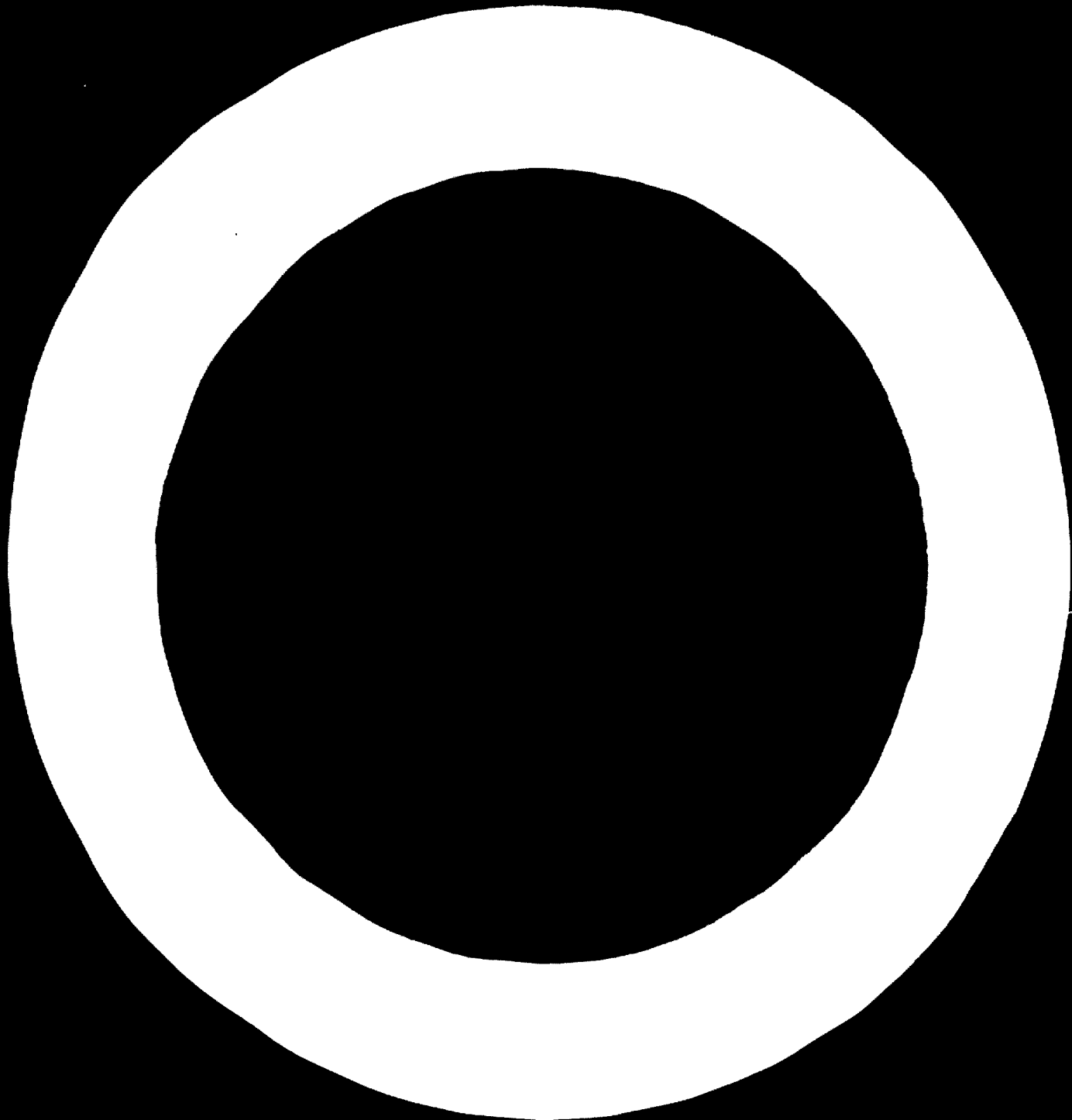
There is a substantial demand for fancy leather goods, especially those made of reptile leather, in Canada, the United States and Western Europe. In the past ten years the demand for articles made of crocodile skin has grown from year to year, while that for articles made of lizard skin has

remained constant. For articles made of snake skin (mainly python), however, the demand has fluctuated in nearly regular intervals, rising and then falling every three years: just now it is rising once again.

Fancy leather goods, which are tied to classical styles, do not depend on current fashion to the extent that other leather goods do. Their manufacture, therefore, is less risky.

Production is labour intensive; thus, only a few machines are required. The comparatively cheap labour, low overheads and cheaper leather in the developing countries help to offset transport expenses and the customs duties imposed by the importing countries.

While the capital requirements are relatively small, the finished goods represent an extensive range of easily salable articles that may first be sold locally to tourists and afterwards be exported. In this way the developing countries can gain the foreign currency they so badly need.



THE NEW FACTORY

PRELIMINARY PREPARATIONS

Before any steps are taken to establish a new fancy leather goods factory, an investigation should be undertaken to determine whether:

Reliable market data on the locally sold fancy leather goods and locally tanned reptile skins are available;

Demand is greater than supply;

It will be possible to sell the quantities of fancy leather goods that the new factory will produce;

The quantity of locally tanned reptile skins will be sufficient for the requirements of the new factory and the quality good enough.

Only if the results of this investigation, which an expert should be able to complete in a month, are positive should the establishment of the new factory be considered.

A team of four experts should be on the spot when production starts.

The team leader should be an expert with over-all knowledge of the fancy leather goods industry. He will be responsible for organizing all phases of production from "storage of materials" to "shipping"; introducing proper methods of storing materials; and setting up a small but efficient quality control system. He will also co-ordinate and supervise the work of the other three experts in the team.

The second expert will teach and demonstrate how to make samples and cut patterns, i. e. how to make copies of various fancy leather goods, adapting the patterns to reptile leather and how to cut this material correctly. He will also teach and demonstrate how to make patterns for dies, patterns according to rough sketches, and patterns for articles (such as belts) made from reject cuts of reptile leather.

The third expert will teach and demonstrate how to cut and stitch fancy leather goods, i. e. how to cut leather by hand; use dies, especially for reptile leather; cut linings (leather and textile); cut cardboard and paper by guillotine; skive leather properly, especially reptile leather; and carry out all stitching operations in the stitching department.

The fourth expert should be a specialist in assembling fancy leather goods (especially those made from reptile leather). He will teach and

demonstrate how to glue; turn, mark and burn edges; and attach frames and other accessories. He will organize all the work in the assembling department.

After the factory is successful on the local market (customers will probably be mainly tourists) the export drive should start. The first exports should go to the nearest developing countries that have good tourist industries.

Exports to Canada, the United States and Western Europe should start later. The best way to enter the major consumer markets is through co-operation with big leather goods factories in the industrialized countries. Such co-operation can be of immense help, since styles, cutting patterns, frames and other accessories are supplied by the customers.

GENERAL SPECIFICATIONS

The factory will operate 52 weeks a year, 44 hours a week and will employ a total of 70 workers, 54 of whom will be engaged in direct production. Production capacity for one year will be 5,750 handbags, 700 document cases, 20,000 wallets and 14,750 belts.

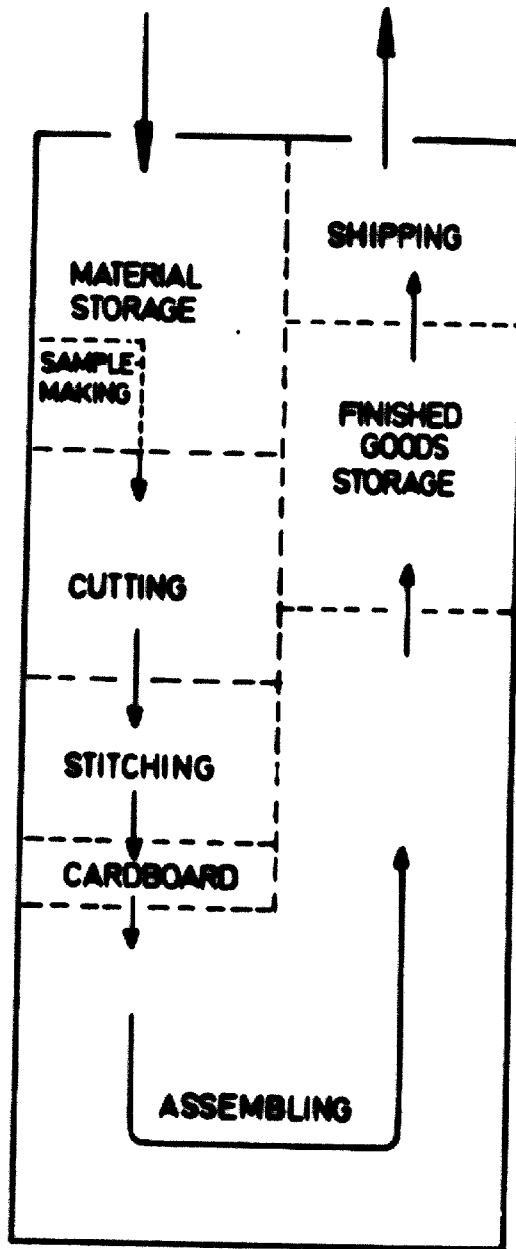
The raw materials used will be: crocodile, lizard and snake leather. Linings for inside pockets and partitions may be of leather (for expensive reptile bags), silk, artificial silk or cotton. Accessories (frames, zippers, buckles, press buttons) needed for the type of goods to be produced in this factory will be imported.

The floor area, 701.5 m² for the production departments only, will be double the area needed for the production capacity mentioned above, which allows for future expansion. The floor area of each department is as follows:

	(m ²)
Material storage	71.5
Sample-making	60.0
Cutting	48.0
Stitching	44.0
Cardboard	12.0
Assembling	234.0
Finished goods storage	71.5
Shipping	32.5
	<u>573.5</u>
Offices (8)	128.0
	<u>701.5</u>

In addition, ample floor space for toilet facilities, personal lockers and a rest room for workers should be provided. Figure 1 gives a flow chart for a fancy leather goods factory.

Figure 1
Flow chart for a fancy leather goods factory



THE MANUFACTURING PROCESS

Material storage

The quantity of incoming materials should be recorded, and the materials sorted according to quality. It should be noted on each invoice that the goods have been received and that the invoice may be paid.

The storage room should be divided into sections, with very expensive materials such as reptile skins stocked separately. Leather, linings, findings (threads, glue, foam plastic, cardboard) and accessories should all be stocked on separate shelves. The minimum quantities established for different types of material should be shown on hanging charts to ensure smooth production. At least one month's supply of locally available raw materials and three months' supply of imported materials, should be stocked.

Sample-making

The sample-making department occupies one room. The sample maker creates new styles and prepares the cutting patterns, which must be ready for the cutting department whenever required. This room, or at least part of it, may also be used to exhibit samples of finished goods.

Cutting

Cutting is done by hand. For small quantities of a certain article, hard cardboard cutting patterns are used. For larger quantities, the cardboard patterns are bound in metal. This factory will not need dies for many years; dies are used only when articles are produced in large numbers.

Stitching

The cut parts are first skived and then sewn together. The linings are glued on, findings applied and some of the accessories fitted. Articles that are of a very complicated design may be partly stitched, sent forward for assembling and then returned for final stitching. Often handles are made in the assembly room and then sent to the stitching room for the necessary sewing.

Cardboard

Paper and cardboard are used extensively in fancy leather goods production. In the cardboard department, a hand-operated guillotine is used to cut paper and board to the sizes required.

Assembling

In the assembly room, the various parts of an article are put together, and the remaining accessories, such as locks and handles, are fitted. Here, too, the article receives the final polishing or cleaning and is inspected.

One of the main operations carried out in this room is folding and turning over. Many small leather articles are not stitched but folded, turned over and glued. (However, the folded outer parts of handbags are always stitched.) Some technicians prefer to have the folding operation carried out in the stitching room. However that may be, it is most convenient to have electrical floor switches on either side of each working table so as to enable a sewing machine to be operated immediately if needed.

Finished goods storage

The storage department receives the finished goods from the assembling room and packs them individually into cardboard boxes. Each box should be clearly labelled with a description of the article it contains. Space in this department should be sufficient to allow for proper storage and easy access to every order or group of articles on stock.

Shipping

Goods should never be kept on stock in the shipping department. Here the goods are crated and sent to the customers.

QUALITY CONTROL

Quality control, which is essential in every factory today, can be carried out more easily and more efficiently in a small factory than in a large one. In a fancy leather goods factory, quality control starts with material storage, is carried out in all the production departments, and includes a final examination before the goods are packed.

The person in charge of the materials storage department controls incoming material. No material to be used in production should be taken into stock without undergoing testing.

Leather and leather lining should be tested for stretching and tearing (tensile strength). Textiles (silk, artificial silk and cotton) should also be tested for stretching strength.

Colours must be fast in fancy leather goods, and consequently they must be tested repeatedly by rubbing the surface of the grain with wet cotton, under strong pressure. If the colour is not fast, just a few drops of rain falling on an expensive black crocodile handbag can make the colour run and, perhaps, spoil a lady's new suit.

Various tests can be carried out on findings and accessories. Among the most important are: tests for tensile strength of threads and adhesive strength of all glues and cements, especially those used for articles that are not stitched; tests (by repeated closing and opening) of zippers, locks and frames.

The next check comes when the material leaves the cutting department. This check should be carried out by the foreman of the cutting and stitching departments. Faulty or badly cut pieces are returned and cut again. Records showing the quality of work of the individual cutters should be kept.

Control in the stitching department is concentrated largely on the workmanship. In the cardboard department it is limited to checking the exact size of the cardboard pieces and the correctness of the sorting. Control in these two departments is also the responsibility of the foreman of the cutting and stitching departments.

Quality control in the assembling department, which is mainly concerned with workmanship, is carried out at each working table by the

foreman of the group (each table has six workers) and supervised by the foreman of the whole department.

The final examination takes place before the goods are packed and sent for storage. It is performed by the foreman of the department responsible for storing the finished goods.

Quality control does not end with the sale of the goods. Claims have to be included in this service. Even the most efficient control system cannot prevent dissatisfied customers from returning some goods.

Wearing tests mean that articles are tested under conditions of normal, everyday use for a certain time and then examined. Handbags made of reptile skin are not expected to be as wear-resistant as travelling bags, but the handles should be properly fastened and stand up to tests involving a weight of 10 kg. These wearing tests should be supervised by the factory manager or by the sales manager.

When an article is returned as faulty and a claim is made—and this means that the article has been subjected to the best possible wearing test—a thorough investigation should be carried out to find the reason for the flaw or weakness and steps taken to prevent its recurrence. Wearing tests are seldom carried out in fancy leather goods factories on the scale that is needed because the articles produced are so expensive.

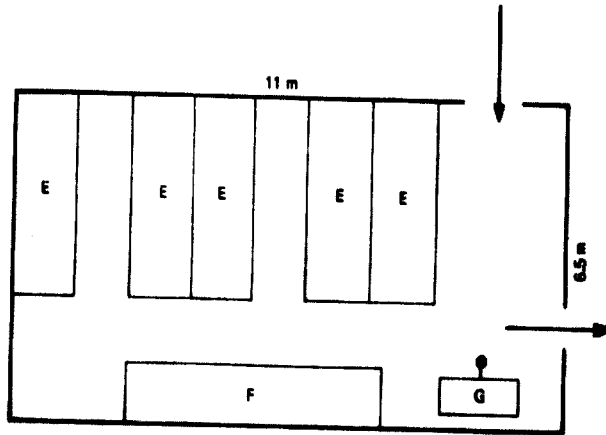
Forty per cent of all productivity control should be concentrated in the claims area, with the remaining 60 per cent divided equally between material storage and production.

EQUIPMENT REQUIRED

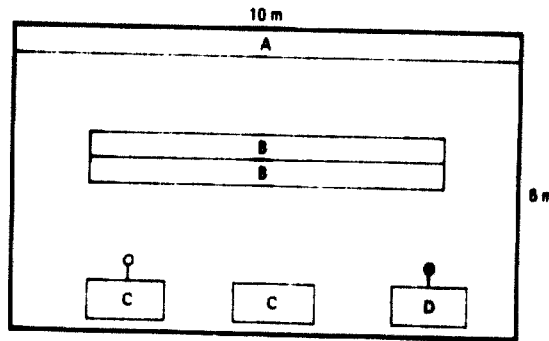
Since fancy leather goods production all over the world employs mainly hand labour, only a few light-weight machines will be needed. Table 1 gives a breakdown of the furniture, machinery and tools required for the new factory, and their approximate costs in dollars. Figure 2 shows the layout of equipment and the degree of skills needed by personnel in each department.

Figure 2
Layout of production units

(a) Material storage department



(b) Sample-making department



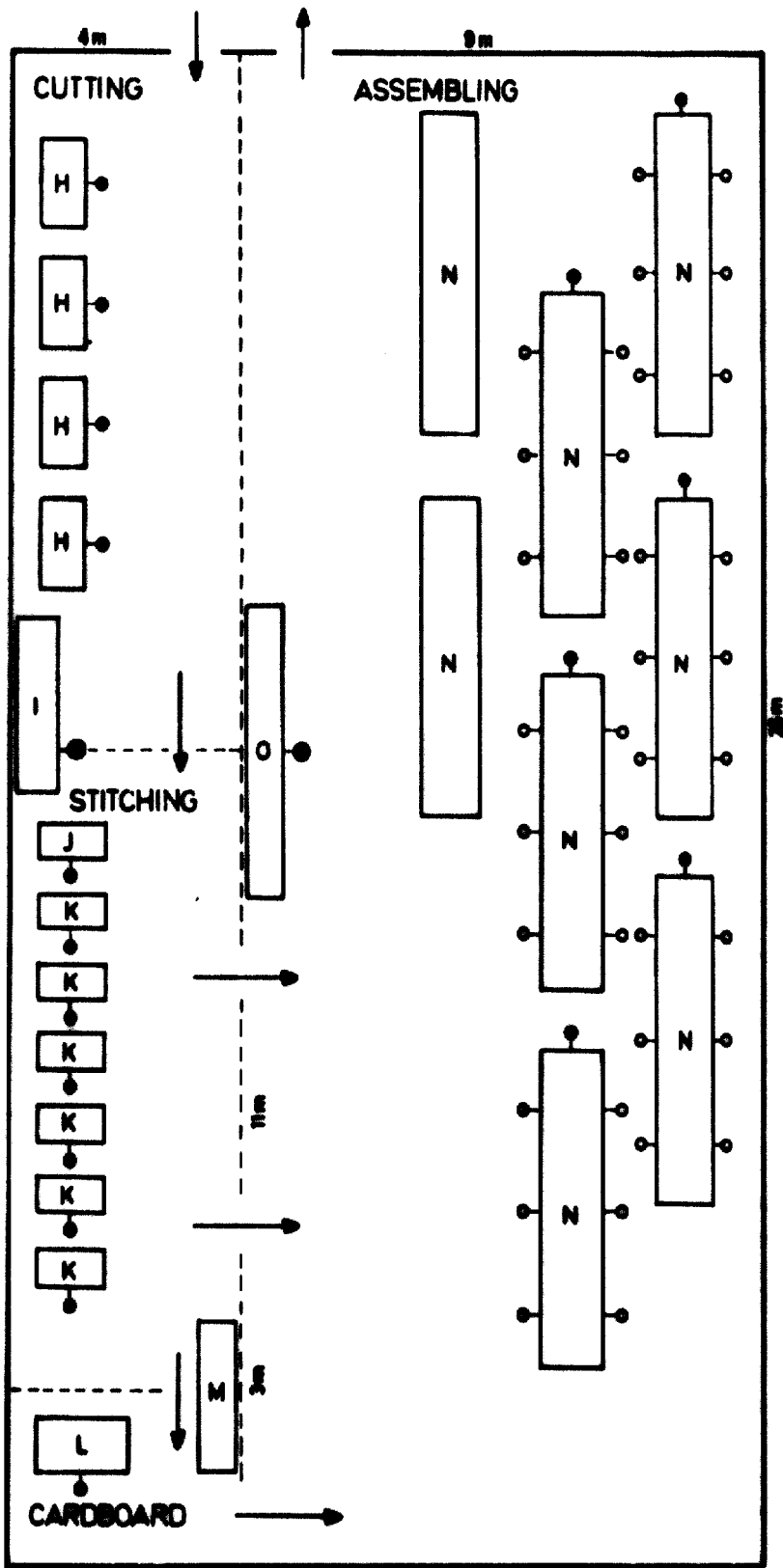
Key to personnel:

⊙ = Highly skilled; ● = Skilled; ○ = Unskilled.

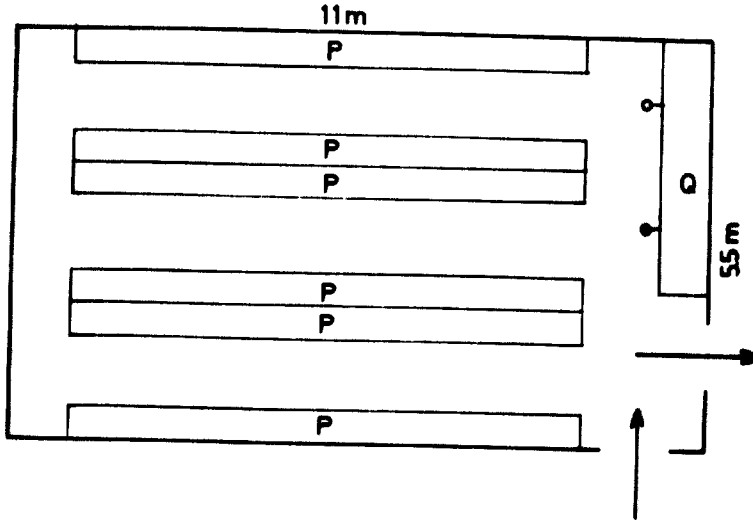
Key to equipment:

- A = Shelving unit (10 m × 0.5 m × 3 m) with 3 shelves and 10 vertical racks
- B = Shelving unit (7 m × 0.5 m × 3 m) with 3 shelves and 7 vertical racks
- C = Working table (1.5 m × 0.75 m × 0.75 m)
- D = Writing table (1.5 m × 0.75 m × 0.75 m)
- E = Shelving unit (4 m × 1.2 m × 3 m) with three shelves and 4 vertical racks
- F = Working table (5 m × 1.2 m × 0.75 m)
- G = Working table (1.5 m × 0.75 m × 0.75 m)
- H = Cutting bench (1.75 m × 0.45 m × 1 m)
- I = Working table (3 m × 0.75 m × 0.75 m)
- J = Skiving machine
- K = Sewing machine
- L = Guillotine
- M = Working table (2.5 m × 0.75 m × 0.75 m)
- N = Working table (5.5 m × 0.75 m × 0.75 m)
- O = Shelving unit (5 m × 0.5 m × 3 m) with 3 shelves and 8 vertical racks
- P = Shelving unit (8 m × 0.5 m × 3 m) with 3 shelves and 8 vertical racks
- Q = Working table (4 m × 0.75 m × 0.75 m)

(c) Cutting, stitching, cardboard and assembling departments



(d) *Finished goods storage*



(e) *Shipping department*

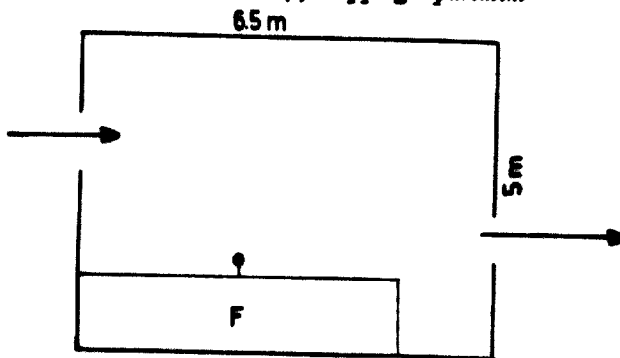


Table 1
FURNITURE, MACHINERY AND TOOLS REQUIRED

	Cost per item (\$)	Number of items	Total cost (\$)
<i>Material storage department</i>			
Furniture			
Shelving unit (E)	420.00	5	2,100.00
Working table (F)	120.00	1	120.00
Working table (G)	80.00	1	80.00
Chairs	15.00	3	45.00
			<u>2,345.00</u>
Tools			
Cutting knife	0.80	3	2.40
Skiving knife	1.10	1	1.10
Pair of scissors	1.60	1	1.60
Folding bone	1.50	1	1.50
Awl	0.70	1	0.70
Iron ruler (50 cm)	1.10	1	1.10
			<u>8.40</u>

Table 1 (continued)

	Cost per item (\$)	Number of items	Total cost (\$)
<i>Sample-making department</i>			
Furniture			
Shelving unit (A)	450.00	1	450.00
Shelving unit (B)	305.00	2	610.00
Working table (C)	80.00	2	160.00
Writing table (D)	100.00	1	100.00
Cutting board (0.9 m × 0.45 m)	55.00	2	110.00
Wooden horse	10.00	4	40.00
Chair	15.00	8	120.00
			<u>1,590.00</u>
Tools			
Table pantograph (hand operated)	60.00	1	60.00
Awl	0.70	2	1.40
Cutting knife	0.80	4	3.20
Skiving knife	1.10	2	2.20
Pair of scissors	1.60	2	3.20
Folding bones	1.50	2	3.00
Compass (for leather goods)	1.00	2	2.00
Iron ruler (50 cm)	1.10	1	1.10
Hammer (for leather goods)	1.50	1	1.50
			<u>77.60</u>
<i>Cutting department</i>			
Furniture			
Cutting bench (H)	50.00	4	200.00
Cutting board (0.9 m × 0.45 m)	55.00	4	220.00
Wooden horse for leather	10.00	4	40.00
Working table (I)	80.00	1	80.00
Chair	15.00	3	45.00
Wooden box (for internal transport of finished goods)	5.00	10	50.00
			<u>635.00</u>
Tools			
Upper cutting knife	0.80	4	3.20
Grinding stone	0.40	4	1.60
Awl	0.70	4	2.80
Iron ruler (50 cm)	1.10	4	4.40
			<u>12.00</u>
<i>Stitching department</i>			
Furniture			
Working table (M)	70.00	1	70.00
Chair	15.00	10	150.00
			<u>220.00</u>

Table 1 (continued)

	Cost per item (\$)	Number of items	Total cost (\$)
Machines and tools			
Skiving machine (J)	425.00	1	425.00
Sewing machine (single-needle flat-bed)	300.00	1	300.00
Sewing machine (single-needle cylinder-bed)	530.00	5	2,650.00
Cutting knife	0.80	8	6.40
Pair of scissors	1.60	6	9.60
Grinding stone	0.40	1	0.40
			<u>3,391.40</u>
Cardboard department			
Machines and tools			
Guillotine	665.00	1	665.00
Cutting knife	0.80	1	0.80
Skiving knife	1.10	1	1.10
Grinding stone	0.40	1	0.40
			<u>667.30</u>
Assembling department			
Furniture			
Working table (N)	100.00	8	800.00
Chair	15.00	50	750.00
Shelving unit (O)	220.00	1	220.00
Trolley (for internal transport of half-finished goods)	200.00	12	2,400.00
			<u>4,170.00</u>
Machines and tools			
Frame-attaching device	165.00	1	165.00
Awl	0.70	43	30.10
Cutting knife	0.80	43	34.40
Pair of scissors	1.60	18	28.80
Edge-polishing irons (for leather goods) Folding bones	0.90	12	10.80
Compass (for leather goods)	1.50	43	64.50
Set of punchers	1.00	12	12.00
Iron ruler (50 cm)	50.00	2	100.00
Hammer (for leather goods)	1.10	18	19.80
Set of frame-fastening tongs (for different frame profiles)	1.50	43	64.50
Electric cooker (for heating glue)	18.00	3	54.00
Pot (for rubber cement and glue)	8.00	12	96.00
Brush	1.00	20	20.00
Stone plate (50 cm × 25 cm × 5 cm) ..	0.70	18	12.60
	20.00	20	400.00
			<u>1,112.50</u>

Table 1 (continued)

	Cost per item (\$)	Number of items	Total cost (\$)
<i>Finished goods storage</i>			
Furniture			
Shelving unit (P)	350.00	6	2,100.00
Working table (Q)	220.00	1	220.00
Chair	15.00	3	45.00
			<u>2,365.00</u>
<i>Shipping department</i>			
Furniture			
Working table (F)	120.00	1	120.00
Table balance	200.00	1	200.00
Floor balance	400.00	1	400.00
Chair	15.00	3	45.00
			<u>765.00</u>

Note: See figure 2 for key to letters in parentheses.

SUMMARY OF ESTIMATED COSTS OF FURNITURE, MACHINERY AND TOOLS (Dollars)

Department	Furniture	Machinery and tools	Total equipment
Material storage	2,345.00	8.40	2,353.40
Sample-making	1,590.00	77.60	1,667.60
Cutting	635.00	12.00	647.00
Stitching	220.00	3,391.40	3,611.40
Cardboard	—	667.30	667.30
Assembling	4,170.00	1,112.50	5,282.50
Finished goods storage	2,365.00	—	2,365.00
Shipping	765.00	—	765.00
	<u>12,090.00</u>	<u>5,269.20</u>	<u>17,359.20</u>

PERSONNEL REQUIREMENTS AND COSTS

Wages throughout the industry are based on piecework, with a flat rate for each operation. For the first year, however, while workers are being trained, all direct labour is to be paid hourly wages.

Manufacturing inferior quality products during the training period can create serious sales resistance that may be difficult to cope with later on. Since the factory is to produce expensive fancy leather goods, it cannot afford rejects. Thus, the quality of the product should constantly be maintained even during the training period.

Most of the workers will have to be trained. Some skilled workers will be available locally but will have to be taught new, up-to-date production methods. Table 2 shows the estimated personnel requirements and costs for the factory's first year of operation.

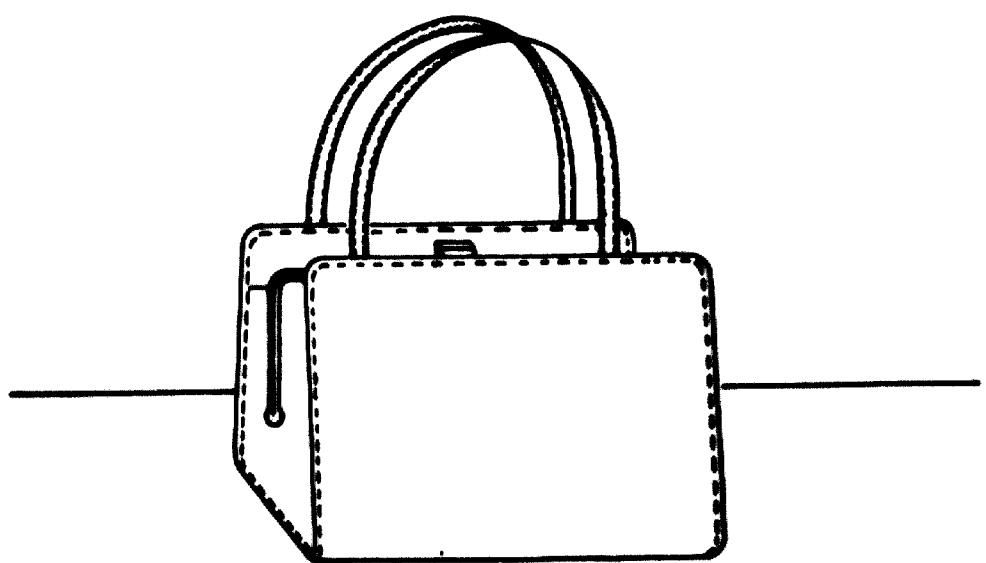
Table 2
PERSONNEL AND SALARY REQUIREMENTS FOR THE FIRST YEAR

	Highly skilled	Annual salary per highly skilled worker (£)	Skilled	Annual salary or wages per skilled worker (£)	Unskilled	Annual wages per unskilled worker (£)	Total personnel	Total salaries and wages (£)
<i>Direct labour</i>								
Department:								
Material storage			1	1,200			1	1,200
Cutting	1 ^a	2,220	4	1,200			5	7,020
Stitching			7	1,020			7	7,140
Cardboard					1	420	1	420
Assembling	1 ^b	2,220	6	1,200	36	420	43	24,540
Finished goods storage								
Shipping			1	1,200	1	420	2	1,620
Transport			1	1,020			1	1,020
Sample-making	1	2,400			1	420	1	420
					1	420	2	2,820
							63	46,200
<i>Indirect labour</i>								
Manager	1	6,000					1	6,000
Accountant	1	4,200					1	4,200
Cashier			1	1,440			1	1,440
Buyer			1	1,440			1	1,440
Typist			1	960			1	960
Cleaner					2	360	2	720
Total							7	14,760
							70	60,960

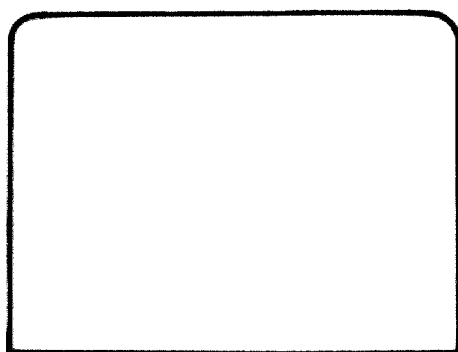
^a Foreman of cutting and stitching departments.
^b Foreman.

Figure 3

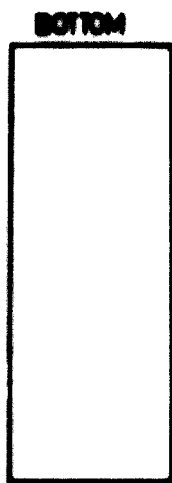
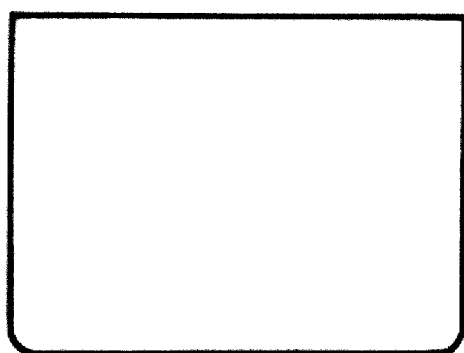
Cutting pattern for handbag with two pockets and a leather-covered metal frame
Scale 4 : 1



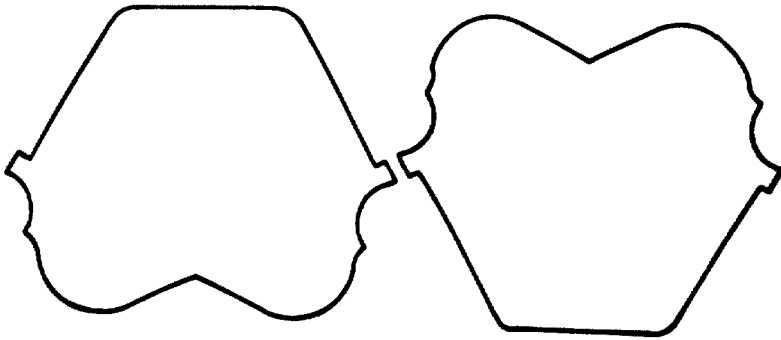
SKETCH OF THE FINISHED BAG



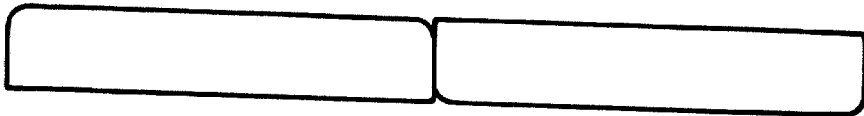
MAIN OUTER PARTS



BOTTOM



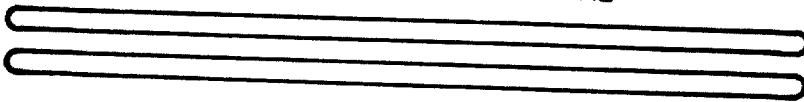
GUSSETS



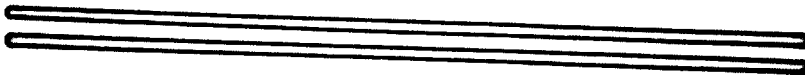
TOP INSIDE COVER ALONG THE MAIN PARTS



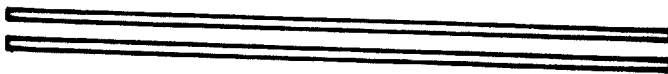
TOP INSIDE COVER ALONG THE FRAME



HANDLES (OUTSIDE)



HANDLES (INSIDE)



COVER FOR METAL FRAME

MATERIALS AND OTHER COSTS OF PRODUCTION

Each of the four types of articles produced by the factory will be made in only one model. The cutting patterns for the handbag, the document case and the wallet are shown in figures 3, 4 and 5, respectively. No cutting patterns are used for the belt, which is made up of offcuts from the other articles. The lining for the belt is cut from sheepskin with rulers and cutting knives. The scraps are then glued to the lining; the pieces have to be carefully skived and put together to give the appearance of being one strip. Since this process is time-consuming, two hours of labour are required to assemble a belt approximately 2.5 cm wide and 85 to 130 cm long.

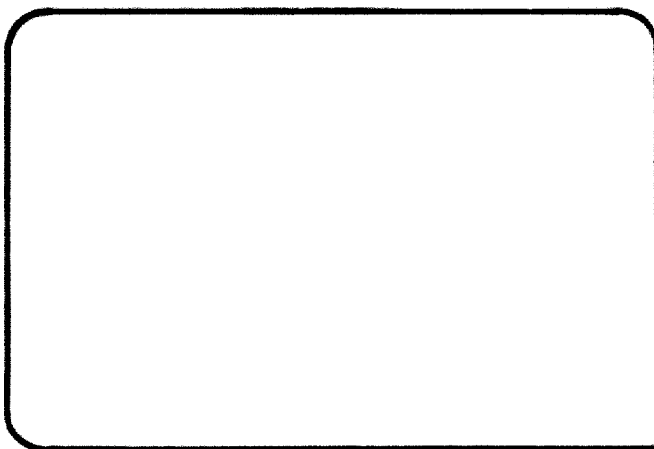
In leather goods made from cattlehide, pigskin, goatskin or sheepskin, the leather constitutes from 55 to 70 per cent of the value of all the materials used. Reptile skin, however, is so expensive that it ranges from 80 to 97 per cent of the value of all materials used; the average value for crocodile is 95 per cent; lizard, 88 per cent; and snake (python), 87 per cent.

Figure 4

Cutting pattern for document case with a narrow gusset and zippered on three sides
Scale 4 : 1



SKETCH OF THE FINISHED DOCUMENT CASE



MAIN PARTS



GUSSET

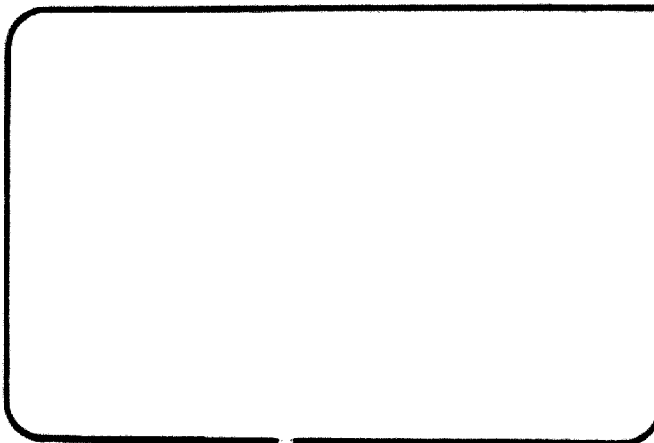
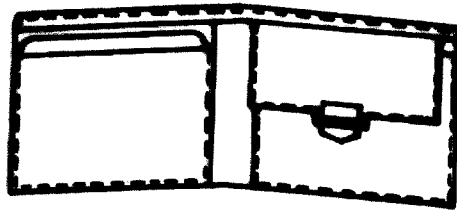
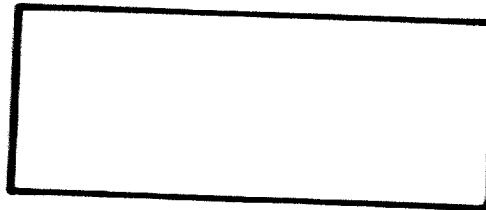


Figure 5

Cutting pattern for wallet with inside partitions, pockets and a small-change purse
Scale 4:1



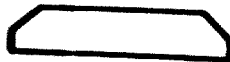
SKETCH OF THE FINISHED WALLET



MAIN-OUTER COVER



INSIDE
MIDDLE
PART



INSIDE PARTITIONS
& POCKETS (LEFT SIDE)



INSIDE TOP COVER OF PURSE



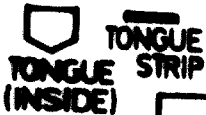
MAIN SMALL-CHANGE PURSE



FLAP OF PURSE (OUTSIDE)



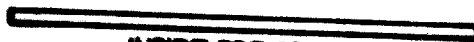
FLAP OF PURSE (INSIDE)



TONGUE
STRIP
(INSIDE)



TONGUE
(OUTSIDE)



INSIDE TOP COVER

Working with such expensive materials requires the utmost care. All personnel dealing with reptile leather must be highly skilled, especially the buyers, the clerk in the material storage department, the foreman of the cutting department and, of course, the cutters.

Reptile skins are sold by the piece, and prices are quoted per centimetre of width. Thus a crocodile skin (belly) that is 169 cm long and 43 cm wide and is priced at \$ 1.67/cm of width would cost \$ 71.81 ($\$ 1.67 \times 43$). For purposes of calculation, however, the skins are measured in square decimetres. The average crocodile skin of the dimensions indicated above will measure a total of 65 dm²; the belly (the best part of the skin), 21 dm²; the tail, 30 dm²; the feet, 8 dm²; and the head, 6 dm². Thus the average cost of crocodile leather per dm² is \$ 1.10 ($\$ 71.81/65$).

Lizard skins 32 cm wide cost \$ 7.80 per skin. Such a skin has 18 dm² and thus costs \$ 0.43/dm². Snake skins (mainly pythons) are sold by the length, but the price/length varies with the width of the skin. A python 30 cm wide costs \$ 7.75 per metre of length; thus a python skin 5 m long costs \$ 38.75. Such a skin has 111 dm² and costs \$ 0.35/dm².

Tables 3 and 4, respectively, show the quantity and cost of reptile skins required for production for the factory's first year of operation.

Table 3
REPTILE SKIN REQUIREMENTS

	<i>Number of pieces</i>	<i>Skin per piece (dm²)</i>	<i>Total skin area (dm²)</i>	<i>Average size of skin (dm²)</i>	<i>Number of skins required</i>
<i>Crocodile</i>					
Handbag	4,000	58.0	232,000	65	3,570
Document case	200	35.0	7,000	65	108
Wallet	10,000	10.1	101,000	65	1,554
Belt	8,000	4.5	36,000	65	554
Total ...	22,200		376,000		5,786
<i>Lizard</i>					
Handbag	1,000	58.0	58,000	18	3,223
Document case	500	35.0	17,500	18	973
Wallet	8,000	10.1	80,800	18	4,489
Belt	4,000	4.5	18,000	18	1,000
Total ...	13,500		174,300		9,685
<i>Snake</i>					
Handbag	750	58.0	43,500	111	392
Wallet	2,000	10.1	20,200	111	182
Belt	2,950	4.5	13,275	111	120
Total ...	5,700		76,975		694

Table 4
REPTILE SKIN COSTS

	<i>Skin per piece (dm²)</i>	<i>Cost per dm² (\$)</i>	<i>Cost per piece (\$)</i>	<i>Number of pieces</i>	<i>Total (\$)</i>
<i>Handbag</i>					
Crocodile	58.0	1.10	63.80	4,000	255,200.00
Lizard	58.0	0.43	24.94	1,000	24,940.00
Snake	58.0	0.35	20.30	750	15,225.00
Subtotal ...				5,750	295,365.00
<i>Document case</i>					
Crocodile	35.0	1.10	38.50	200	7,700.00
Lizard	35.0	0.43	15.05	500	7,525.00
Subtotal ...				700	15,225.00
<i>Wallet</i>					
Crocodile	10.1	1.10	11.11	10,000	111,100.00
Lizard	10.1	0.43	4.343	8,000	34,744.00
Snake	10.1	0.35	3.535	2,000	7,070.00
Subtotal ...				20,000	152,914.00
<i>Belt</i>					
Crocodile	4.5	1.10	4.95	8,000	39,600.00
Lizard	4.5	0.43	1.935	4,000	7,740.00
Snake	4.5	0.35	1.575	2,950	4,646.25
Subtotal ...				14,950	51,986.25
Total				41,400	515,490.25

All accessories and findings (frames, zippers, buckles, thread, wax, etc.) will have to be imported. The costs and quantities of many of these findings (e. g. the amount of thread or wax used in the manufacture of a belt) are too minute to be worth itemizing. However, the total costs of accessories and findings for each of the articles discussed in this study have been computed as follows: handbag, \$ 4.49; document case, \$ 2.68; wallet, \$ 0.44; belt, \$ 0.19. Table 5 gives the total cost of accessories and findings for the entire production.

Table 5
COST OF ACCESSORIES AND FINDINGS

	<i>Cost per piece (\$)</i>	<i>Number of pieces</i>	<i>Total cost (\$)</i>
Handbag	4.49	5,750	25,817.50
Document case	2.68	700	1,876.00
Wallet	0.44	20,000	8,800.00
Belt	0.19	14,950	2,840.50
Total ...			39,334.00

The personnel and salary requirements were given in table 2: table 6 shows the labour costs (including direct and indirect labour) per article and for the entire production. Table 7 shows the total production costs per article and table 8 balances production costs against selling prices, showing the profit that may be expected per piece, per category, and for the entire production.

Table 6
LABOUR COSTS

	<i>Man-hours per piece</i>	<i>Labour cost per man-hour^a (\$)</i>	<i>Labour cost per piece (\$)</i>	<i>Number of pieces</i>	<i>Total labour costs (\$)</i>
Handbag	10.0	0.52	5.20	5,750	29,900
Document case	2.0	0.52	1.04	700	728
Wallet	1.5	0.52	0.78	20,000	15,600
Belt	2.0	0.52	1.04	14,950	15,548
Total ...					61,776

^a Labour costs include both direct (\$ 0.39/man-hour) and indirect labour (\$ 0.13/man-hour).

Table 7
PRODUCTION COSTS PER ARTICLE
(Dollars)

	<i>Cost of materials</i>			<i>Labour costs</i>	<i>Interest on capital^a</i>	<i>Total cost of production</i>
	<i>Skin</i>	<i>Accessories and findings</i>	<i>Total</i>			
Handbag						
Crocodile	63.80	4.49	68.29	5.20	8.20	81.69
Lizard	24.94	4.49	29.43	5.20	3.53	38.16
Snake	20.30	4.49	24.79	5.20	2.98	32.97
Document case						
Crocodile	38.50	2.68	41.18	1.04	4.94	47.16
Lizard	15.05	2.68	17.73	1.04	2.12	20.89
Wallet						
Crocodile	11.11	0.44	11.55	0.78	1.38	13.71
Lizard	4.34	0.44	4.78	0.78	0.57	6.13
Snake	3.54	0.44	3.98	0.78	0.47	5.23
Belt						
Crocodile	4.95	0.19	5.14	1.04	0.61	6.79
Lizard	1.94	0.19	2.13	1.04	0.25	3.42
Snake	1.58	0.19	1.77	1.04	0.20	3.01

^a Twelve per cent of cost of materials, the total of which amounts to approximately 15 per cent of invested working capital.

Table 8
PRODUCTION COSTS VERSUS PROJECTED SALES PROCEEDS

	Cost of production			Proceeds from sales			Profit over cost	
	Number of pieces	Production cost per piece (\$)	Total cost of production (\$)	Selling price per piece (\$)	Total sales proceeds (\$)	Profit over cost per piece (\$)	Total profit over cost (\$)	Profit over cost (%)
Handbag								
Crocodile	4,000	81.69	326,760.00	95.00	380,000.00	13.31	53,240.00	16.3
Lizard	1,000	38.16	38,160.00	45.00	45,000.00	6.84	6,840.00	17.9
Snake	750	32.97	24,727.50	35.00	26,250.00	2.03	1,522.50	6.2
Subtotal	5,750		389,647.50		451,250.00		61,602.50	
Document case								
Crocodile	200	47.16	9,432.00	55.00	11,000.00	7.84	1,568.00	16.7
Lizard	500	20.89	10,445.00	25.00	12,500.00	4.11	2,055.00	19.7
Subtotal	700		19,877.00		23,500.00		3,623.00	
Wallet								
Crocodile	10,000	13.71	137,100.00	15.00	150,000.00	1.29	12,900.00	9.4
Lizard	8,000	6.13	49,040.00	7.00	56,000.00	0.87	6,960.00	14.2
Snake	2,000	5.23	10,460.00	5.50	11,000.00	0.27	540.00	5.2
Subtotal	20,000		196,600.00		217,000.00		20,400.00	
Belt								
Crocodile	8,000	6.79	54,320.00	7.00	56,000.00	0.21	1,680.00	3.1
Lizard	4,000	3.42	13,680.00	3.75	15,000.00	0.33	1,320.00	9.6
Snake	2,950	3.01	8,879.50	3.10	9,145.00	0.09	265.50	3.0
Subtotal	14,950		76,879.50		80,145.00		3,265.50	
Total	41,400		683,004.00		771,895.00		88,891.00	13.01

Table 9 gives an estimate of the initial capital required. Table 10 gives the overhead expenses for a year, and table 11 the working capital required.

Table 9
INITIAL CAPITAL REQUIRED
(Dollars)

Machinery and tools		5,269.20
Furniture		12,090.00
Office equipment		
Desks (8)	880.00	
Chairs (16)	240.00	
Typewriters (2)	340.00	
Adding machine	140.00	1,600.00
		<u>18,959.20</u>
Stock of material for one month's production (\$ 554,824.25/12)		46,235.35
Goods in production for half a month (\$ 46,235.35/2)	23,117.68	
Wages for half a month		
Direct labour	1,925.00	
Indirect labour	615.00	25,657.68
Stock of finished goods (half a month's production)		25,657.68
Total ...		<u>116,509.91</u>

Table 10
OVERHEAD EXPENSES PER YEAR
(Dollars)

Rent (\$ 1.50/m ² per month)	16,200.00
Depreciation	
Machines and tools, 10%	526.92
Furniture, 5%	604.50
Office equipment, 5%	80.00
Wages	
Direct labour	46,200.00
Indirect labour	14,760.00
Electricity	1,380.00
Miscellaneous expenses	1,248.58
Total ...	<u>81,000.00</u>

Table 11
WORKING CAPITAL REQUIRED
(Dollars)

Initial capital funds	116,509.91
Overhead expenses for half a year	40,500.00
Material required for half a year's production	277,412.13
Total	<u>434,422.04</u>

EXPANDING PRODUCTION

Expansion of production can be considered when sales of the entire volume of goods and regular supplies of raw materials are guaranteed. By this time, the factory will have been in operation for several years and a supply of raw materials for four months' production will be sufficient. The tables that follow show the requirements for an operation of almost double the original production and the profitability of such a venture. Figures are those of June/July 1970 in a developing country in South-East Asia. Since then, the cost of labour and other costs have risen, but the costs of raw materials have fallen.

Table 12 shows the additional furniture, machinery and tools needed and table 13 shows the total personnel requirements. The new production targets are given in table 14. Tables 15 and 16 show the quantities of reptile skins needed, and their costs, for the expanded production. The new costs for accessories and findings are given in table 17 and table 18 gives the labour costs, per piece and for total output. Table 19 gives production cost per piece, and table 20 balances the new production costs against the projected sales and profits. Tables 21, 22, and 23 respectively, show the additional capital funds required; the overhead expenses; and the working capital required for the expanded production.

The organizational structure should not be changed immediately. After a few months, however, 12 of the best workers in the assembling department should be promoted to assistant foremen (one at each working table). One of these assistants should be seated at each working table, facing the foreman, as shown in figure 6, the revised floor plan of the production area.

Table 12

ADDITIONAL REQUIREMENTS WITH RESPECT TO FURNITURE, MACHINES AND TOOLS

	Cost per item (\$)	Number of items	Total cost (\$)
<i>Cutting department</i>			
Furniture			
Cutting bench (H)	50.00	4	200.00
Cutting board (0.9 m x 0.45 m)	55.00	4	220.00
Wooden horse	10.00	4	40.00
Wooden box	5.00	8	40.00
			500.00
Tools			
Upper cutting knife	0.80	4	3.20
Grinding stone	0.40	4	1.60
Awl	0.70	4	2.80
Iron ruler (50 cm)	1.10	4	4.40
			12.00
<i>Stitching department</i>			
Furniture			
Chair	15.00	8	120.00
Machines and tools			
Skiving machine (J)	425.00	1	425.00
Sewing machine (single-needle flat-bed)	300.00	1	300.00
Sewing machine (single-needle cylinder-bed)	530.00	5	2,650.00
Cutting knife	0.80	8	6.40
Pair of scissors	1.60	6	9.60
Grinding stone	0.40	1	0.40
			3,391.40
<i>Assembling department</i>			
Furniture			
Working table (N)	100.00	4	400.00
Chair	15.00	36	540.00
Trolley	200.00	10	2,000.00
			2,940.00
Machines and tools			
Frame attaching device	165.00	2	330.00
Awl	0.70	43	30.10
Cutting knife	0.80	43	34.40
Pair of scissors	1.60	18	28.80
Edge-polishing irons	0.90	12	10.80
Folding bones	1.50	43	64.50
Compass	1.00	12	12.00
Set of punchers	50.00	1	50.00
Iron ruler (50 cm)	1.10	18	19.80
Hammer	1.50	43	64.50
Set of frame-fastening tongs	18.00	1	18.00
Electric cooker	8.00	10	80.00
Pot (for rubber cement)	1.00	5	5.00
Brush	0.70	18	12.60
Stone plate (50 cm x 25 cm x 5 cm)	20.00	20	400.00
			1,160.50

Table 12 (continued)

	Cost per item (\$)	Number of items	Total cost (\$)
<i>Sample-making department</i>			
<i>Tools</i>			
Awl	0.70	1	0.70
Skiving knife	1.10	1	1.10
Pair of scissors	1.60	1	1.60
Folding bone	1.50	1	1.50
Compass	1.00	1	1.00
Iron ruler (50 cm)	1.10	1	1.10
Hammer	1.50	1	1.50
			8.50

Summary of estimated costs for additional furniture, machinery and tools
(Dollars)

Department	Furniture	Machinery and tools	Total additional equipment
Sample-making	—	8.50	—
Material storage	—	—	—
Cutting	500.00	12.00	512.00
Stitching	120.00	3,391.40	3,511.40
Cardboard	—	—	—
Assembling	2,950.00	1,160.50	4,110.50
Finished goods storage	—	—	—
Shipping	—	—	—
	3,570.00	4,572.40	8,133.90

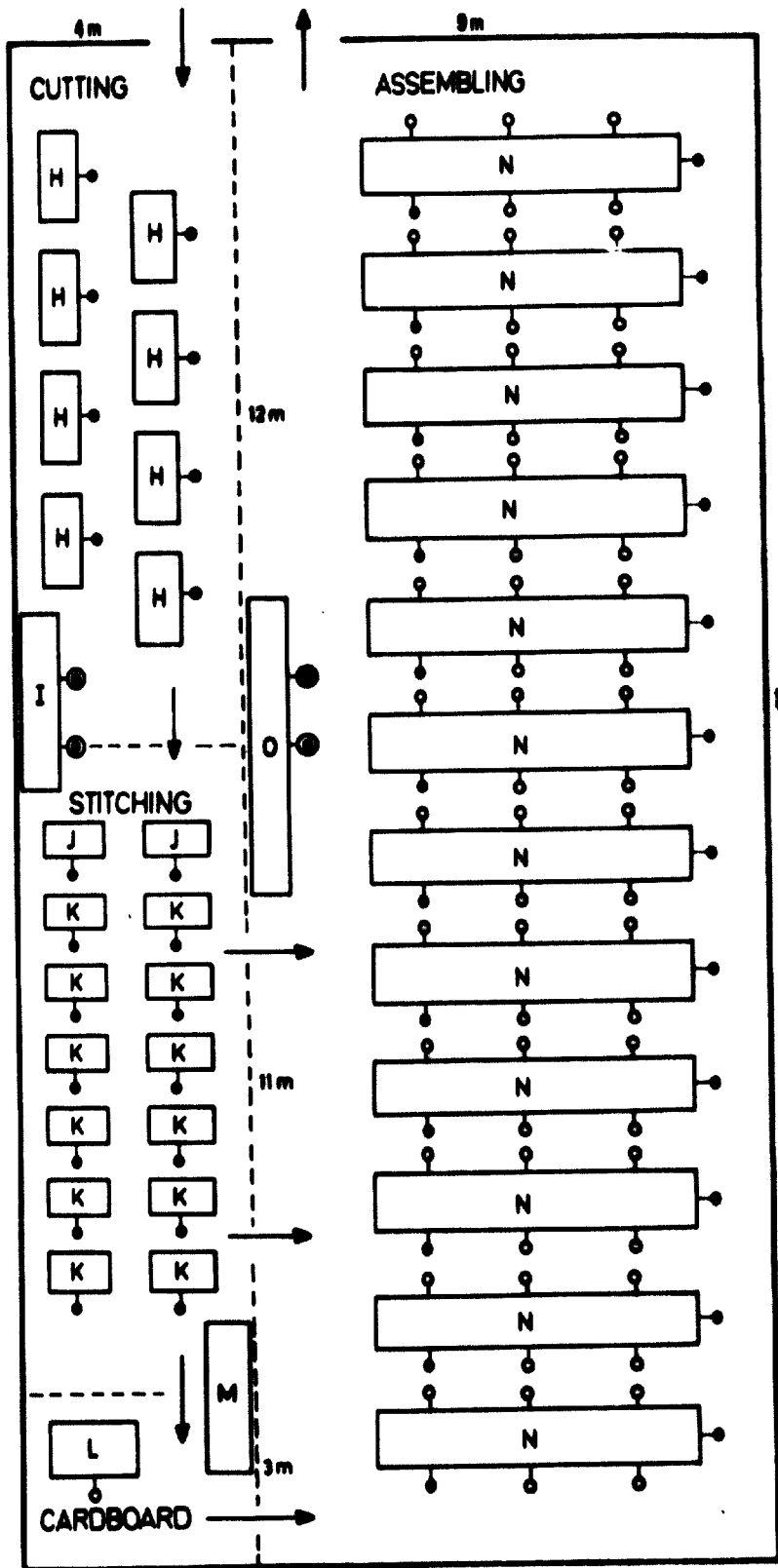
Note: For key to letters in parentheses, see figure 2, page 11.

Table 13

TOTAL PERSONNEL AND SALARY REQUIREMENTS FOR THE EXPANDED PRODUCTION

Department	Annual salary per highly skilled worker		Annual salary or wages per skilled worker		Annual wages per unskilled worker		Total personnel	Total salaries and wages (\$)
	Highly skilled	(\$)	Skilled	(\$)	Unskilled	(\$)		
<i>Direct labour</i>								
Material storage			1	1,200			1	1,200
Cutting	1 ^a	2,220	8	1,200			9	11,820
Stitching	1 ^a	2,220	14	1,020			15	16,500
Cardboard					1	420	1	420
Assembling ...	2 ^a	2,220	12	1,200	72	420	86	49,080
Finished goods storage			1	1,200	1	420	2	1,620
Shipping			1	1,020	1	420	2	1,440
Transport					2	420	2	840
Sample-making	1	2,400	1	1,200	1	420	3	4,020
							121	86,940

Figure 6
Layout of the production units for expanded production



Note: For key to symbols see figure 2, page 11.

Table 13 (continued)

	Annual salary per highly skilled worker		Annual salary or wages per skilled worker		Annual wages per unskilled worker		Total personnel	Total salaries and wages (£)
	Highly skilled	(£)	Skilled	(£)	Unskilled	(£)		
<i>Indirect labour</i>								
Manager	1	6,000					1	6,000
Technical manager	1	4,800					1	4,800
Accountant	1	4,200					1	4,200
Cashier			1	1,440			1	1,440
Purchasing officer			1	1,440			1	1,440
Selling officer ...			1	2,520			1	2,520
Typist			1	960			1	960
Cleaner					2	360	2	720
							9	22,080
Total							130	109,020

a Foreman.

Table 14

PROPOSED PRODUCTION FOR THE FIRST YEAR OF EXPANDED PRODUCTION

	Crocodile	Lizard	Snake	Total
Handbag	8,000	2,000	1,500	11,500
Document case	400	1,000	—	1,400
Wallet	20,000	16,000	4,000	40,000
Belt	16,000	8,000	4,800	28,800
Total	44,400	27,000	10,300	81,700

Table 15

REPTILE SKIN REQUIREMENTS — EXPANDED PRODUCTION

	No. of pieces	Skin per piece (dm ²)	Total skin area (dm ²)	Average size of skin (dm ²)	No. of skins required
<i>Crocodile</i>					
Handbag	8,000	58.0	464,000	65	7,138
Document case	400	35.0	14,000	65	215
Wallet	20,000	10.1	202,000	65	3,108
Belt	16,000	4.5	72,000	65	1,108
Total	44,400		752,000	65	11,569
<i>Lizard</i>					
Handbag	2,000	58.0	116,000	18	6,445
Document case	1,000	55.0	35,000	18	1,945
Wallet	16,000	10.1	161,600	18	8,977
Belt	8,000	4.5	36,000	18	2,000
Total	27,000		348,600	18	19,367

Table 15 (continued)

	No. of pieces	Skins per piece (dm ²)	Total skin area (dm ²)	Average size of skin (dm ²)	No. of skins required
<i>Snake</i>					
Handbag	1,500	58.0	87,000	111	783
Wallet	4,000	10.1	40,400	111	364
Belt	4,800	4.5	21,600	111	195
Total	10,300		149,000	111	1,342

Table 16
REPTILE SKIN COSTS — EXPANDED PRODUCTION

	Skin per piece (dm ²)	Cost per dm ² (\$)	Cost per piece (\$)	Number of pieces	Total skin cost (\$)
<i>Handbag</i>					
Crocodile	58.0	1.10	63.80	8,000	510,400
Lizard	58.0	0.43	24.94	2,000	49,880
Snake	58.0	0.35	20.30	1,500	30,450
Subtotal				11,500	590,730
<i>Document case</i>					
Crocodile	35.0	1.10	38.50	400	15,400
Lizard	35.0	0.43	15.05	1,000	15,050
Subtotal				1,400	30,450
<i>Wallet</i>					
Crocodile	10.1	1.10	11.11	20,000	222,200
Lizard	10.1	0.43	4.343	16,000	69,488
Snake	10.1	0.35	3.535	4,000	14,140
Subtotal				40,000	305,828
<i>Belt</i>					
Crocodile	4.5	1.10	4.95	16,000	79,200
Lizard	4.5	0.43	1.935	8,000	15,480
Snake	4.5	0.35	1.575	4,800	7,560
Subtotal				28,800	102,240
Total				81,700	1,029,248

Table 17
COST OF ACCESSORIES AND FINDINGS — EXPANDED PRODUCTION

	<i>Cost per piece (\$)</i>	<i>Number of pieces</i>	<i>Total cost (\$)</i>
Handbag	4.49	11,500	51,635
Document case	2.68	1,400	3,752
Wallet	0.44	40,000	17,600
Belt	0.19	28,800	5,472
Total			<u>78,459</u>

Table 18
LABOUR COSTS—EXPANDED PRODUCTION

	<i>Man-hours per piece</i>	<i>Labour cost per man-hour^a (\$)</i>	<i>Labour cost per piece (\$)</i>	<i>Number of pieces</i>	<i>Total labour costs (\$)</i>
Handbag	10.0	0.47	4.70	11,500	54,050
Document case	2.0	0.47	0.94	1,400	1,316
Wallet	1.5	0.47	0.70	40,000	28,000
Belt	2.0	0.47	0.94	28,800	27,072
Total					<u>110,438</u>

^a Labour costs include both direct (\$0.37/man-hour) and indirect labour (\$0.10/man-hour).

Table 19
PRODUCTION COSTS PER ARTICLE
(Dollars)

	<i>Cost of materials</i>			<i>Labour costs</i>	<i>Interest on capital</i>	<i>Total cost of production</i>
	<i>Shin</i>	<i>Accessories and findings</i>	<i>Total</i>			
Handbag						
Crocodile	63.80	4.49	68.29	4.70	8.19	81.18
Lizard	24.92	4.49	29.41	4.70	3.53	37.64
Snake	20.30	4.49	24.79	4.70	2.97	32.46
Document case						
Crocodile	38.50	2.68	41.18	0.94	4.94	47.06
Lizard	15.05	2.68	17.73	0.94	2.12	20.79
Wallet						
Crocodile	11.11	0.44	11.55	0.70	1.38	13.63
Lizard	4.34	0.44	4.78	0.70	0.57	6.05
Snake	3.54	0.44	3.98	0.70	0.48	5.16
Belt						
Crocodile	4.95	0.19	5.14	0.94	0.61	6.69
Lizard	1.94	0.19	2.13	0.94	0.25	3.32
Snake	1.58	0.19	1.77	0.94	0.21	2.92

Table 20
PRODUCTION COSTS VERSUS PROJECTED SALES PROCEEDS

	Number of pieces to be produced	Cost of production		Proceeds from sales		Profit over cost		
		Production cost per piece (\$)	Total cost of production (\$)	Selling price (per piece) (\$)	Total sales proceeds (\$)	Profit over cost (per piece) (\$)	Total profit over cost (\$)	Profit over cost (%)
Handbag								
Crocodile	8,000	81.18	649,440	95.00	760,000.00	13.82	110,560	17.0
Lizard	2,000	37.67	75,340	45.00	90,000.00	7.33	14,660	19.5
Snake	1,500	32.46	48,690	35.00	52,500.00	2.54	3,810	7.8
Subtotal	11,500		773,470		902,500.00		129,030	16.7
Document case								
Crocodile	400	47.06	18,824	55.00	22,000.00	7.94	3,176	16.9
Lizard	1,000	20.79	20,790	25.00	25,000.00	4.21	4,210	20.3
Subtotal	1,400		39,614		47,000.00		7,386	18.6
Wallet								
Crocodile	20,000	13.63	272,600	15.00	300,000.00	1.37	27,400	10.0
Lizard	16,000	6.05	96,800	7.00	112,000.00	0.95	15,200	15.7
Snake	4,000	5.16	20,640	5.50	22,000.00	0.34	1,360	6.5
Subtotal	40,000		390,040		434,000.00		43,960	11.3
Belt								
Crocodile	16,000	6.69	107,040	7.00	112,000.00	0.31	4,960	4.6
Lizard	8,000	3.32	26,560	3.75	30,000.00	0.43	3,440	12.9
Snake	4,800	2.92	14,016	3.10	14,880.00	0.18	864	6.2
Subtotal	28,800		147,616		156,880.00		9,264	6.3
Total	81,700		1,350,740		1,540,380.00		189,640	14.0

Table 21
ADDITIONAL CAPITAL FUNDS REQUIRED
(Dollars)

Machinery and tools		4,572.40
Furniture		3,570.00
Office equipment:		
Desks (2)	220.00	
Chairs (4)	60.00	280.00
		<u>8,422.40</u>

Table 22
OVERHEAD EXPENSES PER YEAR
(Dollars)

Rent (\$ 1.50/m ² per month)		16,200.00
Depreciation		
Machinery and tools, 10 per cent		
Old	526.92	
New	<u>457.24</u>	984.16
Furniture, 5 per cent		
Old	604.50	
New	<u>178.50</u>	783.00
Office equipment, 5 per cent		
Old	80.00	
New	<u>14.00</u>	94.00
Wages		86,940.00
Salaries		22,080.00
Electricity		2,760.00
Miscellaneous expenses		1,158.84
Total		<u>131,000.00</u>

Table 23
WORKING CAPITAL REQUIRED
(Dollars)

Initial capital funds (old machinery, tools, furniture and office equipment)		18,959.20
Additional new equipment		8,422.40
Overhead expenses for half a year		65,500.00
Material required for 4 months' production .		369,235.67
Goods in production for half a month (\$ 369,235.67/8)	46,154.46	
Wages for half a month		
Direct labour	3,622.50	
Indirect labour	<u>920.00</u>	50,696.96
Stock of finished goods for half a month's production		50,696.96
Total		<u>563,511.19</u>

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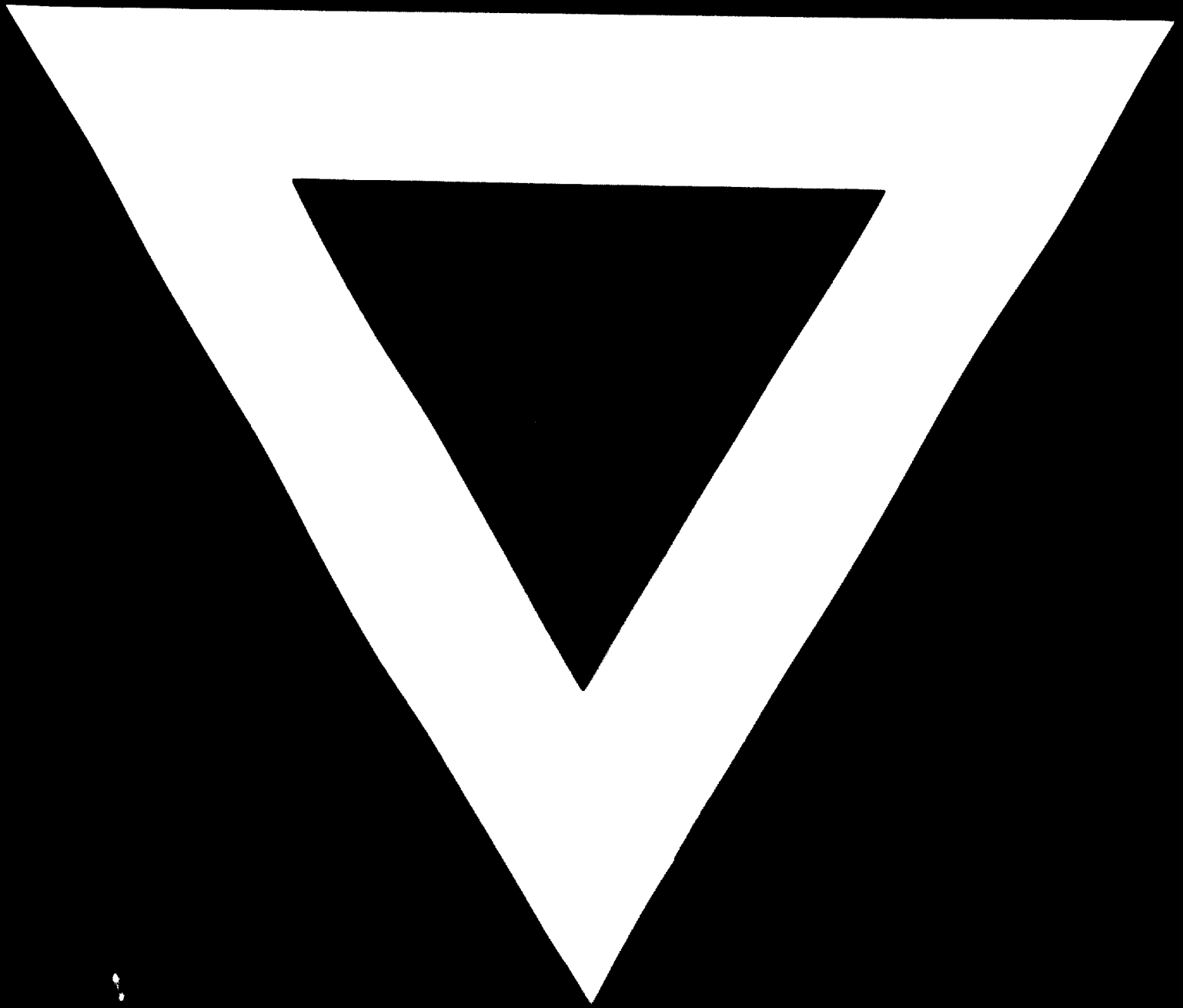
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