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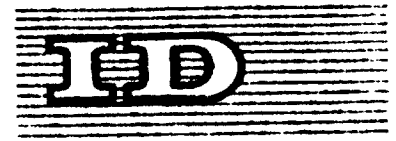
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manufacturing in developing countries

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LEATHER GOODS PRODUCTION AND PRODUCTION
PLANNING IN SMALL OR LARGE UNITS ^{1/}

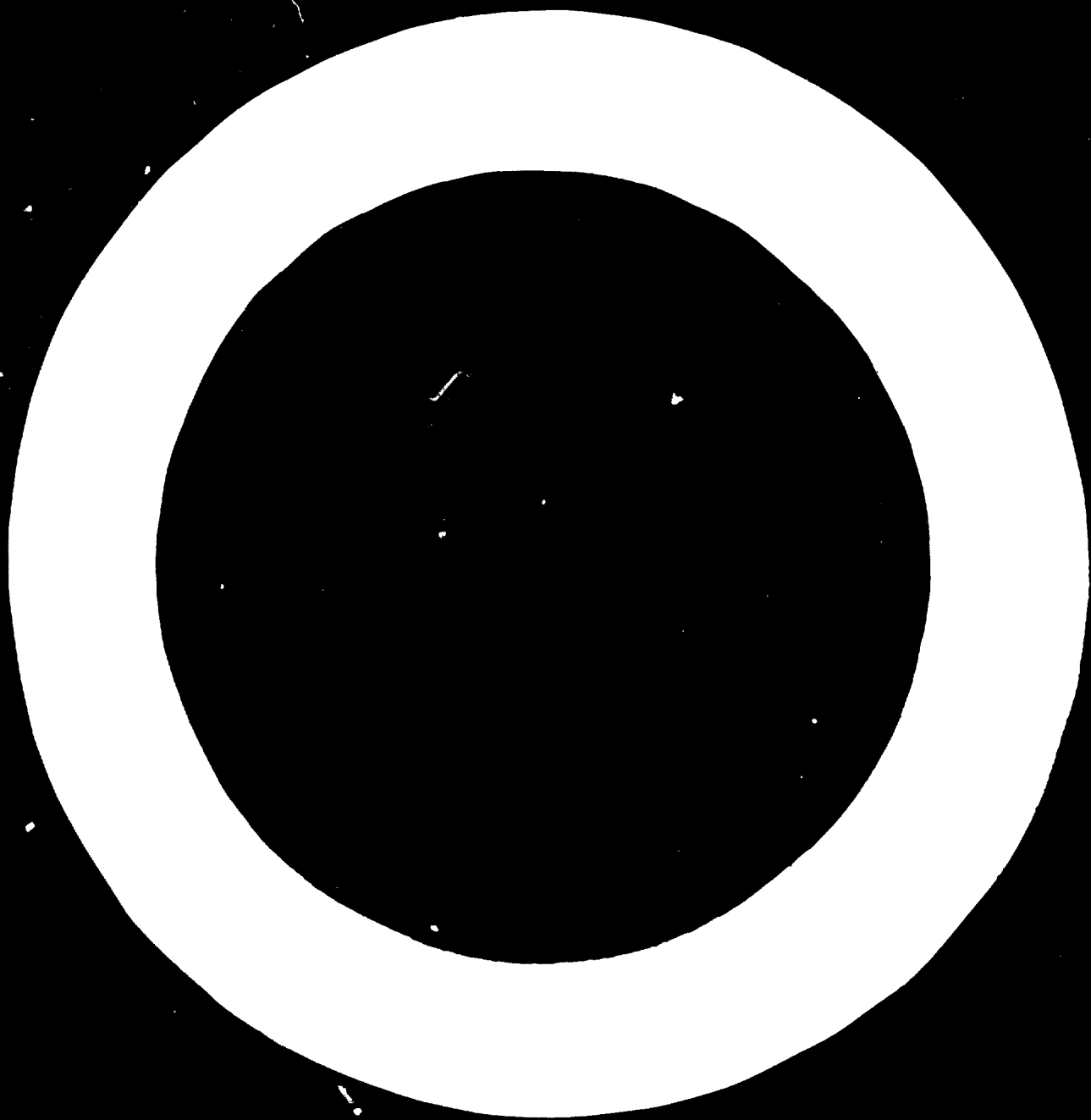
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I n t r o d u c t i o n

Production of leather, leather footwear and leather goods has been carried on since ancient times.

Nearly in all developing countries raw hides and raw skins are available in large quantities. From year to year a stronger trend is felt to terminate the export of raw materials and to increase the export of half finished products and especially finished (final) products.

The trend goes in the export business from raw hides and raw skins over semi processed (not finished) leather (wet blue - crust) and finished leather to footwear and leather goods.

Leather goods are a typical labour intensive industry especially attractive for developing countries. Many developing countries are already on such a way and some can show also results in exporting semi processed leather and also leather and footwear.

Leather goods are however exported only in small quantities. In most developing countries leather goods are produced in small shops in the old traditional way of the country and sold mainly on the local market to tourists.

On the world market is a rising demand for leather goods made of "genuine leather". For the production only a few machines are required and the capital requirements are relatively small.

The finished goods however represent a range of easily salable articles that may first be sold locally to tourists and afterwards exported.

Leather goods - basic informations

The term "leather goods" embraces a wide range of articles (Figure 1 - page 3). It has however to be emphasized that it is impossible to list all the various articles which are today produced. The chart sticks to the main groups only.

Before the first world war footwear and leather goods were manufactured only from genuine leather, today however these articles are produced in substantial quantities also from textiles, plastics and artificial leather, or fibre and cardboard.

The production of leather goods may be classified either according to the type of articles produced by the factory (Figure 1 - page 3) or according to the type of material used in the production as:

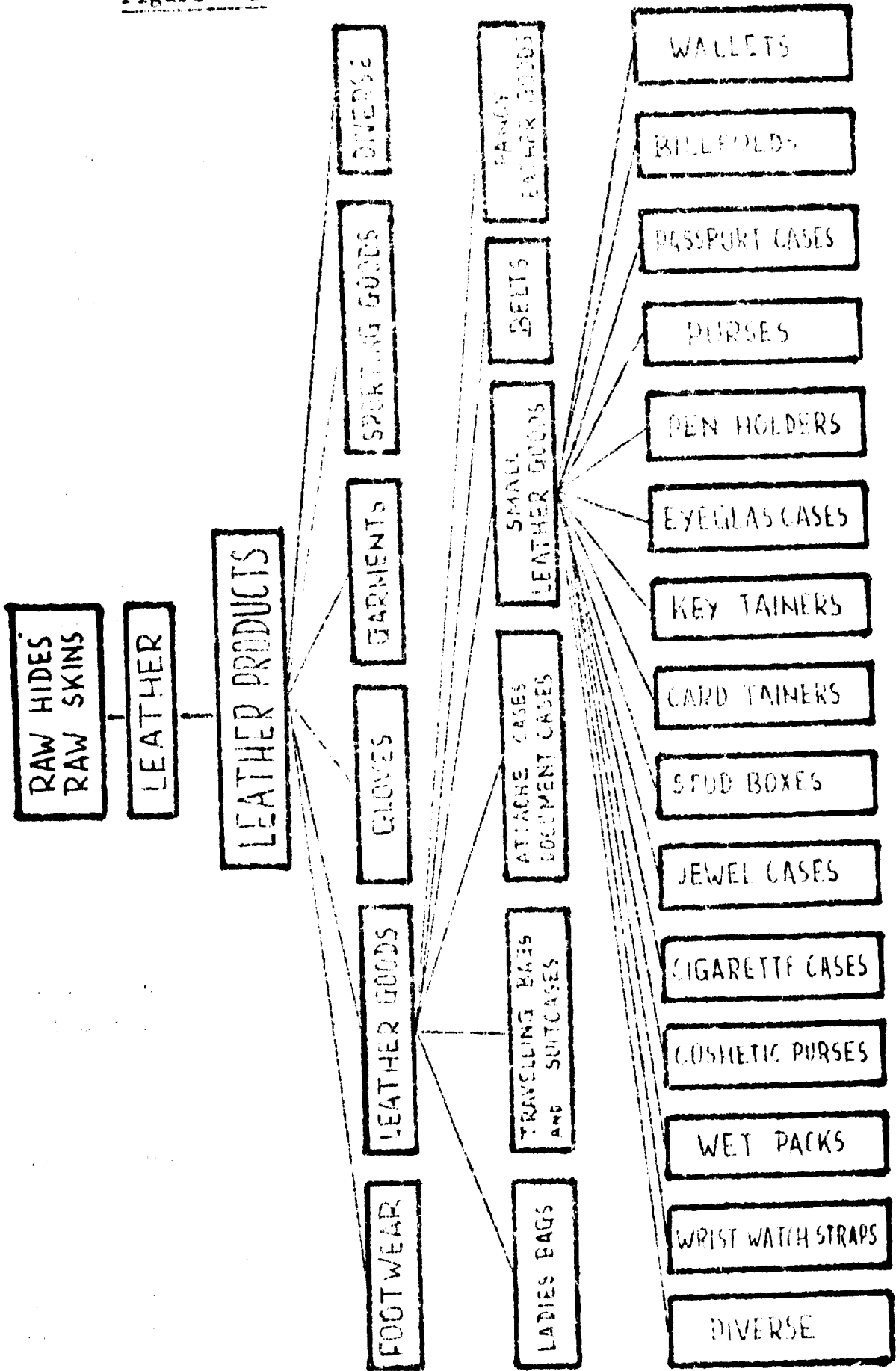
Leather of reptiles (fancy leather goods)
leather
textiles
plastics and artificial leather
fibre and cardboard

The leather required for the production of leather goods has to be tanned according to the requirements of the articles produced. There are however two possibilities: either the tannery follows the requirements and specifications of the leather goods manufacturer (and that is the right way), or the leather goods manufacturer adapts his production to the leather available.

Quite a lot of people classify gloves, leather garments and sporting goods also as leather goods. That is absolutely wrong.

First: the leather required for these three groups of leather products is substantially different from the leather used in the manufacturing process of lea -

Figure 1



ther goods.

second: the production process of these three groups is quite different and

third: the machines used in the production are also different from the machines used in leather goods factories.

In the developed countries leather goods production is quite on its own and never together with shoe production. Technicians and manufacturers of shoes are strongly opposed when asked to start a leather goods production in their factory.

The same opposition exists also from the leather goods technicians who do not want to have their production connected with a shoe factory.

In the developing countries however just that, namely a combined production of footwear and leather goods is wanted and considering the special situation, it is correct.

The manufacturing process of leather goods.

The flow chart for a leather goods factory (figure 2 - page 5) shows how the manufacturing process runs, the schematic flow chart (figure 3 - page 6) shows also the time in process.

Material storage: All incoming material is stocked here. The storage room should be divided into sections for different materials as leather, linings, findings (threads, glues, foam plastic, cardboard etc) and accessories.

Sample making: In this department new styles are created and cutting patterns prepared.

Cutting: Cutting is done by hand using hard cardboard patterns metal bound. For large quantities dies are used either to be used on a clicking machine or by hand (handle-hammer).

Figure 2

FLOW CHART FOR LEATHER GOODS FACTORY

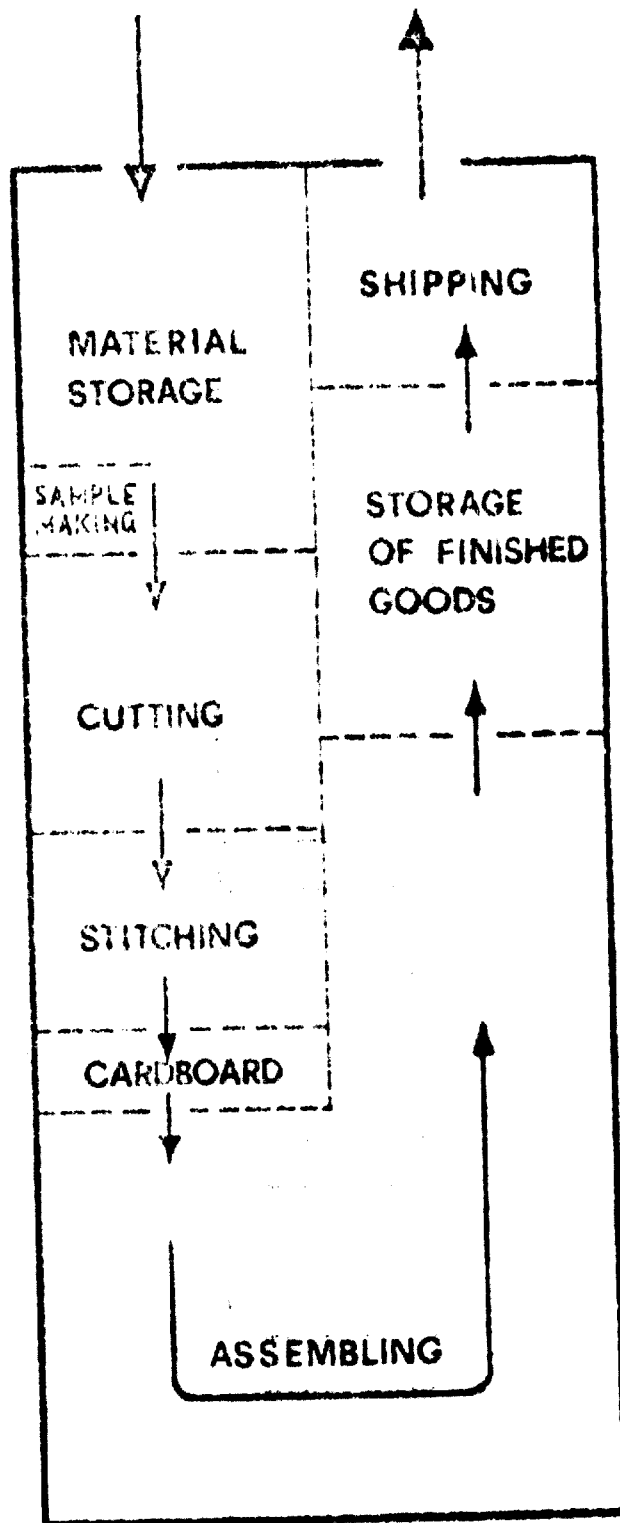
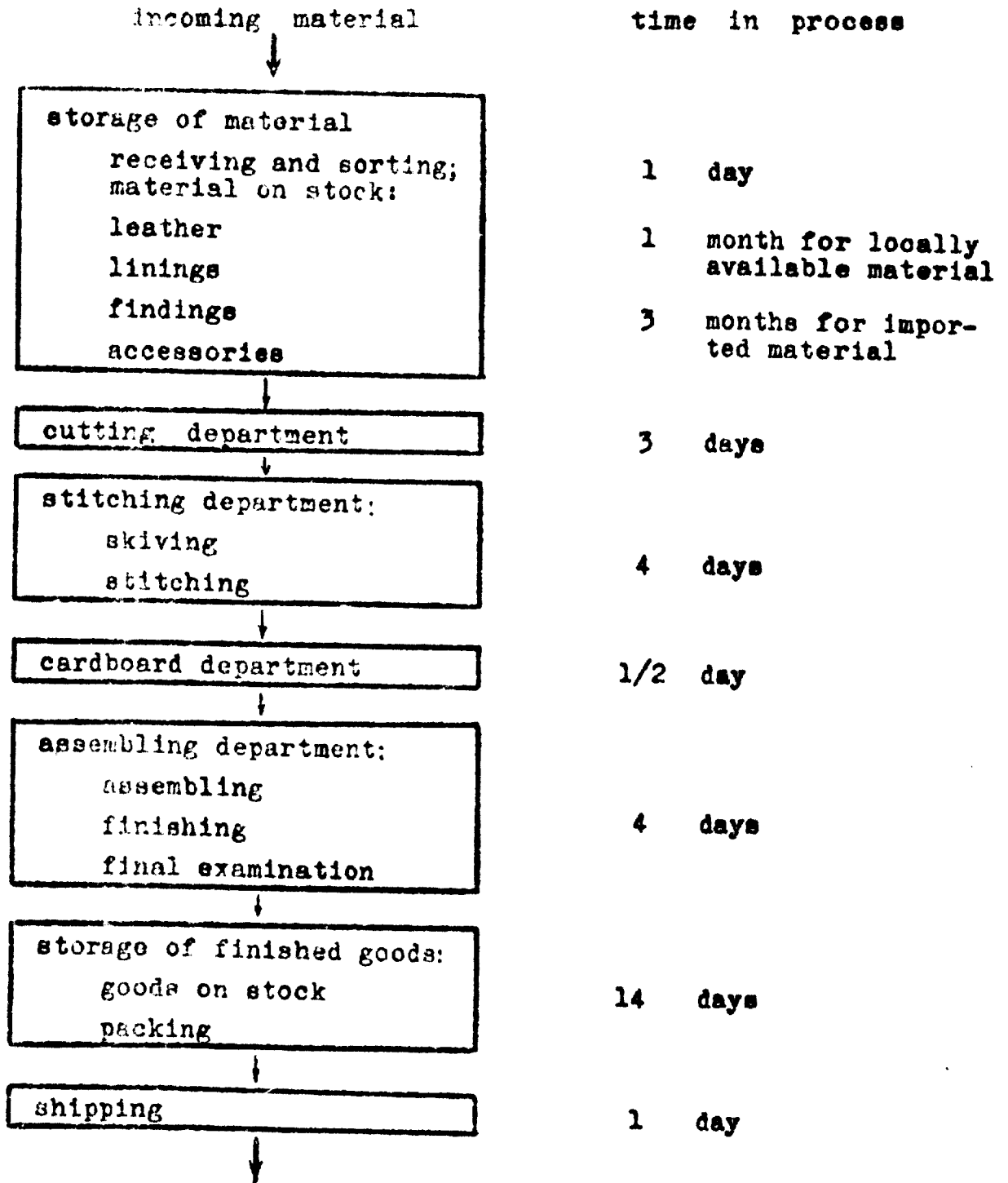


Figure 3

Schematic flow chart of a leather goods production



Stitching: The cut parts are skived and sewn together. Here also the linings are glued on, linings applied and accessories fitted.

Cardboard: A hand operated guillotine is used to cut paper and cardboard to sizes required.

Assembling: One of the many operations carried out in this department is folding and turning over. Also various parts of one article are put together and remaining accessories such as locks and handles fitted. Here also the article receives the final polishing or cleaning and is inspected.

Finished goods storage: The storage department receives the finished goods from the assembling room and packs them individually. Space in this department should be sufficient to allow proper storage and easy access to every group of articles.

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

A new leather goods production will be established either in a room in a shoe factory or if quite an independent production is planned in a building in the industrial estates. It is also possible that some old already existing empty buildings have to be used.

Exact sizes for the floor areas can be seen in the lay-out of the production units (in the annex) or for the beginning in the lay-out of the production for the training centre.

Practical experience shows that the floor areas of the production departments and storages of a leather goods factory should be in the following proportions:

Material storage	14 %
sample making	4 %
cutting	11 %
stitching	7 %
cardboard	3 %
assembling	40 %
storage of finished goods	14 %
shipping	7 %
	<u>100 %</u>

How and when to start leather goods production

Before any steps are taken to establish a new leather goods factory an investigation should be undertaken to find out whether:

reliable market data on the locally sold leather goods are available;

demand for leather goods is greater than supply;

it will be possible to sell quantities of leather goods that the new factory will produce.

Such an investigation an expert should be able to complete in one month.

Only if the results of this investigation are positive the establishment of the new leather goods factory should be taken into consideration.

In most developing countries substantial quantities of raw hides and raw skins are available. Many of these countries have already started processing the raw hides and skins into leather, and also leather into final products, shoes.

Leather goods are also produced in developing countries but mainly in small production units on the level of small scale industries.

Contrary to the rule valid for developed countries, namely that footwear and leather goods should not be produced in the same factory, for the developing countries it is advisable to establish in the existing shoe factories special departments for the manufacture of leather goods, because:

substantial quantities of scrap leather from the shoe production can be used for making leather goods;

machines not more used in the shoe production can be used in the new leather goods department, some machines without alteration, some machines can be easily adapted;

machines which are never used in the shoe factory to full capacity, can be part time used for the leather goods department (for instance: splitting machine, clicking press etc. - see also annex "Case study - illustration" page 31);

the whole administration, purchasing and selling can be done for the leather goods department by the existing organisation in the shoe factory so lowering overheads;

retraining of workers already employed in the shoe factory is also easier than training new workers who never had any connections with leather.

It would be not correct to start immediately with a large production. The nucleus of the new leather goods production should be about 12 workers.

Small scale production of leather goods was already mentioned. There exist a tendency to regard such small enterprises as rather unimportant. But in many developing countries just these small enterprises are far from being unimportant, in fact they are vital to the economies of these countries.

In this small scale production the new factory for leather goods has a unique opportunity to employ workers all over the country and expand its own production capacities without investing money in new buildings, equipment etc.

Does a developing country want to start an up-to-date leather goods production and there does not yet exist a shoe factory, a training center should be established under the supervision and assistance of a department of the Ministry of Industries (Light Industries Services).

The leather goods producers in the small shops should be convinced to assist in the establishment of such a training center in their own interest.

What kind of articles to chose

In the beginning the production should be limited to such leather goods that can be produced from the material available in the shoe factory (scrap leather) and on the local market.

The most suitable group are small leather goods and belts. Small leather goods can be produced from scrap leather and also the training of workers is easiest by producing small leather goods.

Further this group of leather goods ^{is} easier salable especially to tourists when the articles (as for instance: purses, billfolds, pocketbooks etc) have on the covers embossed symbols of the country. In the annex (figures 11-16 pages 33-36) are some articles suggested. The sketches of these articles show details so that they can be produced already in the second month of the training if there is an expert supervision. All these articles are suitable to be produced either in open edge technique (polished edges), or with turned over edges.

When the workers are already accustomed to the production of small leather goods and show enough skill slowly the range of articles can be extended first to simple document cases with zippers. The following group should be traveling bags, then attache cases and suitcases and the very last group should be ladies bags.

It is important that in the training all these groups of articles are produced so that the workers get experience and skills in producing all the different kinds of leather goods. The main stock of production will however be limited to such articles and article groups that can be immediately sold.

Organisation of production - management

The way to start the leather goods training centre can be quite the same if it is connected with an already existing shoe factory, or if it is intended for improvement of the local small scale leather goods production.

The production and the training shall start with 12 people. One supervisor, two cutters, one stitcher who will work also on the skiving machine and eight assemblers.

The supervisor has to be in charge of supervising the whole department, he has to prepare styles, make cutting patterns and he has to be also in charge of the quality control. It is essential that he is in no way subordinated or responsible to the production manager in the shoe factory, but only to the managing director.

It is also wise to make no differences in salaries and wages between people employed in the shoe factory and people working in the new leather goods department when the training period is completed.

The organisation chart and a lay out of the production for this leather goods department (training centre) is shown on the following page (figure 4 - page 14).

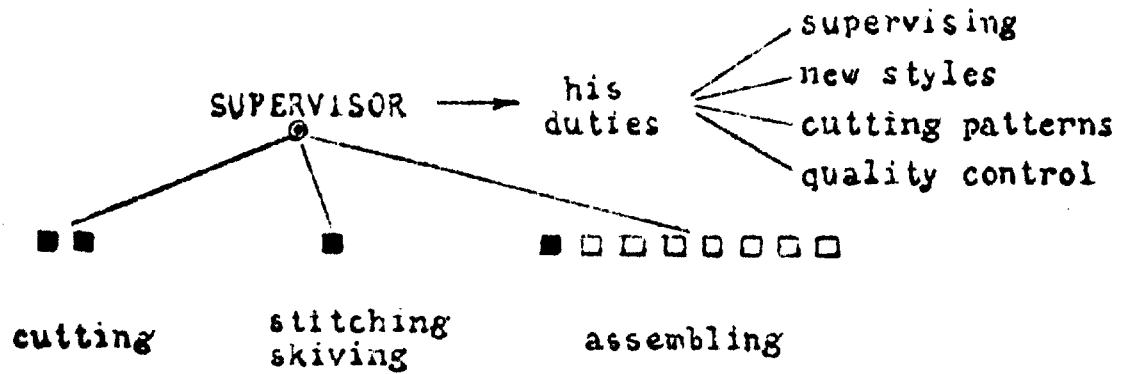
The cutting will be done on special cutting boards put on cutting benches. Two men will be employed here. One girl will work on the skiving and on the stitching machine and eight girls will be occupied along the assembling table. The best one of these girls will be supervising the work here but she is supposed to work along with the other seven girls.

In principle all the 8 assemblers should be trained in all the different techniques of assembling.

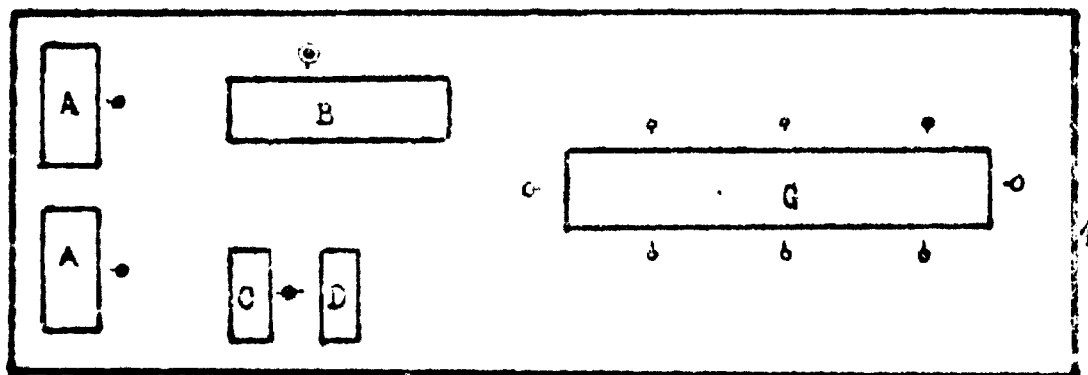
The work along the assembling table should be organised: when large quantities of one article are in production, in a chain, every worker doing only one phase; for small

Figure 4

Organisation chart - production - Training Centre



Layout of the production - Training Centre



- A 2 cutting benches - 2 skilled workers
- B working table - 1 supervisor - highly skilled
- C 1 skiving machine
- D 1 sewing machine - 1 skilled worker
single needle
flat bed
- G working table - 1 skilled and 7 unskilled workers

quantities however every worker should be whole- assembling himself.

Estimated costs of machines, tools and equipment for this training centre are about US \$ 21000.- (prices as quoted in October 1959).

A list of machines and tools for this department is attached in the annex (table 1 page 2).

If this training centre is in a shoe factory the two machines required should be disposed by the shoe factory.

If the training of the people in this new production department is properly started and the workers are eager to learn, such a training could be completed by an expert in the time of six months.

The training has of course to be adapted to local conditions and the abilities of the trainees to master the skills of leather goods production.

Expansion of production can be considered when the sales of the entire production and regular supplies of raw material (mainly leather) are guaranteed.

Considering however only technicalities (in plant training of new hands) in 5 to 6 years the out-put of the factory could be at least ten times higher than in the first year.

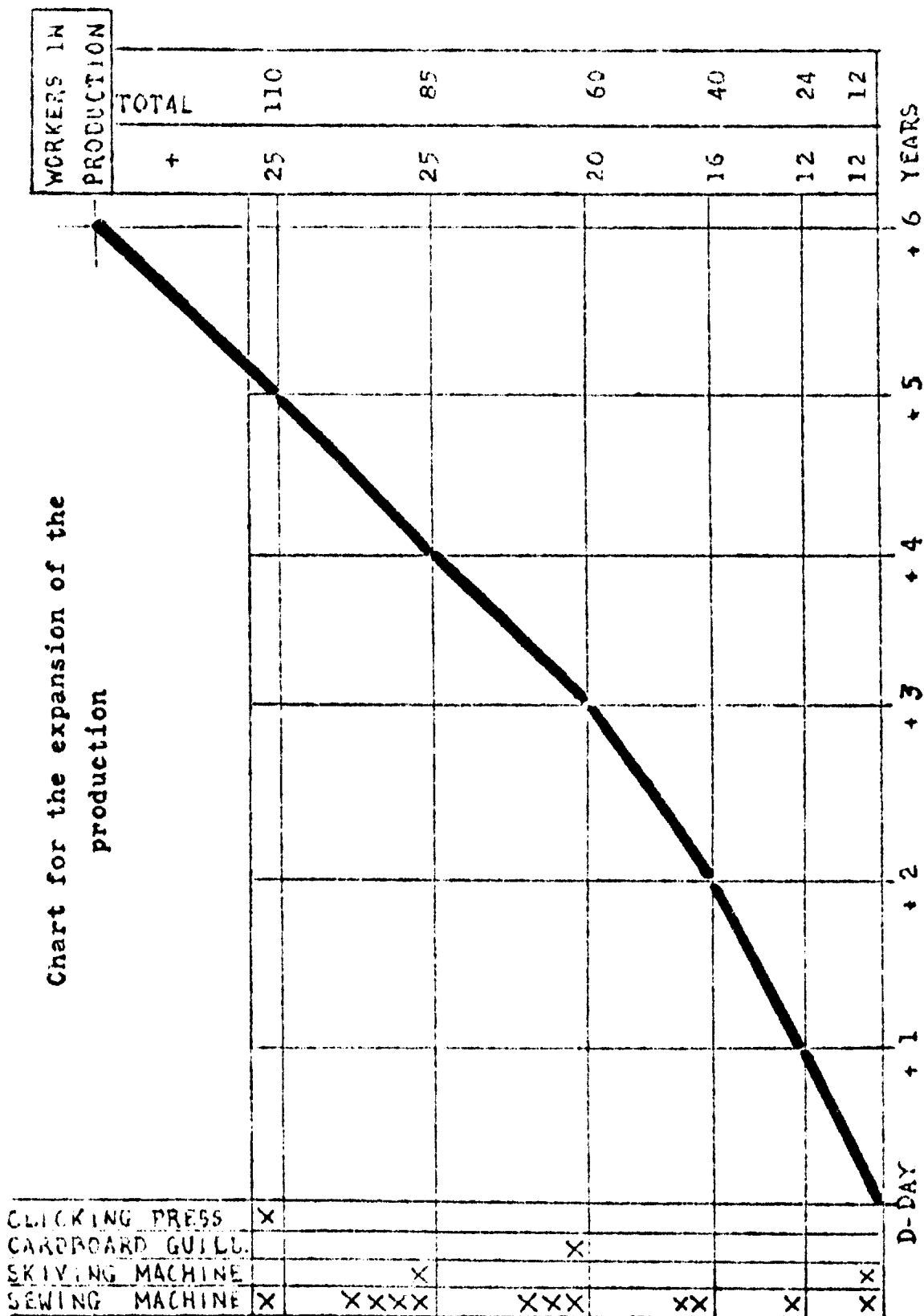
Such an enlarged factory would employ 110 people. The chart for the expansion of the production (figure 5 - page 16) shows in which years the number of workers and for how many workers should be increased and also which machines should be bought in the years of expansion.

The sewing machines should be two single needle flat bed and ten single needle cylinder bed sewing machines.

The clicking press should be bought only when large quantities of certain articles are ordered.

"D" DAY is the day when the training of the first crew (12 people) is successfully completed.

Figure 5



For a production unit may be expected in developing coun-tries the system of assembling an "one work" 5 to 8 workers along an assembling table remains unchanged.

An organisation chart and a layout of a production unit for such an extended production is attached in the annex (see figure 17 and 38, 39 pages).

Are there no possibilities or no intentions to enlarge the production of the training centre and in the country are small shops producing leather goods the training centre can start a co-operation on the following basis:

Small scale leather goods producers receive from the centre pre-cut parts for stitching and assembling as home work.

That is possible if the small entrepreneurs agree to be for a short time trained in the training centre.

The small shops have its own peculiar structure quite different from large enterprises. The workers in such small shops have however an intimate practical understanding of the material they use as a result of the long years of on-the-job training where many of them have spent all their time since boyhood. Of course this knowledge lacks often the proper technical foundation.

The leather goods training centre in the shoe factory has to be organised as a model production unit providing re-training facilities for the small shop owners. In-plant-training is the best way to show and convince the new co-operators how useful the new production techniques will be.

Lack of interest must be expected and has to be overcome - the best way being proving the advantages of constant employment and higher profits.

Should a developing country want to improve and enlarge the existing production of leather goods not in any connection with a shoe factory, also a training centre has to be established.

This training centre could be just such one as that propo-

sed earlier for the shoe factory. Only in this case the machines have to be bought and some administrative help has to be given to the centre to assist the supervisor in buying material, selling the produced leather goods etc.

For the beginning it is enough to have only two machines one skiving machine and one sewing machine. The splitting machine is negligible and the clicking press also. The main task of this centre is to show improved up-to-date production techniques for the small leather goods producers.

For instance: The cutting of leather by scissors as it is practised in many developing countries has to be abolished and proper cutting, using knives and metal bound cardboard patterns introduced.

Hand dies have to be used especially when larger quantities of small leather goods are ordered.

The training centre shall also organise an own selling organisation to sell the leather goods manufactured in its own shop and also those goods made by the other small producers.

The goal of this training centre in the further development is to engage all the small leather goods shops willing to co-operate so that the training centre provides all the component parts of an article cut and skived and the small shops have to turn over, stitch and assemble these parts returning to the centre the finished articles.

The centre has to care for correct styles and is responsible for selling.

The centre shall organise an efficient quality control when the finished goods are returned and especially at the beginning of the co-operation the quality control has to be strictly performed also in the production in the small shops.

The training centre has to be in both cases (when es-
tablished in a shoe factory or when established on its
own) from the beginning an effort to small run production,
using advanced up-to-date production methods which must
be adapted to local conditions.

For comparison, to show the differences in the organi-
sation of a medium size leather goods factory (employing
110 workers) and a large one (employing over 500 wor-
kers) in the annex also attached an organisation chart
for such a large leather goods factory (figures 18-20,
pages 40-42).

The main difference between the two factories is that
the smaller factory has for all the different groups of
articles centralised departments for cutting, stitching
and assembling. Under the supervision of the production
manager are 5 functions namely: in the sample making room,
in the stock of material, in the cutting department, in the
stitching department + cardboard department and in the as-
sembling room.

In the large leather goods factory however is the production
more specialised and the different groups of leather goods
(for instance: small leather goods, ladies bags, document
cases etc) have their own specialised production units.
In such a production unit are all phases embraced (cut-
ting, stitching, assembling).

It could be said that under the supervision of the produc-
tion manager are 5 specialised departments, three of them
representing specialised factories: stock of material,
stylist and sample making, small leather goods factory,
ladies bags factory and factory for document cases.

E x p o r t

In most developing countries there is a strong desire to achieve success in exporting goods. The possibilities for exporting leather goods do exist, but for at least one to two years the bulk of production should be sold on the home market.

Tourists buying on the home market are a good test how certain articles will be received by the customers when exported to the developed countries.

The export drive should be limited in the beginning to articles which are easily produced from locally available material.

As already suggested for the first steps in export a collection of small leather goods should be prepared (for instance: key-tainers, eyeglass cases, cosmetic purses, billfolds, cheque book covers, small change purses etc.).

If in the developing country exists an export promotion organisation, the first steps should be taken by using the services and connections of this organisation.

The contacts in the developed countries are mainly two groups: import companies or merchants and leather goods factories. The better partner for the beginning are the leather goods factories.

In a leather goods factory they know what can be done and how the material available in the developing country may be best used. Because they know their markets, they know what articles are salable and can give therefore efficient technical assistance, send perfect cutting patterns, give suggestions for further improvements, advice for buying machinery and equipment etc etc.

Many leather goods factories in the developed countries have also their own specialised selling organisations therefore orders will be given with

long terms of delivery;
These leather goods factories are also short of hands, salaries and wages are high, therefore the factories may be interested in an eventual joint venture, import companies however are nearly never interested in joint ventures.

It remains however as a must that above all the quality of the production has to be on such a level which will be always accepted by the customers. A constant quality of the products has to be maintained to keep the confidence of the customers.

Therefore the main goal in the training centre has to be and has to remain for always the concentration on the improvement of the quality of all products.

Visual aids

Visual aids should be used in the production of leather goods wherever possible. Good visual aids should be attractive to get and to hold the attention of the workers. If possible the visual aids should be supplemented by short, concise explanatory notes.

Workers and foremen should become accustomed to the visual aids in the very beginning of the training.

As visual aids should be used also actual objects (articles) perfectly manufactured and accompanied by schematic sketches. The visual aids have to be explained thoroughly to the workers so that they will understand them and know how to use them best. All visual aids have to be adapted to the comprehension level of the workers.

If everything is carefully prepared visual aids are also a substantial help to the men in charge of quality control.

It is not possible to cite in this paper all the numerous visual aids that may be used in leather goods production, but some examples show at least the idea.

In the cutting department a sketch of a hide should show the cutters in which directions a hide or a skin is stretchable on its various parts (figure 6 - page 23).

Should an article be manufactured in large quantities, on a schematic sketch of a hide can be shown how to lay out the different cutting patterns and where to cut certain pieces.

In the stitching department visual aids can be prepared showing correct skiving with allowance for turning over edges or open edges. These visual aids should be accompanied by explanatory notes (figure 7 and figure 8 - page 23).

What was just said about skiving may be applied also to turning over. A sketch showing how the turning over allowance

Figure 6

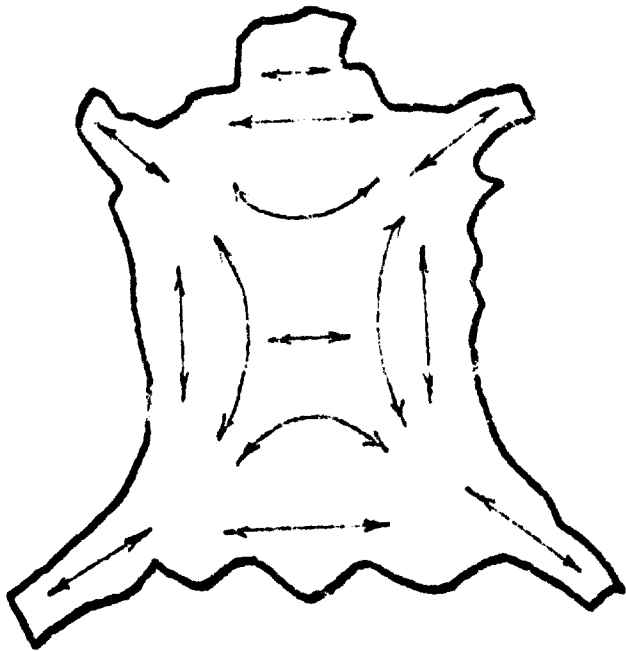
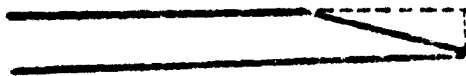
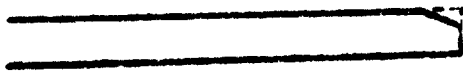


Figure 7



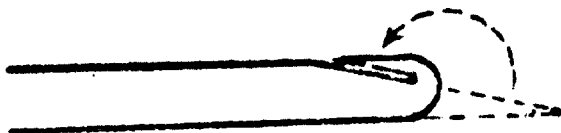
skiving with prepared allowance for turning over

Figure 8



skiving with prepared allowance for open edge (polished edges)

Figure 9



turning over

should be turned in and over (figure 9 - page 23) should be further explained by an actual object, the piece which has to be turned over, perfectly made. The stitching can be shown on sketches and actual objects also, showing the number of stitches per centimeter, the use of different types of needles, the use of different types of threads etc.

In the assembling department there is a wide possibility to use visual aids. Especially in this department as many actual objects as possible should be added to the visual aids - sketches.

Some examples: fastening of push buttons, glueing of gussets, glueing and inserting of lining, proper inserting and fastening of bags and purses into frames etc.

It is important that visual aids - actual articles are used for the final inspection. These visual aids should emphasize parts which have to be especially carefully examined.

Also the packing of the articles can be shown by simple clear sketches.

All visual aids (sketches) have to be on such places that the workers see them without need to turn the head.

Already during the teaching and training the workers must get accustomed to use the visual aids. In the training centre the expert or his counterpart demonstrates the process and the workers are observing (learning by observing). When the workers start to produce the articles themselves, the samples made by the expert or his counterpart are in fact the visual aids (actual objects) and the workers learn to use them (learning by doing).

On the entrance into the production department each day or at least each week the results achieved by the department can be shown on a chart (numbers and added symbols). Also the worker who achieved the best results can be cited by name. That is not in fact a visual aid connected with the production but it does work - provoking ambition.

Quality control

Quality control is today "a must" in every leather goods factory. In leather goods factories quality control starts with the material storage, is carried out in all the production departments and includes a final examination before the goods are packed.

All incoming material is controlled.

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

The fastness of colours of leather has to be tested repeatedly by rubbing the surface of the grain with wet cotton under strong pressure.

Among the tests that can be carried out on findings and accessories the following should be mentioned as the most important ones:

- tests for tensile strength of threads and adhesive strength of all glues and cements especially those used for articles that are not stitched but only cemented;
- tests of zippers, by repeated closing and opening;
- tests of locks and frames also by repeated closing and opening;
- tests of push buttons.

The next check comes when the material leaves the cutting department.

Faulty or badly cut pieces have to be returned and cut again. Records showing the quality of work of the individual cutters should be kept.

Control in the stitching department is concentrated mainly on workmanship.

In the cardboard department the control is limited to checking the exact size of the cardboard pieces and the

correctness of sorting.

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

The final examination takes place before the goods are packed and sent for storage.

Quality control does however 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.

When an article is returned as faulty and a claim is made - and that means that the article has been subjected to the best possible test - a thorough investigation has to be carried out to find the reasons for the flaw or weakness and steps must be taken to prevent its recurrence.

Wearing tests mean that articles are tested under conditions of normal, everyday use for a certain time and then examined. Ladies handbags 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.

Wearing tests are seldom carried out in leather goods factories on the scale that is needed, because the articles produced are rather expensive.

40 % of all quality control should be concentrated in the claims area, with the remaining 60 % divided equally between quality control activities in the material storage and quality control activities in the production.

Immediately when starting a leather goods production quality control has to be applied.

In a small production unit employing up to 25 workers quality control is one of the many duties to be performed by the foreman or supervisor.

In a bigger leather goods factory the foreman or supervisors of the different production departments (material storage,

cutting department, stitching department, cardboard department, assembling department, finished goods storage) carry out the quality control in their departments.

Very big leather goods factories however will have a special group of highly trained people to carry out the quality control. These controllers will perform their duties under the supervision of a chief of quality control, who should be responsible directly to the managing director of the factory and in no way subordinated to the production manager.

The graphs on the following page show the importance of quality control activities (figure 10 - page 28) and a system for organising quality control in a leather goods factory (figure 10a - page 28).

The developing countries will not be satisfied with the results of a new leather goods production if it will be not possible to export a high proportion of the produced leather goods.

For these products they must find markets, where they will however meet a very keen competition. New suppliers will have to prove that they are able to compete in prices and above all in quality.

Without establishing an efficient quality control at the very beginning, without success in teaching the whole crew to become quality conscious it will be impossible to achieve results in the export drive.

IMPORTANCE OF ACTIVITIES OF CONTROL

Figure 10

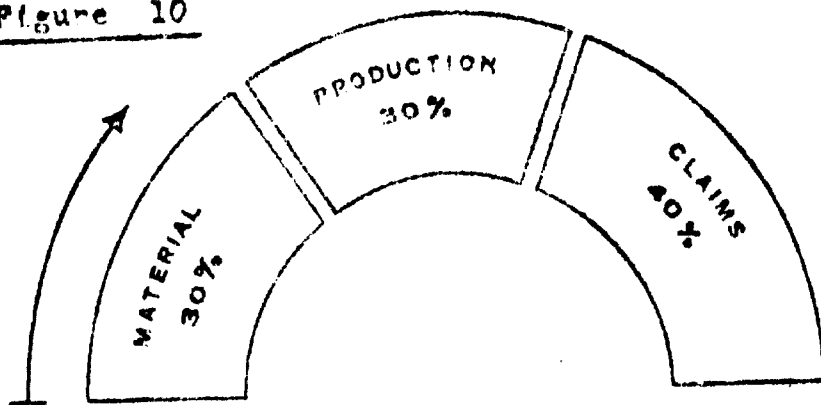
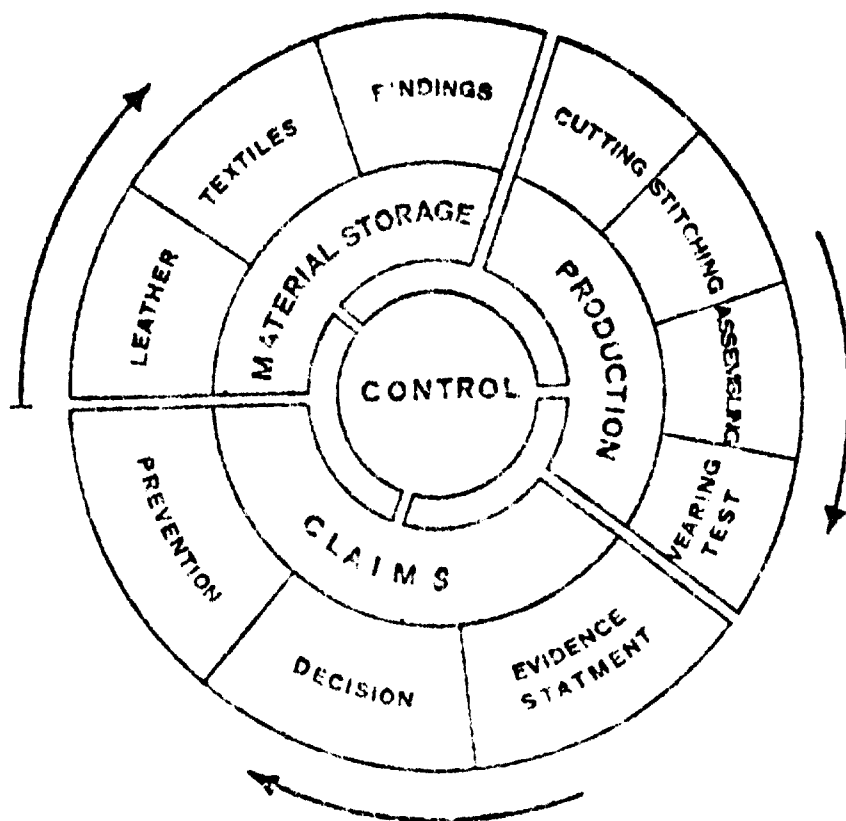


Figure 10a



C o n c l u s i o n s

Leather goods production is a very attractive industry for developing countries because it is a labour intensive industry.

Only a few machines are required and the capital requirements are relatively small.

In the existing shoe factories in the developing countries are nearly always some spare machines at hand and large stocks of scrap leather. Both, the machines and the scrap leather can be used for leather goods production.

Small scale leather goods production also exists in most developing countries and could be expanded for its own benefit.

An expert is able to organise a training centre either in an existing shoe factory or for the benefit of the small scale leather goods shops in 6 to 9 months, depending how the local conditions are.

It is advisable to employ in this training centre in the beginning 12 people only. These 12 people shall be afterwards able to train new workers for the expanding production.

A larger training centre employing say up to 40 people can also be organised but one expert could not do it alone. For such a training a team of experts is needed. A team leader and three to four experts. This team could complete the training in 9 to 12 months.

Case study - illustration

A big company in a developing country operated already for three years a tannery and a shoe factory.

The tannery and the shoe factory were fully mechanised. The tannery employed 50 workers and the output in one year was 850.000 sq feet upper leather and lining and 60 tons of bottom leather.

The shoe factory employed 185 workers and produced 120.000 pairs of shoes yearly.

The company wanted to start in addition to the tannery and the shoe factory also a new leather goods department and asked for a UNIDO expert to start this project.

An expert was sent and in an assignment of six months the following results were achieved:

The project started in a large, clean swept, empty room adjoining the shoe production.

No new machines have been bought.

The shoe factory supplied the following machines and equipment which was not used:

- 1 skiving machine
- 1 sewing machine
- 2 cutting benches
- 2 cutting boards

- 3 machines in the shoe production were part time used by the leather goods department (clicking press, splitting machine and rivetting machine)

The company invested into the leather goods production for tools and furniture US \$ 200.-

For only US \$ 210.-

material and accessories have been bought.

This amount represented roughly 20 % of the whole material used: 80 % of the leather for the production of leather goods was however taken from the vast storage of scrap leather accumulated in the shoe factory during the previous three years.

For wages and monthly salaries for the whole time have been paid

US \$ 2.275.-

One foreman and one designer were trained for the new leather goods department and for the direct production two cutters and six girls for stitching, skiving and assembling.

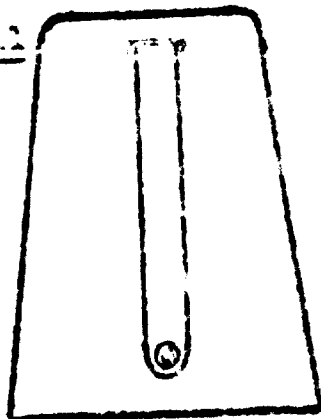
41 new styles of different leather goods have been made (mainly small leather goods and belts, a few ladies bags, a few document cases and one attache case).

The sales department of the company received from the new leather goods department salable goods worth (selling price) which have been sold on the local market.

US \$ 3.525.-

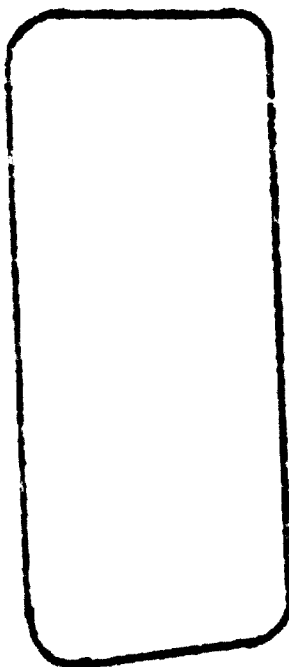
On the third anniversary of the company (three years since the tannery and the shoe factory started with their production) there was a big celebration. The new leather goods department supplied souvenirs for all the invited guests (850 pieces of key tainers gold embossed). That was at the begining of the second month of training.

Figure 11

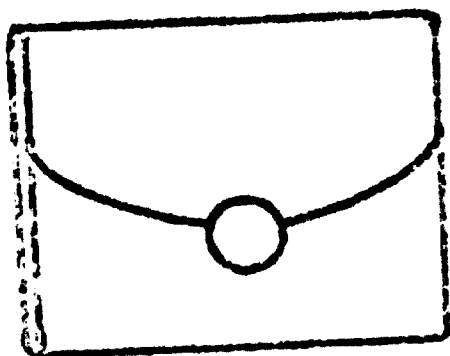


KEY - TAINER
SIZE 10 x 7 (6) cm

Figure 12



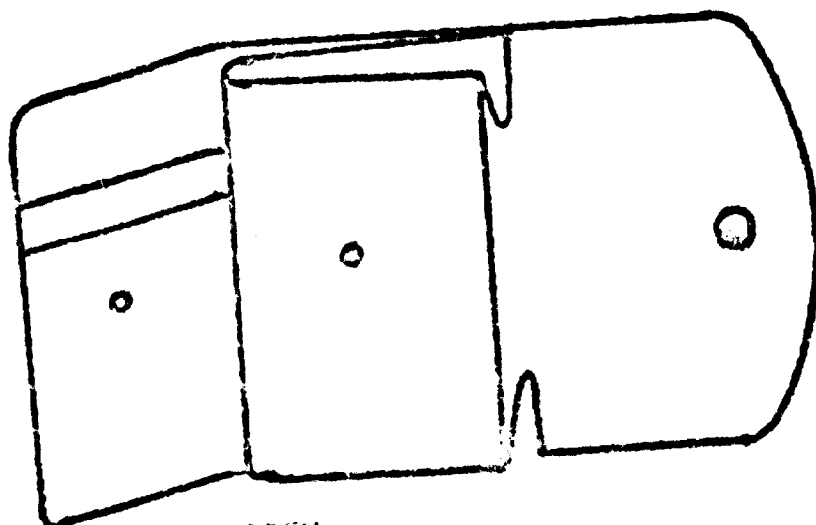
EYEGLOSS - CASE
SIZE 16 x 7 cm



CLOSED: SIZE 10.5 x 7.5 cm

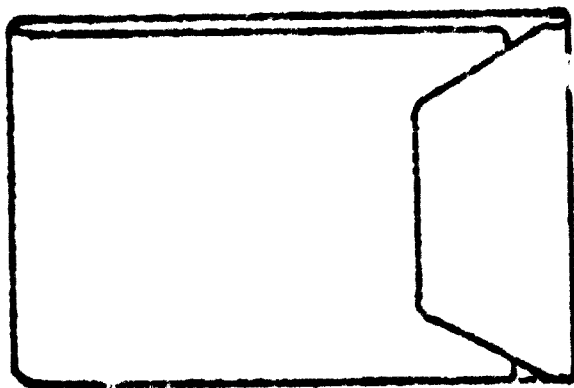
Figure 13

COMBINED PURSE - BILLFOLD



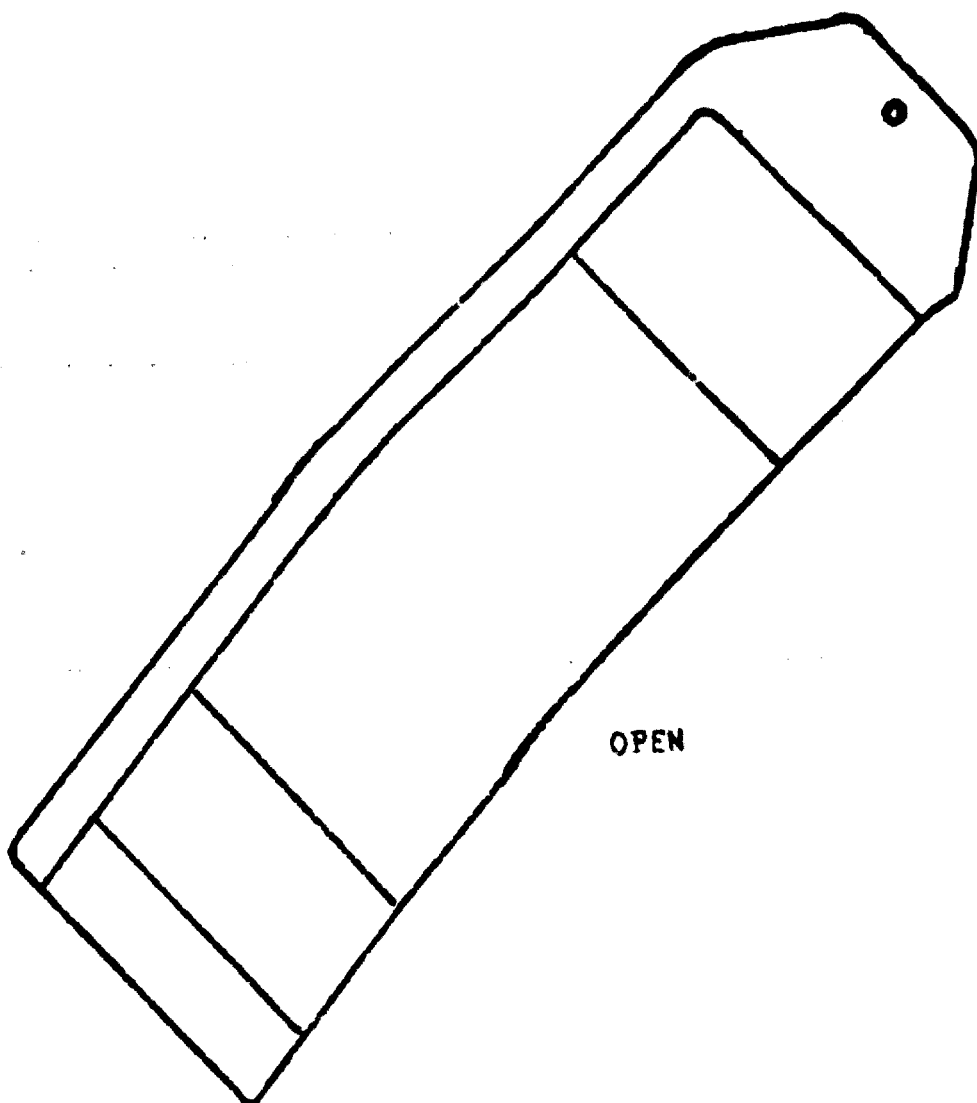
OPEN

Figure 14



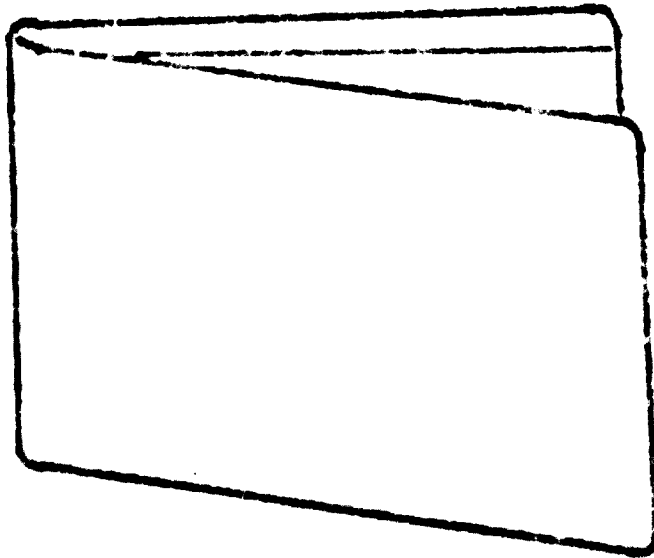
CHEQUEBOOK - COVER

CLOSED : SIZE 12 x 9 cm



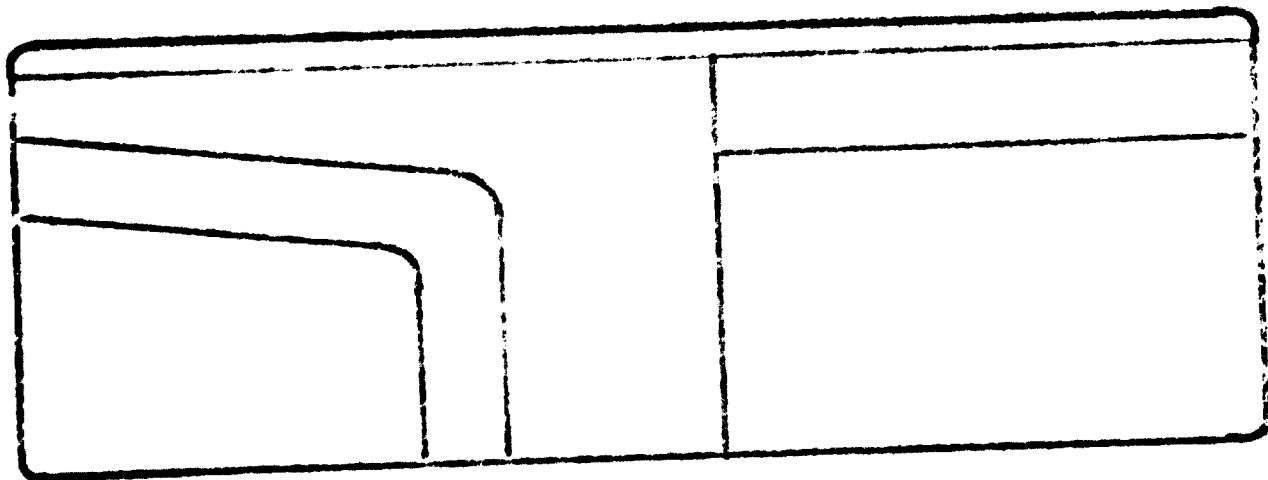
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Figure 15



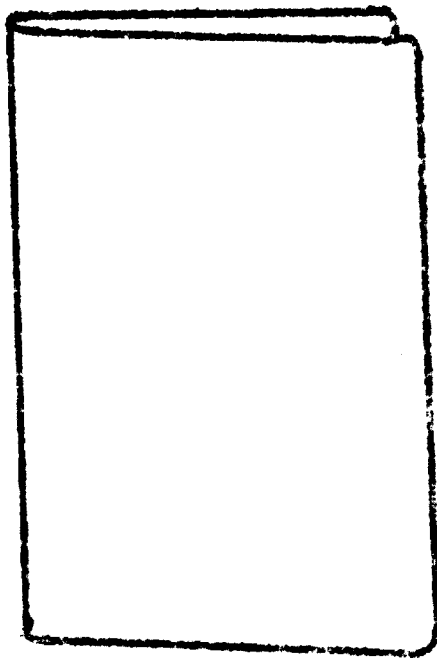
BILFOLD

CLOSED: SIZE 13 x 9.5 cm



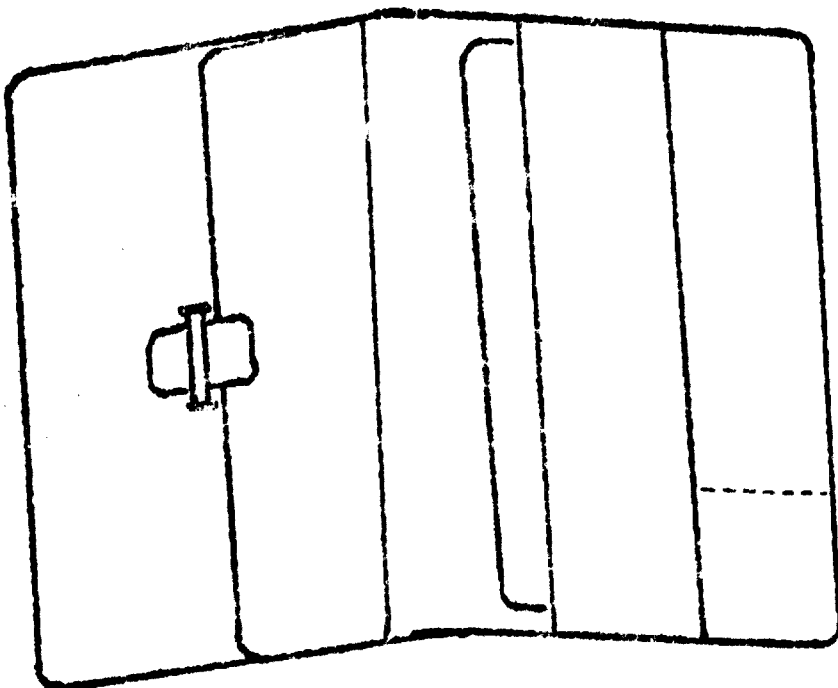
OPEN

Figure 16



WALLET

CLOSED: SIZE 16 x 10 cm

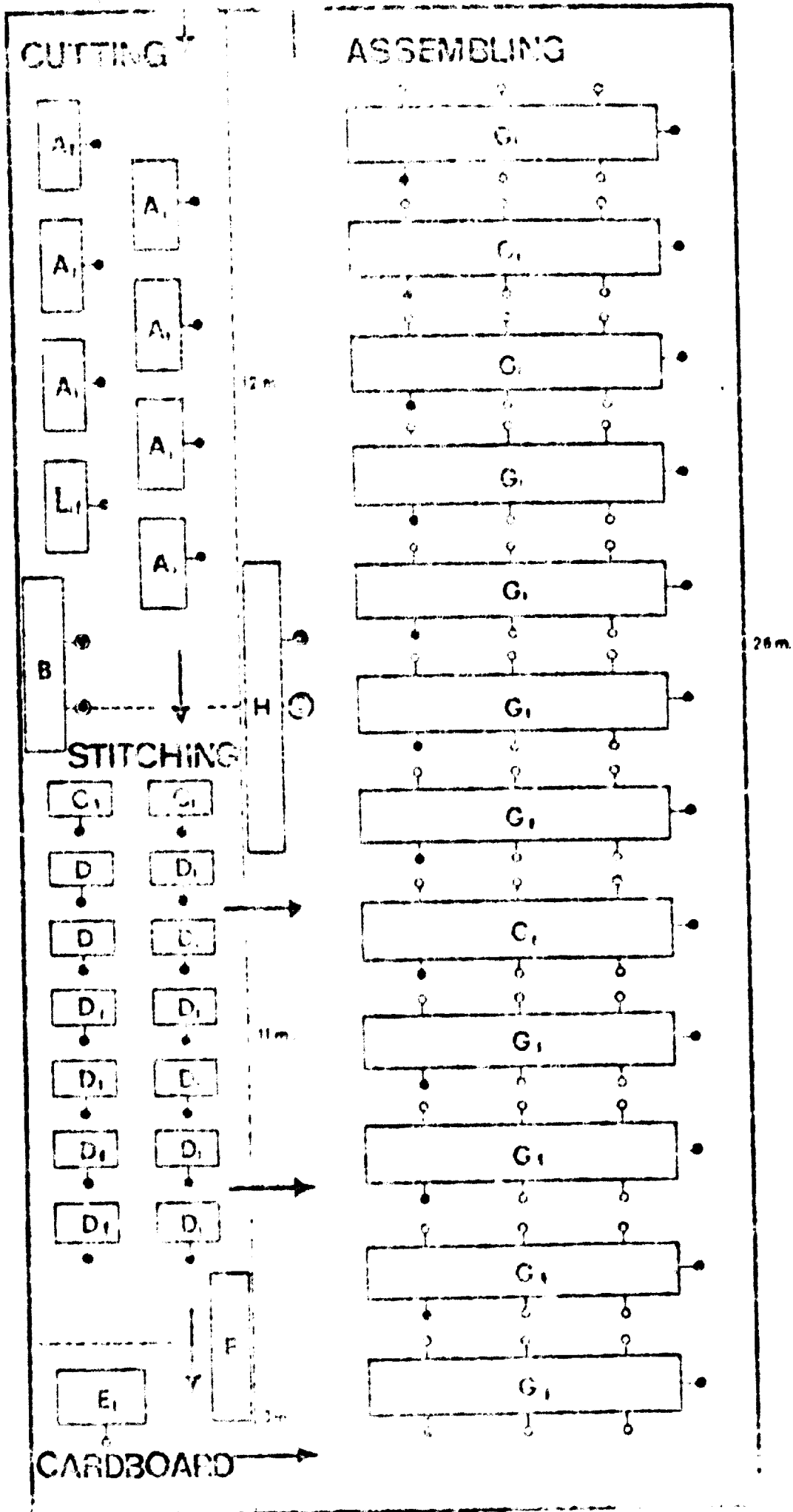


OPEN

List of machines, tools and equipment for the
training centre

pieces		price US \$	total US \$
1	skiving	565.-	565.-
1	sewing machine single needle flat bed	395.-	395.-
2	cutting benches	70.-	140.-
2	cutting boards	80.-	160.-
1	working table (supervisor)	105.-	105.-
1	working table (assembling)	145.-	145.-
11	chairs	20.-	220.-
11	cutting knives	1.10	12.10
5	grinding stones	0.50	2.50
5	scissors	2.10	10.50
3	edge polishing irons	1.20	3.60
9	folding bones	2.-	18.-
5	compasses for leather goods	1.30	6.50
4	iron rulers 50 cm	1.50	6.-
10	hammers for leather goods	2.-	20.-
1	set of frame attaching and faste- ning tongs for different profiles	24.-	24.-
1	electrical cooker	11.-	11.-
4	pots for rubber cement	1.30	5.20
6	brushes	1.-	6.-
4	stone plates (30 x 25 x 5 cm)	30.-	120.-
			<u>US \$ 1.975.-</u>

Figure 17



Key to personnel :

- production manager
- foremen (supervisors)
- skilled
- unskilled

Key to equipment:

- A, cutting bench and cutting board
- B working table
- C, skiving machine
- D sewing machine single needle flat bed
- D, sewing machine single needle cylinder bed
- E, guillotine cardboard cutter
- F working table
- G, working table
- H working table
- L, clicking press

Organisation chart - leather goods factory - employing 120 workers

Figure 10

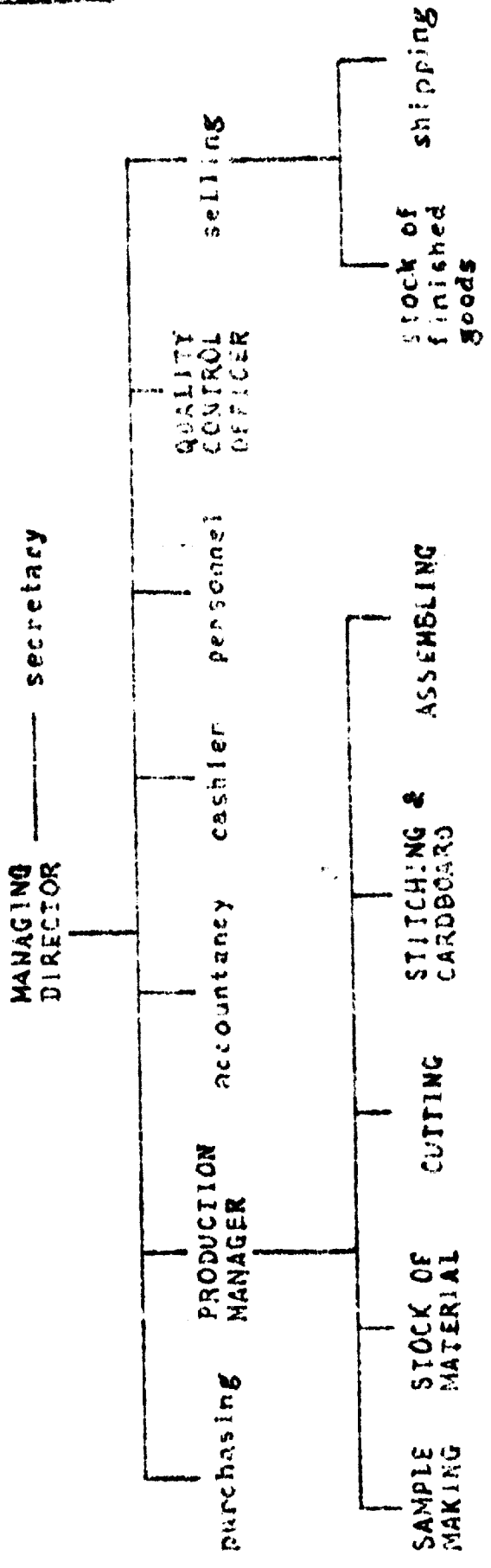


Figure 19

Organisation chart for a large Leather Goods Factory
employing more than 500 workers

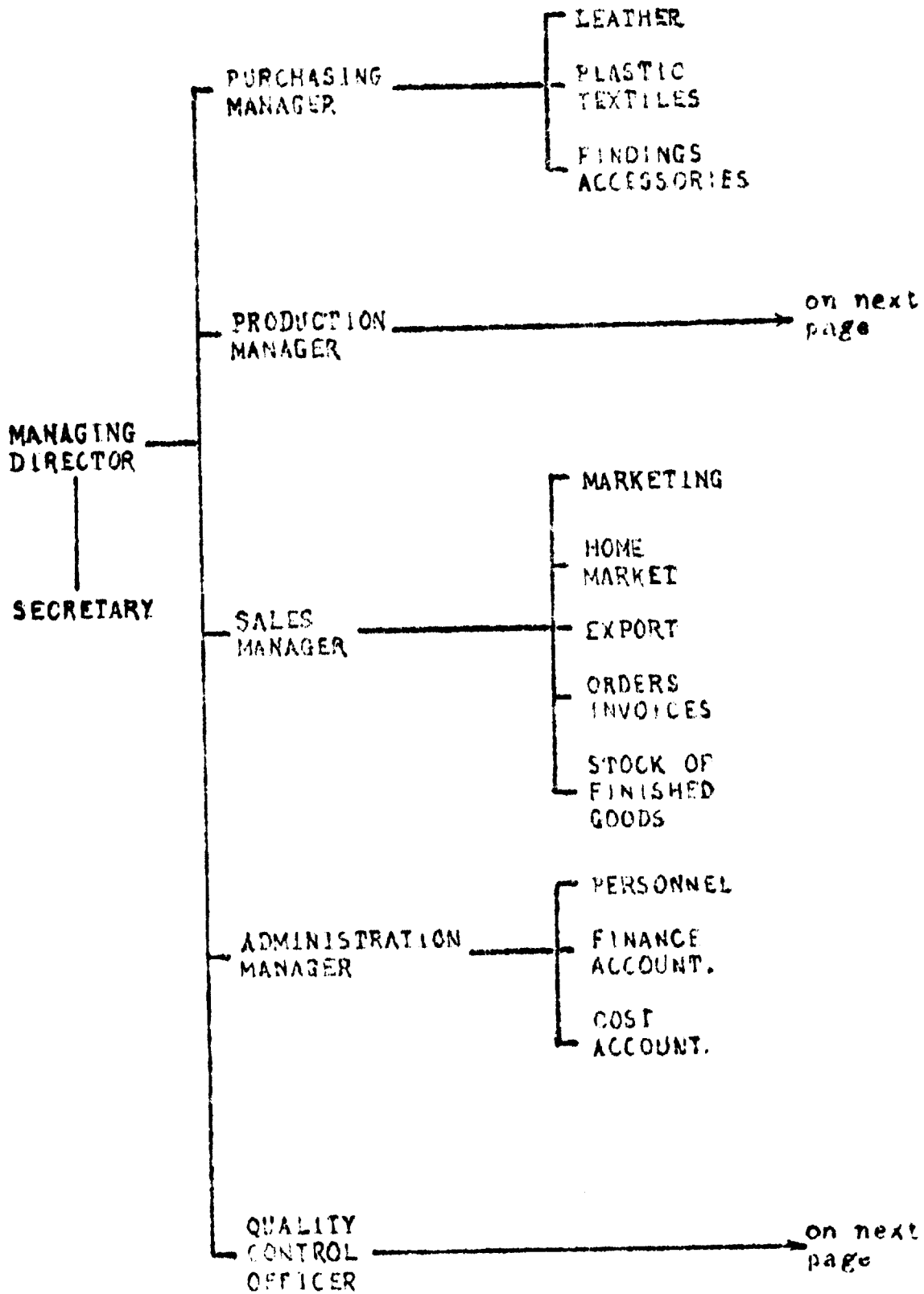
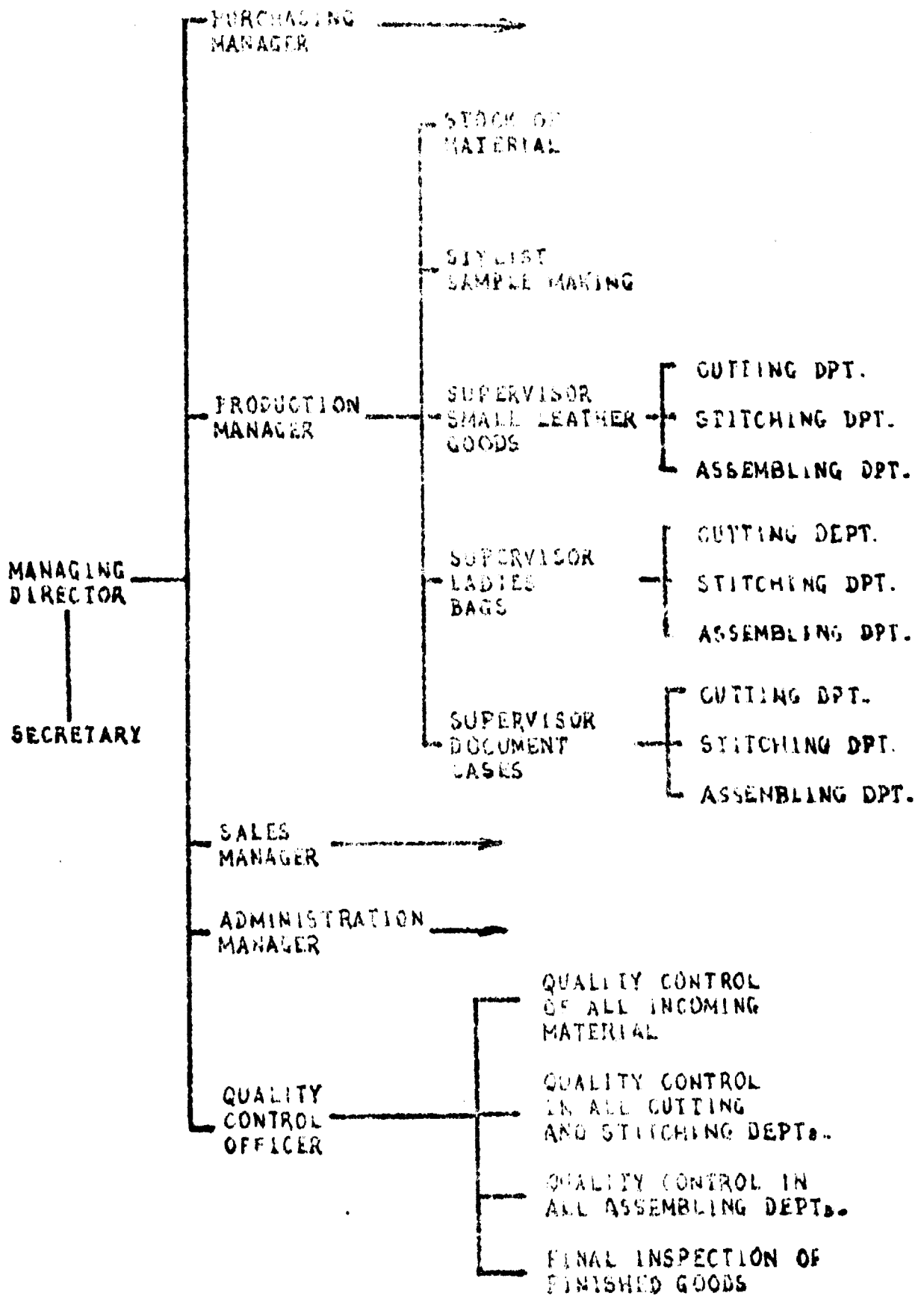


Figure 20

Organisation chart - continued





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