OCCASION

This publication has been made available to the public on the occasion of the 50th anniversary of the United Nations Industrial Development Organisation.

DISCLAIMER

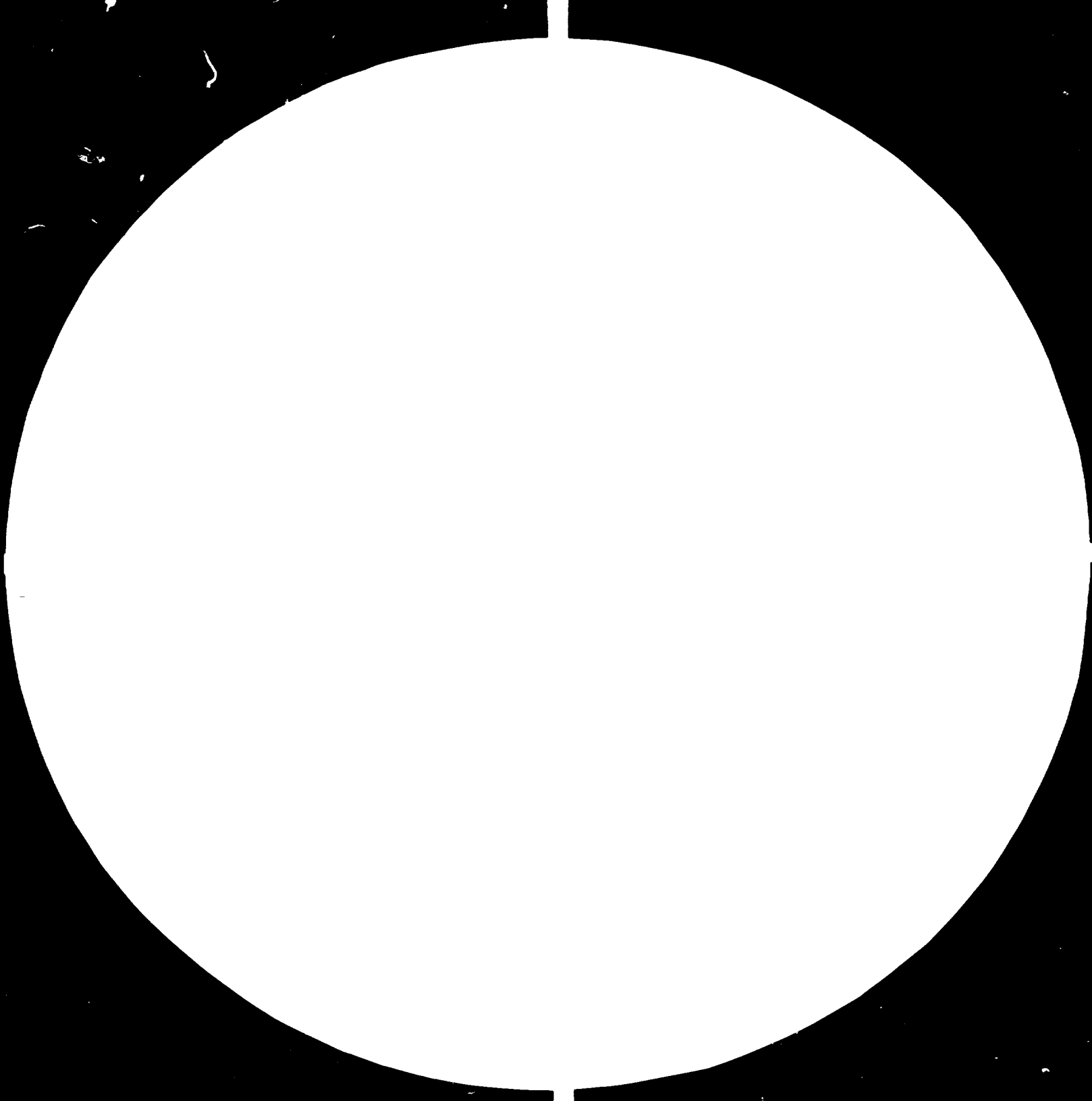
FAIR USE POLICY

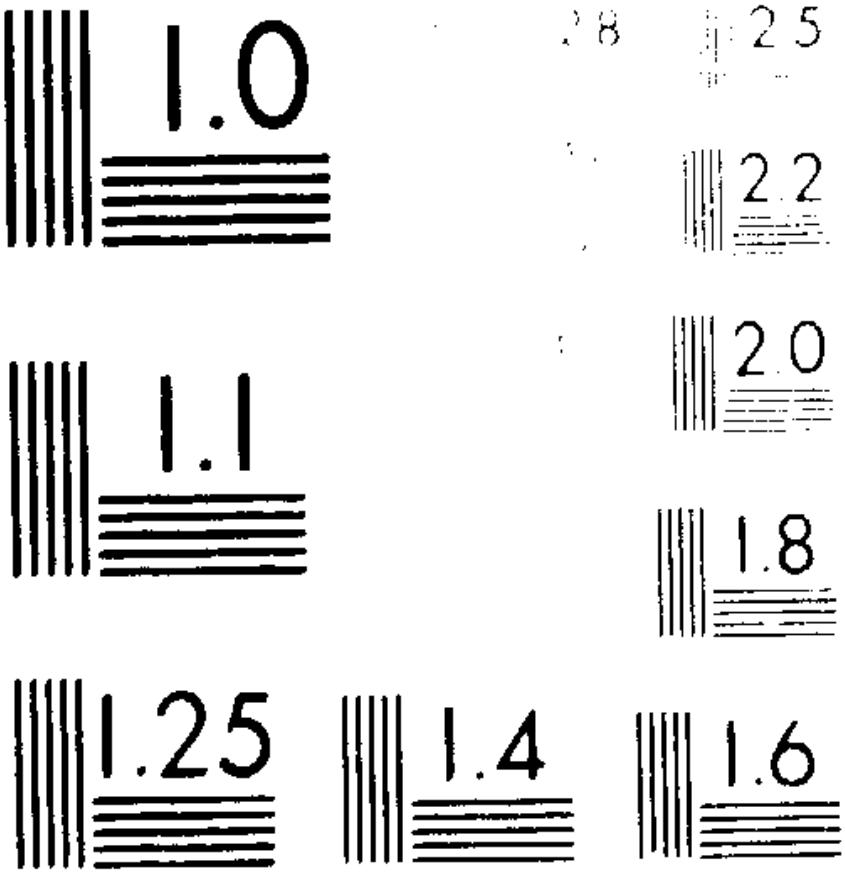
CONTACT

Please contact publications@unido.org for further information concerning UNIDO publications.

For more information about UNIDO, please visit us at www.unido.org

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
Vienna International Centre, P.O. Box 300, 1400 Vienna, Austria
Tel: (+43-1) 26026-0 · www.unido.org · unido@unido.org




1.0
2.8
2.5
2.2
1.1
2.0
1.8
1.25
1.4
1.6

RESTRICTED

09561

DP/ID/SER.B/261
2 August 1980
English

ASSISTANCE TO THE SHOE INDUSTRY

SI/HUN/79/801

HUNGARY

Terminal Report *

Prepared for the Government of the Hungarian People's Republic
by the United Nations Industrial Development Organization,
executing agency for the United Nations Development Programme

Based on the work of Robert G. Lucas,
Expert in Cutting Room Management and Technology

United Nations Industrial Development Organization
Vienna

*This document has been reproduced without formal editing.

80-43063

CONTENTS:-

COURSE IN UPPER LEATHER ALLOWANCES, CLICKING TECHNOLOGY AND DEPARTMENTAL SUPERVISION.

June 16th - 27th. 1980 Szombathely. Hungary.

INTRODUCTION.

The course was held in the library and lecture room of the Sabaria Shoe Factory, Szombathely, Hungary, where eleven members of staff from the Sabaria shoe factory and other factories throughout Hungary, representing supervisory and technical management, joined together for a two week course.

Counterpart and translator for the course was Magdolna Nagy, Engineer of the Leather Industry from the Research Institute for the Leather, Artificial Leather & Footwear Institute.

COURSE CONTENT.

The course covered three main area :-

a) Upper Leather Allowances,

b) Quality and technical aspects of clicking,

and c) Supervision.

UPPER LEATHER ALLOWANCES.

The background and history associated with the Clicking Department in relation to the other departments of the shoe factory were dealt with, highlighting the individualistic nature of clickers and the importance of good material utilisation to the economic success of the shoe factory. The former indicating the role of training and supervision, and the latter emphasising the importance of the best possible costing allowance system.

The wide range of systems used for the leather allowances were briefly dealt with arriving at the system known as Scientific Leather Measurement (SLM) and its variations, which is generally regarded as the best system available at the present time due to its scientific base of allowances and the method of pattern assessment, which has been arrived at scientifically, and not as in other systems being based on past inaccurate cutting records.

There are two areas to setting leather allowances :-

1. Pattern Assessment and
2. Leather Assessment.

The Pattern Assessment works on quite straightforward principles using a planimeter to determine the exact area of the pattern, the waste, and the interlocks. This is converted to a Pattern Assessment Form where percentages are calculated giving information on pattern economy so that action can be taken at sample stage to improve pattern utilisation if this is at all possible.

All the members on the course tackled this area with enthusiasm and ease. Those from the Sabaria factory responsible for the parallelogram system for setting allowances were brilliant at their work and did much to assist the others on the course.

The Leather Assessment is an equally important part of the scheme, if not more so. There are two areas to this - a Discrepancy Co-efficient and a Leather Co-efficient.

The Discrepancy Co-efficient is the difference between the area recorded by the tanner and the area assessed by the shoe manufacturer. If this is in excess of 3% (some work to a margin of 2%) then action is taken through the leather buyer with the tanner. It is a known fact, that due to human error in reading the dial on the measuring machine, or due to faulty machinery or handling, the leather area indicated by the tanner is often wrong and therefore is in need of control by the shoe manufacturer. This is not done within the Sabaria factory and there is no equipment with which to do it.

The Leather Co-efficient is an assessment of unusable material based upon the shoe being cut according to the quality standard. Here, a very experienced person is required to undertake this work and adequate training must be given. All leathers have to be assessed on delivery to see that they conform to the allowance set, and from this a Virtual Price Control is set so that if deliveries of leather fall below this action can again be taken through the leather buyer with the tanner. In practice, leather assessed as 12% unusable has a Leather Co-efficient of 88. Thus having established the exact pattern assessment at 100% co-efficient, all that is required is to read off the allowance from the chart which converts this to the exact material allowance for a given leather at the set co-efficient.

It can be seen that this system involves quite an increase in the man-power required to maintain it, but it has been well established that the financial benefits in material savings do justify it for most types of shoe factories. The writer was recently quoted by one company making a weekly saving in material of approximately 20,000 dm^2 . The system has a built-in allowance of 3% incentive for the clicker to save, and providing leather assessment is carried out well the area allowance is very tight. In the SLM system the clicker's return is $\frac{1}{3}$ of the material cost. Therefore, with expensive leathers his bonus on material saving will be greater.

To install the SLM system efficiently usually takes in the region of 3-4 months of constant practical work within the factory and in close consultation with management and the UNIONS. It is also fair to say that the system does benefit both parties, and if anything favours the clicker, inasmuch as a clicker can make material bonus on one order and lose it on others without any penalty.

In the time available we could only outline the system in the Sabaria factory, and much more work needs to be done in the setting of leather co-efficients to draw strict comparisons. If the leather varies by more than 5% either way then ideally the leather should be sorted or a more close contact be made with the tannery to give more accurate quality grading. Some leathers assessed during the course fluctuated by as much as 12%.

SUMMARY.

To summarise the fore-going, it can be said that there is ample evidence to suggest that a system like SLM would benefit the Sabaria factory, and in general terms be a good system to adopt for the Hungarian Shoe Industry.

However, the bonus system in the SLM is not ideal and would need modifying to suit the needs of the Hungarian Shoe Industry. It is generally accepted that limiting the scope of bonus earnings is more favourable in order to control quality. The aim being to train cutters to an established standard, and with control of materials to make for a tight system all round. This is obviously needed in the Sabaria factory where there is a wide difference between cutters' abilities on material utilisation. One saved as much as 8,000 forints during June 1980, whilst others made very little saving at all.

The students appraised the system well and in general the comparisons between the existing system and the SLM gave a tighter margin with the SLM. If the system is given a suitable follow-up with co-operation of the pattern assessors with some-one working on the leather side good progress would be made which would have far-reaching effects on the Hungarian Shoe Industry in general.

QUALITY AND TECHNICAL.

During the third day of the course when we began to look at Leather Assessment the question of quality raised itself and became a burning issue among the Sabaria Supervisors on the course. The problem of leather shading was the cause for this deep feeling of concern among this group of Supervisors and such was the depth of feeling among this group that it generated an attitide of an insuperable problem incapable of being solved. Presented with this difficult situation and without having had the time to investigate it the writer was deeply concerned about the course fulfilling its objectives with attitudes of almost despair among the supervisors over this problem. That it was of deep genuine concern was apparent for all to see, and the writer was forcibly told that 'you would be gone in three weeks and we will still have the problem! '

In order to restore confidence in their ability to solve problems we looked at this question of quality and requested technical assistance to look at the level of leather quality standards. Although this assistance was reque-

sted during the first week of the course, no firm assurance was given that leather quality and shading would be fully investigated.

This position is unquestionably very serious when one considers the effect this is having on the Sabaria Shoe Factory in general. A very high percentage of work is being 'match-marked' and need not be, since in many instances there is no shade variation in the leather whatsoever. This situatio was quite apparent during visits to the sewing department on two separate occasions. Here, one can see operatives sorting out work to the numbered parts with all the extra time that this takes, and with definitely no shade variation among any of the parts that we could see being stitched together.

That there is a problem with some leathers there is no doubt, hence the request to look into it, but here it should be stated that within a given skin there are usually two shades and sometimes three. This was established during the Instructor Course in doing shading exercises when it was impossible for the human eye to detect any more than three separate shades from within one skin of leather.

The situation within the Sabaria factory is made more serious by the suggestion put forward by the Sabaria supervisors that shading is the dominant factor in the cutting department, and that cutters can cut the parts from any section of the skin providing the shade is correct. This situation does exist within the cutting department, where one can seethe cutters cutting the parts from any section of the leather. On one occasion I did see a vamp being cut from very near the offal region of the skin and being so stretchy as to be totally unacceptable.

The efforts within the work-force to overcome this problem is beyond any doubt and one can only respect and admire the considerable efforts that are being made in every department to make shoes in pairs, but it is the opinion of the writer that much of this effort is mis-directed due to a failure to attack the problem in the right way.

During the course we tried to establish an approach to the problem along the following lines:-

1. To set a quality specification for the shoe based upon the sample submitted to the customer. Here we examined the sample in detail and one could definitely detect slight shade and print variations with the sample itself. See the appendix which shows the set Quality Specification for the leather and shoe causing problems.

2. To examine and assess the leather to this specification - Can it be cut to the required standard,and of quality and shade? What will the leather co-efficient be, and will this be acceptable to management?

3. To prepare a suitable cutting system of the leather giving the best quality and economy of the material based on the quality specification, and to show the cutters in visual form how to cut up the leather. See appendix for photographed example prepared during the course.

4. To establish a method of inspection to the quality and shading standard.

With this as a first step we can then look at the question of leather quality more closely and -

1. Set a sample standard according to the grade, and inspect leathers on delivery to that standard. Some-one needs to be trained in this work, but clearly it needs to be done.

2. Take action on leather not meeting the required quality standard.

Very brief examination of some skins revealed that a) the embossing print was invariably missing along the back-bone area (the best quality) of the leather due to bad plating in the tannery, resulting in the clicker being unable to use this, the best material. And b) Shade variations occurred chiefly at the tail and neck ends and around the edges of the leather where a two tone effect 'shadow spray' seemed to have been carried out incorrectly in the tannery. Also, on the red aniline printed sides there was severe patchy discolouration (a sort of blooming effect) on many skins making cutting of this leather very difficult indeed.

All these points should be investigated by the Leather Buyer in collaboration with the cutting and leather department.

INSPECTION.

Inspection is carried out with great care in the Sabaria factory. Most vamps are strained over a domed apparatus to show up any faults or defects in the toe region that might arise in lasting. A very high-powered light illuminates the leather and the glare from this is considerable and must affect the eyes. All parts are re-examined again in pairs to inspect for quality and shade, both as separate operations with considerable handling time. Even with all this attention shoes do not always match in shade and the reject or re-cut rate seems quite high in returns from the lasting room.

Looking at shoes going through the Shoe Room on the conveyor with leather giving the shading problem, we noticed distinct shading differences between paired shoes which to us were quite unacceptable. As the shoes went along the conveyor we followed these closely and found that the first operation was a shadow spraying effect with a dark colour on the brown leather. This was applied along the seam joining the apron to the vamp and along the heavy stitching on the leg. The difference in shade between the apron and the vamp was immediately alleviated by this process. The next operator carefully examined

the shoes obviously paying great attention to looking at the shade variation. Any shade variation was quickly noticed and the shade variation was then immediately uniformedwith a fine spray which balanced the shade perfectly. This job was being done with great care and skill and without the use of excessive spray which would have spoiled the leather appearance.

A greater quality problem with these boots seemed to be the variation in cutting where the cutter had cut the wrong direction of the stretch in the leg region, and the forward strain in lasting without the support of the last underneath meant that the backer or lining acting in resisting the strain, the leather had been stretched forward, and in trying to re-assert itself left creases and bagginess. Cut the correct way of the stretch the opposing forces of the backer and leather would not have created this problem.

LIGHTING.

It is impossible to make any firm observation as to the lighting within the cutting department, but it would be definitely advisable to carry out some tests since the problem of shading is causing such confusion. There could be conflicting lighting variations from the fluorescent general lighting and the individual lighting (ordinary bulbs) where operatives shade their sections away from their individual lights. Both side areas of the cutting room has good natural lighting, but could suffer from excessive glare. Ideally, a lighting consultant should look at this problem to see if improvement could be made.

CUTTING METHODS.

The cutting methods within the Sabaria factory varied considerably in cutting leather. A nucleus maintain a very high standard whilst others cut in a way quite opposed to accepted principles. Quite a number cut from the neck of he skin downwards and some cut up one side of the skin and down the other. There are styles where parts are cut at random by some cutters and the large pieces remaining are placed aside to use for cutting other shoes. In other words, they do not 'run in' another style, but cut it afterwards.

An explanation was put forward by the pattern assessors on the course for cutting from the neck downwards on boots. This is said to be the method adopted in Finland and seen by some of the management whilst on a visit there. However, whatever advantage there seems to be in this approach other shoes are being cut in this way too, and there is a general lack of understanding by a lot of the cutters in how to cut up the leather. This can only be due to inadequate training.

CUTTING FABRICS, SPONGES AND POROMERICS.

In many instances this is done by trainees on the clicking presses and would seem that very little instruction is given in the correct way to cut the material. Almost everyone cuts up the material and not across, which is both slower and more wasteful of material. When cutting up the material it is very difficult to maintain a straight line with some patterns as the location points to follow are less, and in moving away from oneself in cutting naturally means more difficult and a greater distance in the movement of the hands. It also usually results in the wearing of one area of the board as the material is constanly moved across to the same position.

There are no costings issued with these materials and the material is cut very wastefully with uneven edges and folded very unevenly. The layers are sometimes held together with paper clips and consequently easily move about wasting even further material. During the Instructor Course we tried to establish a correct method for this job by laying the materials on the special table by the large presses, and holding the edges together with staples.

On the travelling head cutting presses and the Schon/Kaev presses a very good standard of cutting and laying the material exists.

CLICKING BOARDS AND PRESSES.

A factor which seems to have influenced cutting methods are the boards and presses.

Presses. With the mechanical presses the trip mechanism is situated on the left hand side, and whilst it can be moved with the beam is usually located separately on the left hand side of the press, resulting in all movements having a tendency towards the right side, and resulting in materials and press knives being placed conveniently to the right. A good bench has been designed to work in this way and the system is working very well. However, consideration should be given to the use of left and right hand operated presses which allows the use of both hands according to the position of the material on the press. With the beam always to the right side there is the tendency to work the board accordingly and this necessitates the constant movement of the materials rather than the easy moving of the beam from one side to the other according to where the cutter happens to be in cutting across his board. Hence, the possible bad habit of cutting up the board.

It is also noticeable that on the recent Kaev presses (hydraulic) in use in the cutting room the trip mechanism is situated to the left side, and whilst this can be used from both sides it would be preferable if this trip mechanism could be positioned symmetrically on the beam to allow a more natural and even movement of both hands either from the right or left side.

The more recent Kaev catalogue does show this improvement.

BOARDS.

The size of the boards are about ⅔ of the actual press base size and give less scope for cutting in moving across the material. A factor to be considered here is that each operator has his or her own board and removes this at the end of their shift. Ideally, one would like to see a better board and a full sized one laminated to a firm base to avoid the bowing which is frequently seen. Such a board would not be able to be moved by the ladies and could present storage problems. However, there is sufficient reason for giving this a try with some cutters and assessing the results. Generally speaking the boards are not worn evenly which is an indication of bad cutting, but which in this instance is to some extent a reflection of the machines and the boards.

CODING.

Press knife storage is excellent and the edges are code stamped for identification of size. An improvement to this to speed up identification would be to colour size code these. The colour is much more quickly identifiable so that operatives can quickly store the knives away in sizes and pick them out easily from the storage racks. Colour coding is very quick to install and justifies the small time spent in establishing it.

WORKING CONDITIONS AND ATMOSPHERE.

The general working conditions and atmosphere throughout the factory is of a very high standard and one seldom finds a person away from his or her production area. Within the cutting room this is also the case with a very high standard of cleanliness and tidiness everywhere and with operators paying very careful attention to their individual machines. The conveyor and box system was working very well and never were there boxes to be found over the gang-way lines.

The leather trolley'horses' for each cutter are somewhat low and result in double handling within the leather store and for the cutter since each skin has to be folded to rest satisfactorily on the 'horse'. This also results in unnecessarily creasing the leather which under a number of heavy skins can sometimes be quite severe.

M.T.M. Applications.

Looking at the Closing Department during a brief visit on two occasions with course members from other factories, one is particularly struck by the tremendous scope of the M.T.M. team to improve methods within this department. Some of the table methods of fitting parts together could be radically improved and one was surprised at the extent to which M.T.M could be applied. Another surprising point within the closing room was to find that French binding was being attached by hand and not by using a guide. A guide at

very little cost would double the production of this operation. Five people were attaching binding by hand.

The standard of workmanship throughout the Closing Department was of a very high standard and most of the stitching was excellent.

SUMMARY OF QUALITY AND TECHNICAL.

There seems to be reasonable evidence to suggest that most of the problems existing within the cutting department and in the factory are self-inflicted and derive from an overiding consideration to solve the problem of shading by resorting to excessive use of labour to match-mark nearly all the work. Other ways of solving the problem do not seem to have been explored and there seems to be a lack of understanding about it. This has resulted in frustration at supervisory level which then tends to run through the work force. This was the main reason for having requested support in searching for solutions to these problems on the basis of the known fact that happiness increases energy whilst sorrow and discontent decreases it. So in factories a happy and contented work force produces better quality and quantity than a disgruntled one. There is also the fact that to be released from the continuous burden of match marking would result in a vast increase in the production capabilities of the plant of the order of 30%.

What we have tried to do during this course was to re-direct the obvious tremendous energy of these supervisors from a negative attitude to a positive one, determined to overcome any obstacle preventing progress. This can only be achieved if there is a willingness by all concerned to tackle these problems in a systamatic way and provide the necessary support and understanding at every level.

During the course we provided a fairly sound practical approach to the problem dealing with most technical and quality problems, some of which have been mentioned in this report.

Looked at in perspective these problems are easy to solve and I am sure that the Sabaria management in consultation with the Ministry of Light Industry and the Research Institute of the Leather, Artificial Leather and Footwear Industries and the tanners will quickly overcome these problems.

SUPERVISION.

During the second week we combined lessons in supervision with technical talks as well as attempting a project based on the course work. Each participant on the course undertook the following project to prepare a manual of procedures for their own record, as well as to compare the results with those currently being used within the Sabaria factory.

PROJECT WORK.

1. To prepare an SLM Pattern Assessment.
2. To complete the Pattern Assessment Form and establish percentages of waste.
3. Using the sample submitted to the customer to prepare a Quality Specification based on the sample.
4. To establish the Leather Co-efficient based on the Quality Specification with one bundle of leather.
5. To extend the Pattern Assessment Form with the Leather Co-efficient giving the Leather Allowance per pair.
6. Using the standard leather co-efficient estab lish a system of cutting the leather and prepare details and methods, a photograph of the layout, and a direct comparison of material utilisation.

There wa s insufficient time to complete the talks on supervision, priority being given to the practical work above. The complete supervisory manual is being translated so as to allow students to complete this course within their own time.

SUMMARY OF SUPERVISION.

The Supervisory Course is a good one based on the modern psychological behavioural sciences. The lessons given were felt to be highly beneficial to the course members, and these need to be followed up by the management and at Institute level.

COURSE IN INSTRUCTOR TRAINING FOR PRESS CLICKING OF UPPER LEATHER.

June 30th - July 11th, 1980. Szombathely, Hungary.

INTRODUCTION.

This course was again held in the library and lecture room of the Sabaria Shoe factory, Szombathely Hungary, where twelve members of staff representing the Leather, Artificial Leather and Footwear Institute, staff from the Sabaria shoe factory, and other staff from various shoe factories throughout Hungary, met together for a two week course devoted to the techniques of instruction in relation to the cutting of upper leather by press.

Counterpart and translator for the Course was Magdolna Nagy.

The course covered two basic areas:-

a) The use of the Skills Analysis approach to operator training and the techniques and principles of the system.

and b) The application of these techniques to the teaching of the cutting of leather by press.

Note: As all cutting is done entirely by press the special features of teaching cutting by hand were not covered.

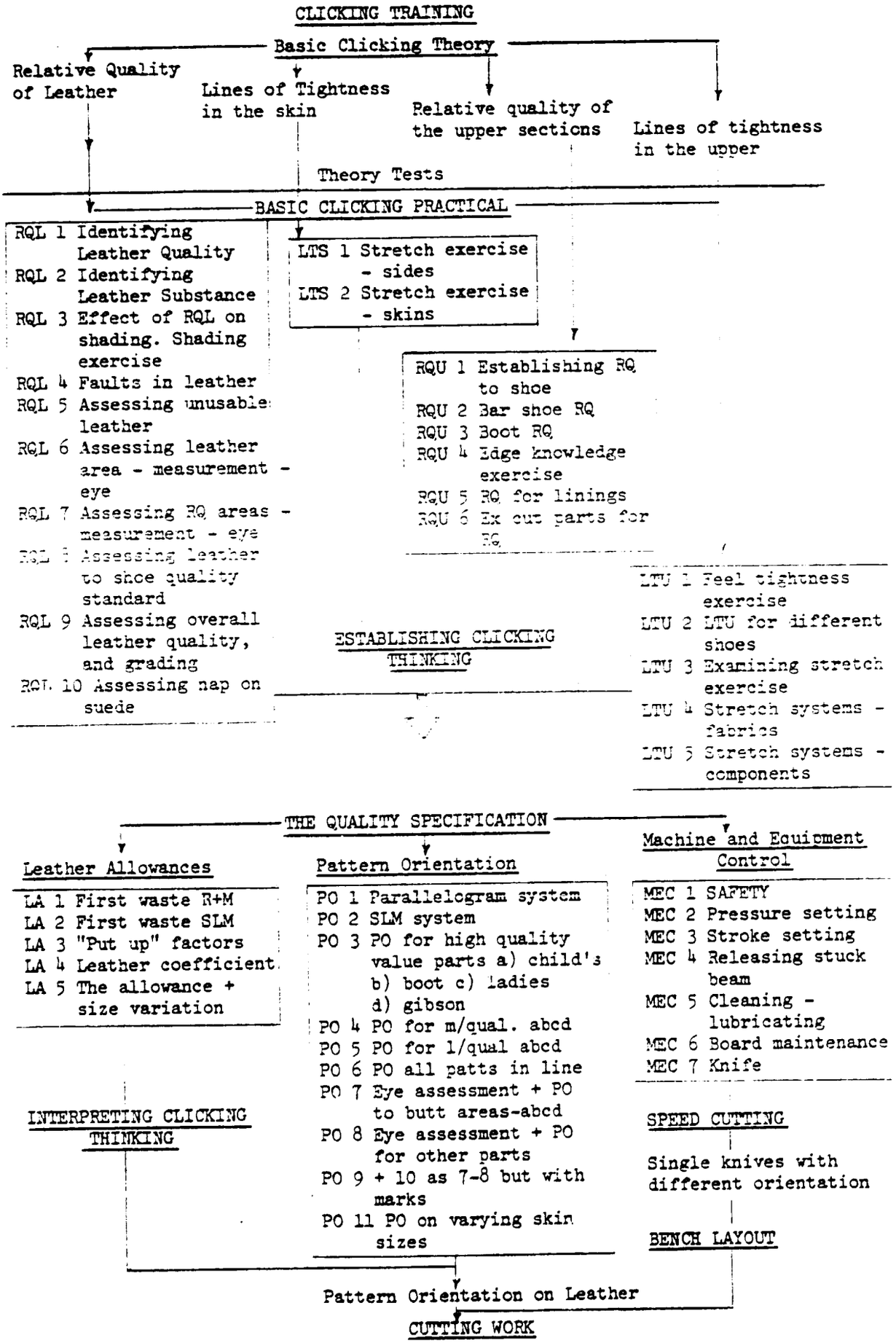
SKILLS ANALYSIS.

The first part of the course devoted itself to the teaching of the principles governing the Skills Analysis approach to training. These details were given during a course in Budapest and so there is no need to amplify on them in any detail in this report as they were widely publicised throughout the shoe industry following the course in Closing held in 1977.

Basically, the approach of Skills Analysis, as the name implies, is to analyze the skills of whatever job and break them down into a suitable teaching programme.

CLICKING SKILLS.

Clicking can be broken down into two basic elements which are best described as - the thinking and the doing. If we look carefully at the clicking operation we find that the clicker observes a very complicated mental picture upon which he bases his decision as to how he cuts the parts of the shoe upper. As far as press clicking is concerned the actual practical work involved is relatively simple and straightforward where the techniques of T.W.I. (training within industry) can be easily and readily employed. What is more difficult to define is the 'Clicking Theory' and how best to approach this from a teaching and training point of view.


CLICKING TRAINING
Basic Clicking Theory
Relative Quality of Leather
Lines of Tightness in the skin
Relative quality of the upper sections
Lines of tightness in the upper
Theory Tests
BASIC CLICKING PRACTICAL
RQL 1 Identifying Leather Quality
RQL 2 Identifying Leather Substance
RQL 3 Effect of RQL on shading. Shading exercise
RQL 4 Faults in leather
RQL 5 Assessing unusable leather
RQL 6 Assessing leather area - measurement - eye
RQL 7 Assessing RQ areas - measurement - eye
RQL 8 Assessing leather to shoe quality standard
RQL 9 Assessing overall leather quality, and grading
RQL 10 Assessing nap on suede
LTS 1 Stretch exercise - sides
LTS 2 Stretch exercise - skins
RQU 1 Establishing RQ to shoe
RQU 2 Bar shoe RQ
RQU 3 Boot RQ
RQU 4 Edge knowledge exercise
RQU 5 RQ for linings
RQU 6 Ex cut parts for RQ
LTU 1 Feel tightness exercise
LTU 2 LTU for different shoes
LTU 3 Examining stretch exercise
LTU 4 Stretch systems - fabrics
LTU 5 Stretch systems - components
ESTABLISHING CLICKING THINKING
THE QUALITY SPECIFICATION
Leather Allowances
LA 1 First waste R+M
LA 2 First waste SLM
LA 3 "Put up" factors
LA 4 Leather coefficient
LA 5 The allowance + size variation
Pattern Orientation
PO 1 Parallelogram system
PO 2 SLM system
PO 3 PO for high quality value parts a) child's b) boot c) ladies d) gibson
PO 4 PO for m/qual. abcd
PO 5 PO for l/qual abcd
PO 6 PO all patts in line
PO 7 Eye assessment + PO to butt areas-abcd
PO 8 Eye assessment + PO for other parts
PO 9 + 10 as 7-8 but with marks
PO 11 PO on varying skin sizes
Machine and Equipment Control
MEC 1 SAFETY
MEC 2 Pressure setting
MEC 3 Stroke setting
MEC 4 Releasing stuck beam
MEC 5 Cleaning - lubricating
MEC 6 Board maintenance
MEC 7 Knife
INTERPRETING CLICKING THINKING
SPEED CUTTING
Single knives with different orientation
BENCH LAYOUT
Pattern Orientation on Leather
CUTTING WORK

The training system for Clicking is based upon the chart prepared by the writer shown on the previous page. Here we see a two stage approach which have been given the titles of :-

a) Establishing Clicking Thinking

and b) Interpreting Clicking Thinking.

This two stage approach is based on the belief that until a clicker understands the theory of his work he will not interpret it correctly, and that everything a clicker does in the performance of his work is based on the correct clicking thinking. An example of this, is the positioning of patterns. Until we have taught the trainee what influences how a pattern must be positioned there is little point in doing exercises without the full knowledge of all the many factors that influence this.

As can be seen from the chart the first stage is BASIC CLICKING THEORY and covers four areas :-

a) The Relative Quality of leather

b) The lines of Tightness in the Skin.

c) The Relative Quality of Upper Sections.

d) The Lines of Tightness within the Upper.

These four subjects form the basic clicking theory of the cutter and are essential before he can in any way attempt any practical work.

The Use of Programmes.

The above subjects can be taught in many ways, but an interesting example developed by G. Brandish of Norwich was to use Programmed Learning of the Linear type to teach these basic subjects. Here, Mr Brandish aimed his programmes at the standard middle average junior entering the British Shoe Industry and found them highly successful. The writer has used them and finds they have many advantages, the best one being that they do teach every point required and allow the student to progress at his or her own pace, which is often important in mixed ability classes. The technique also adopted by Mr Brandish was a self-checking technique where students after completing their work check their own results. In the case of the programmes, they perform written exercises in the form of diagrams and then check these against a light box over the master transparency.

The question arises whether or not these programmes would have application within the Hungarian System where the level of academic standard is often very high indeed. From the test that we did on one programme, there would seem to be a definite use for such an approach and in fact it would seem that the supervisors on the course found the programme tested very useful. It also seems that the standard entrant at 14 years is comparable to the persons for whom the original programmes were intended.

It should be pointed out that these programmes are the Copyright of Mr Brandish and should it be found necessary to go ahead with them his

permission will be needed.

Also included in the programmed package is the use of test sheets to ensure that the trainee has acquired the necessary knowledge before he progresses to the next stage.

The theory is a relatively straightforward part of the training of cutters whether approached by programmes or not. What is more difficult is interpreting this theory into practise in a realm of primarily two senses where only experience is the learner. These are kinaesthesis and the use of the eyes.

Here we hit upon the reason why Clicking has always maintained a certain mystique and has resulted in a breed of men renowned for their individualism. Only by years of experience have clickers developed the way they are interpreting their fine senses and skills in the cutting of leather.

If we look at the chart we can see that the first area, The Relative Quality of Leather is by far the largest in terms of exercises, and herein lies the emphasis of the training programme. If we can 'cram' as much experience into this area as possible we shall go a long way to bridging the gap of this difficult and complicated subject.

This having learned from the programmes about how leather varies according to its fibre structure we can move from the theory to the rapid understanding of the practical side in <u>feeling</u> and <u>seeing</u> how the leather varies in quality from various parts of the skin. This is followed by identifying leathers and leather substances by feel and sight and then by feel alone.

In RQL 3 we see how the RQL affects shading and do shading exercises. This is followed in RQL 4 with faults in leather and how to identify them. In RQL 5 we then look at how to assess unusable leather, and at this stage we are able to start on the exercises of the Relative Quality of the Upper Sections upon which the first five exercises form the basis.

With the <u>Lines of Tightness</u> in the Skin we extend from the programme in examining skins and sides allowing the student to feel and stretch the leather to see practically how the tightness is formed in the upper and to draw on the skin with chalk the lines of tightness and those areas, if any, where there seems to be mutual tightness in any direction.

The <u>Lines of tightness in the upper</u> continues with practical 'feel' exercises in determining the stretch of leather, and here we find it is better to have actual examples of leathers which stretch unacceptably mixed among those of acceptable stretch, allowing the student to run through them in the correct handling way identifying those that are not acceptable. This is covered with exercise LTU3 whilst the first exercise is purely letting the student define stretch direction rather than 'stretch quality', and this is done using circles with eight lines across them and allowing the student to place them on a chart with the lines thought to be the direction of <u>least stretch</u>. This is done to to a target time since we are wanting to establish the skilled speed of the

experienced worker.

Even within an experienced group we found there to be differences of assessment in judging the quality of the cut parts, and clearly it is this area which establishes the skilled cutter from the novice. Hence, I repeat the necessity to concentrate on this area as being fundamental to the training of a skilled cutter.

Judging the quality of upper leather is another perfect example and illustrates the problem encountered during the first supervisory course. How do we compare leather and to what standard can a judgement be made? Here the writer recommended that the use of the so-called supreme shoe upper leather, calf skin, be used as a standard on which to compare others and to form the basis of the teaching in comparing other leathers from the point of view of 'feel' 'break' strength, stretch and appearance. It is precisely this difficulty of comparing such a variable material of leather from the point of view of quality that makes clicking an art dependent largely on the use of the eye and the fine sense of feel in the fingers.

It can be expected that the programmes and the Basic Clicking Practical Exercises will take a full week or even longer to complete. All these exercises carry with them the appropriate knowledge lessons that fit to the practical. For example, the Edge Knowledge exercise will have to include a basic talk on pattern cutting involving the types of seams and allowances. Since the programmes deal with the patterns for a standard gibson shoe we tried to have a standard range of all basic shoes styles so that during the course the student would end up quite familiar with the names of all the sections and the way in which these interlock together.

One exercise which needs to be added to the list is the exercise of the correct way of bundling leather together and tying it up, which will need to be done at the completion of each exercise where bundles of leather is involved.

At the beginning of the course we completed a complete stage I analysis and the knowledge lessons appropriate to each exercise were listed.

Whilst it is stated that about one week will cover the Basic Clicking, exercises relating to quality can be continued with throughout the course since we are constantly building up the experience of handling leather. The emphasis will be to vary the types of leathers as much as possible to broaden the experience of the trainee.

STRETCH SYSTEMS FABRICS.

Having taught the principles of stretch in leather we can move onto the same principles as they apply to fabrics in the LTU exercises. These offer the first 'taste' of the student to lock patterns together using the principles of tightness in the fabric related to the shoe. These should be extended to cover the range applicable to the factory concerned, and in each case as the student uses his or her own ability to establish the most economical system in line with

the direction of tightness of the material as it must go in the shoe. The range of exercises should cover cutting in a straight line, cutting diagonally and cutting with more than one pattern at once. Here it is possible to acquaint the student with costs very easily and each exercise can have a target of time and cost as the basis.

During the course some excellent work was done in this area primarily for the reason that this area was so lacking in the Sabaria factory. There were no systems established in the Sabaria factory and when we did comparisons we were easily able to show at least a 20% saving on material by improving the method of interlocking the patterns.

In this area there is a great need for establishing systems for cutting on the fabrics, sponges and poromerics so that the young people entering the factory can be taught properly how to cut the material.

Particularly outstanding during this part of the course was Vargáné Király Zsuzsa of the Institute who contributed considerably to the course with some excellent work and a demonstration in this area.

The Quality Specification.

The whole of the first section of the course leads up to the establishment of the Quality Specification before entering onto the second part of the course aimed at interpreting the Clicking Thinking.

The second stage covers three areas in parallel, Leather Allowances, Pattern Orientation and Machine & Equipment Control.

Leather Allowances.

During the course we dealt but briefly with the subject of Leather Allowances since time did not permit to go into this subject in detail. In many ways this approach is to be recommended in the actual training scheme unless it is decided that a very full and comprehensive course is preferred for the trainees. The writer's view is that a brief outline is sufficient so that the trainee can concentrate on the all important area of gaining rapid experience of handling leather rather than teach too many specialised areas at once. After a period in the factory the trainees can be given a special course in Leather Allowances where this subject alone can be concentrated on.

PATTERN ORIENTATION.

In this series of exercises we look first at the methods adopted by Russ and Small in setting first waste allowances and a means of measuring them and their application to cutting of leather. Here we can see that the parallelogram system can be sometimes used, and therefore the trainees need to be made aware of it. In the S.L.M. system we have an extension of this with consideration being given to the possibility of two patterns being assessed at once if cut from vamp material, and also the recognition that certain patterns

will be cut from certain areas of the skin. The SATRA system does recognise this and is an important step in developing clicking training, whereas the parallelogram is confined to cutting patterns in one way, and not in lefts and rights, and is purely a system (at the very good) of measuring first waste.

ASSESSING AREAS.

Apart from the difficulty of assessing leather quality in all its aspects, a main feature of the skilled cutter is his ability to assess the areas of leather and the patterns and build up a mental picture in his mind how the patterns will fit into the leather. Hence, we need to build exercises which will aim to equip the trainee with the ability to look at a skin of leather and a set of patterns, and see in the mind how these will fit onto the skin and how many pairs can be cut from it.

The Pattern Orientation exercises continue with assessing a wide a variety of skins as possible cut out of board having two main considerations:- 1. Assessing the best quality butt area and 2 Assessing the remainder in relation to this. Here we need skins and sides of all shapes and sizes cut from board which have been previously accurately assessed so that we have some means of checking the trainees progress. These are covered in the first stages of BCL 7.

The Pattern Orientation exercises co-incide with these area assessments by establishing how patterns lock together for high, medium and low quality parts, since clearly we are concerned with interpreting our clicking thinking upon fundamental quality considerations. As can be seen in the appendix layout all parts do not lock together, but usually confine themselves to the front part of the shoe locking together and the back part of the shoe locking together.

However, where we have shading considerations we often have to lock together in a straight line blending the shade from toe to heel as far as is possible. Hence the exercise of organising the patterns in a straight line across the skin, but with stretch considerations very much in mind as part of the quality standard.

Pattern Orientation then continues on board with the student assessing the butt areas by eye, recording the amount of vamps or first quality parts that he or she expects to get from them, and then laying out the patterns on the board as economically as possible but with again quality considerations. All these exercises have to have very well worked out systems with which to compare the trainees progress and for the trainee to be able to see how well he or she is progressing. This is then done for other quality areas again on board with the only constraint being that the lines of tightness must be adhered to.

The Board is then used on the other side, this time having marks upon it, giving the student the added constraint to show their ability of trying to fit the marks into the un-seen edges of the shoe and to fit round the marks in the most economical way.

The Pattern Orientation exercises are completed on the standard range of styles so that the student becomes familiar with as wide a range of patterns as possible, and these are applied to the widest possible range of skins and sides to cover the effects of varying areas and pattern sizes.

MACHINE & EQUIPMENT CONTROL.

Highest on the list is that of SAFETY and this cannot receive too much attention. The remainder are relatively straightforward to teach and were discussed well on the course.

SPEED CUTTING.

After the machine & equipment control exercises have been covered the student can be introduced to a range of speed cutting exercises where all that is required is to develop quick and accurate knife manipulation using different layout systems with different knife orientation. Within the Sabaria factory there are a whole range of such exercises, and it is interesting to note that during the course one lady actually did a remarkably good demonstration almost halving the norm for cutting poromerics.

BENCH LAYOUT.

Following speed cutting we come onto Bench Layout for cutting several components and we dealt with this bearing in mind the considerations mentioned in the first report.

PATTERN ORIENTATION ON LEATHER.

We now come to perhaps the most critical part of the course in building on the knowledge and all the exercises which should have given the student a very clear insight into the details of Clicking and how the mind of the experienced clicker works. This is what we are aiming for - teaching the trainee how he must think and apply his thinking.

The approach to this is normally to layout patterns on the leather or to mark up the leather using a marking pen. Clearly, this type of exercise is too slow and does not simulate the work of the clicker. With patterns we cannot really feel and handle the leather otherwise the patterns will be moved about, and any exercise should come as close to the real thing as is possible. For this part of the course we need a marking machine which will allow the use of press knives or plastic patterns like a marking pattern where we can use a ribbon type ink and print on the pattern onto the leather handling the leather and patterns in the same way as if the trainee was working a clicking press. So the size of the board will be that of the press thus allowing the student to follow the same pattern of movement except that he will not cut up the leather - merely mark it. This is then hung up and the student calculates the time per pair, the area per pair and compares with the costing and allowed time. It will be the job of the instructor to assess the work for quality.

With this exercise equipment the student will be able to perform at the speed above that of the cutting press, thus giving the maximum experience in the handling of leather and patterns which is so essential to training the cutter in the shortest possible time. Given the right equipment for this work the course will have a far-reaching effect. Each skin of leather can be used time and time again, and the widest selection of skins should be available for the trainee to test his ability on, as well as the widest range of patterns. In all this work the preparation will have to have been considerable to make the training effective, since the student requires immediate feed-back on his results, and only if there is the right examples to show the student after he has made the best possible attempts will these exercises bear the fullest impact on the trainee.

TRANSFER TO PRODUCTION.

During the Pattern Orientation on Leather exercises the instructor will maintain close contact with the supervisor watching closely the progress of the trainees in terms of speed and quality, and material economy. Since all these times and allowances have already been set for the main Clicking Room it will be very easy to keep a good check on the trainees progress. Transfer to production can be done gradually allowing the student to move onto actual cutting when those patterns and leathers have been fully mastered at the Pattern Orientation stage, or, in one full move direct to the Clicking Room when all have been mastered. This will depend to some extent on the situation and the type of work. Employing a gradual change means that both instructor and supervisor will work closely together thus gaining the integration of the training centre with the cutting room, and placing the important emphasis of the training within the company.

SUMMARY.

During the course we were able to go through the details of the course as set out in this report, but for reasons of time, equipment and materials, as well as the space within the library, very little practical work on the exercises was given. Before it is possible for the instructors to complete such a course ample time in preparation would be required.

The students on the course performed well and most progressed considerably as the course went on in ability and confidence. Some had the difficulty due to their long experience of looking at their work through the eyes of the trainee, rather then from their own ideas. These points were made very strongly to those concerned and all were aware of these problems.

It was generally felt that the programme as set out is a good sound approach to the training of clickers, but needing considerable preparation especially in terms of materials and patterns for each particular factory.

During the discussion with Mr Schmel on the final day it was recommended that a two stage approach be given to the training of clickers in order to simplify the experience for the instructors.

Stage 1. Establish a course in cutting pig-skin linings, sponges, perromerics, fabrics and chopping out design patterns. Prepare exercises and a manual for this first stage with full costings and layouts for every synthetic or fabric material, and pig-skins.

The advantage of such a first stage is that the instructors are quite capable at the present time to undertake such a course, and that the needs for this introductory training is really lacking within the Sabaria factory, and will give immediate economic gains as well as training to the young entrants.

Stage 2. After a period of about six months the second stage could be attempted after the instructors have had time in co-operation with the Institute staff to complete the necessary preparations.

RECOMMENDATIONS BASED ON THE SUPERVISORY COURSES

1. Assign a suitable person to undertake the assessing of Leather Co-efficients to fully evaluate the information supplied for setting Leather Allowances.

2. Assign a person fully qualified to assess leather on arrival at the factory for quality, and arrange a system in co-operation with the buying department to control leather quality.

3. For the supervisors attending the course set a time scale and programme for the completion of a) Quality Specifications
b) Personal objectives,
and c) departmental objectives to be discussed with senior management as laid down in the Supervisory Lectures. It is recommended that b and c could be completed within one month and a divided equally among the supervisors for completion within three months, or to set a number per week.

4. To take action as laid down in the report in respect of shading of leathers and match-marking of components.

5. Look at the overall function of the Quality Control staff and the way Quality Control is operating to improve the standard of control in general.

6. Leather department to take action with problem leathers.

7. Involve tannery, Institute and Ministry in the scientific problems of lighting, shading and leathers.

8. Evaluate all cutters and prepare a programme of re-training for those using bad methods.

9. Start courses immediately in cutting Pig Skin, fabrics, poromerics and other man-made materials for the junior trainees.

10. Experiment using a full width board with a group of experienced clickers.

11. Give consideration to the purchasing of a new press allowing left and right hand operation and bench layout to assess future needs and training methods. This is just one press for trials.

12. Consider applying colour coding to the press knives.

13. Immediately programme MTM application within the closing department.

14. Immediately purchase French binding guides for post machines and eliminate hand guiding.

15. Assign a suitable person to develop training centre for clickers based on the programme given during the course. This should be done in close collaboration with the Institute officers.

THANKS. I would like to record my deepest gratitude to everyone connected with the two course and for the wonderful hospitality extended to me in Szombathely.

In particular I would pay the warmest tribute to my counterpart Magdolna Nagy who was outstanding in every respect. Magdolna not only handled the course wonderfully well, but was so exceptionally quick in grasping the details of the course and in presenting it to the students. I am also indebted to her for translations done in her own time for the benefit of the course.

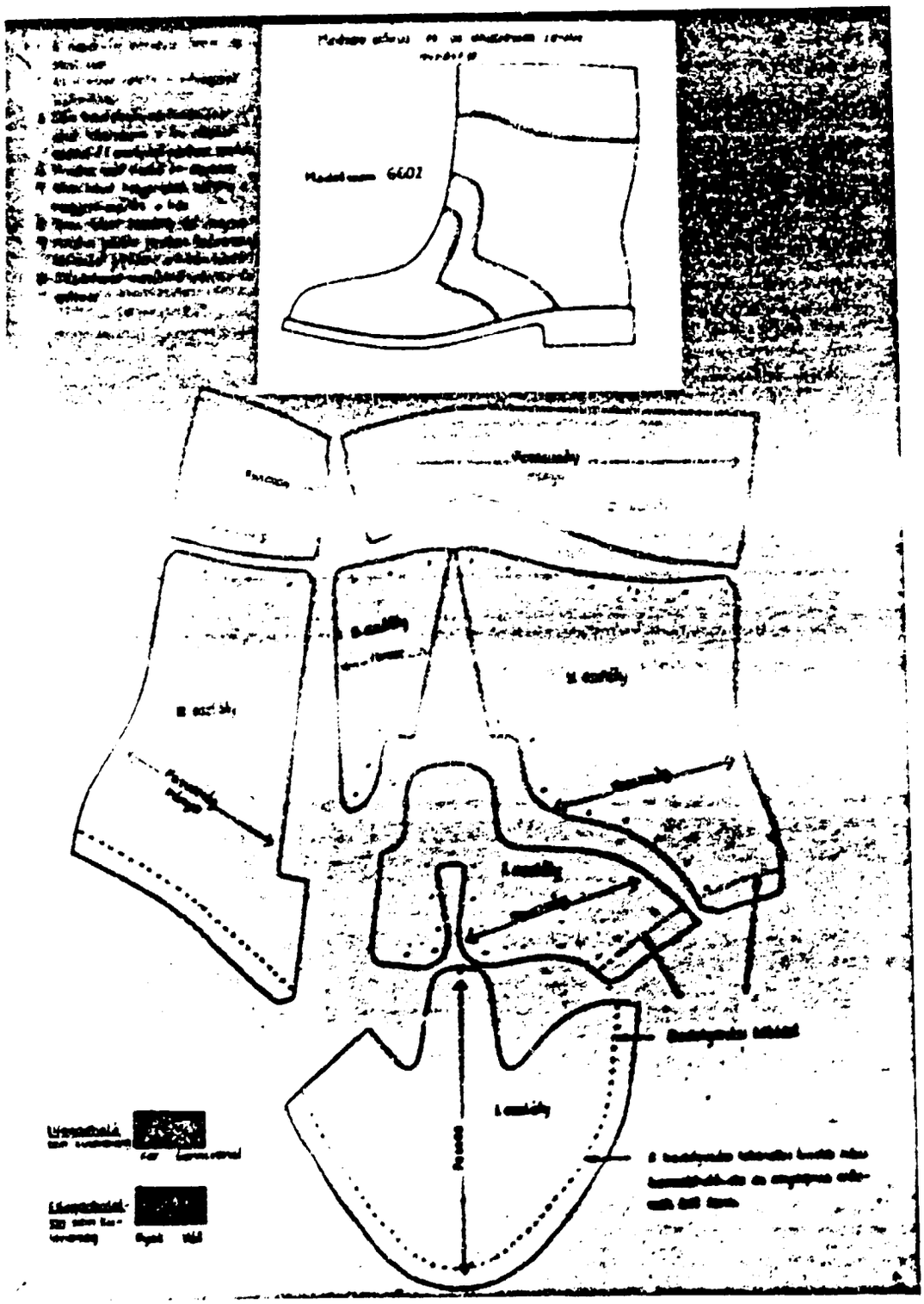
Appendix I

Course members on the Instructor Course.

Course members on the Supervisory Course.

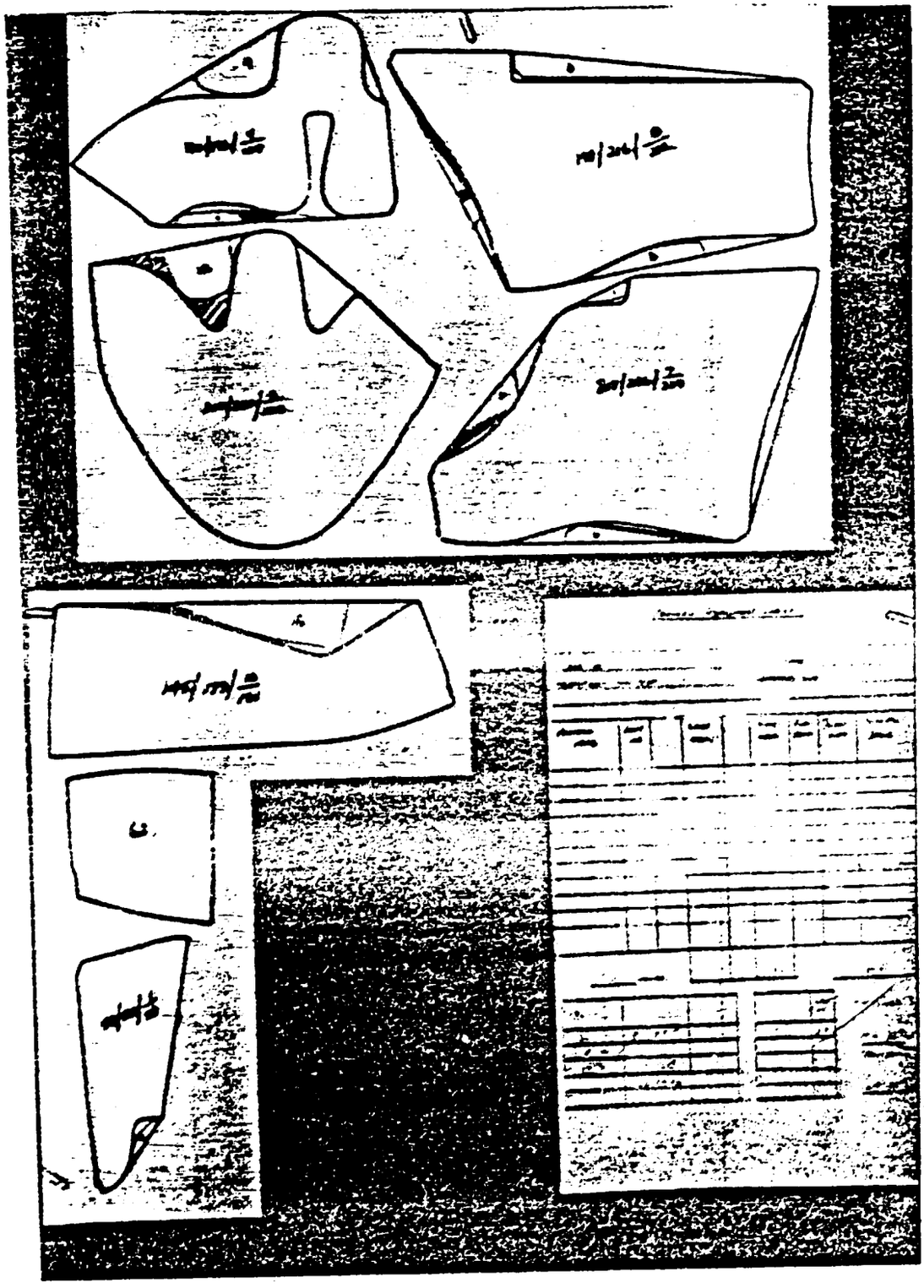
APPENDIX II.

Quality Specification prepared for Pattern 6602
which was causing problems in shading and cutting.

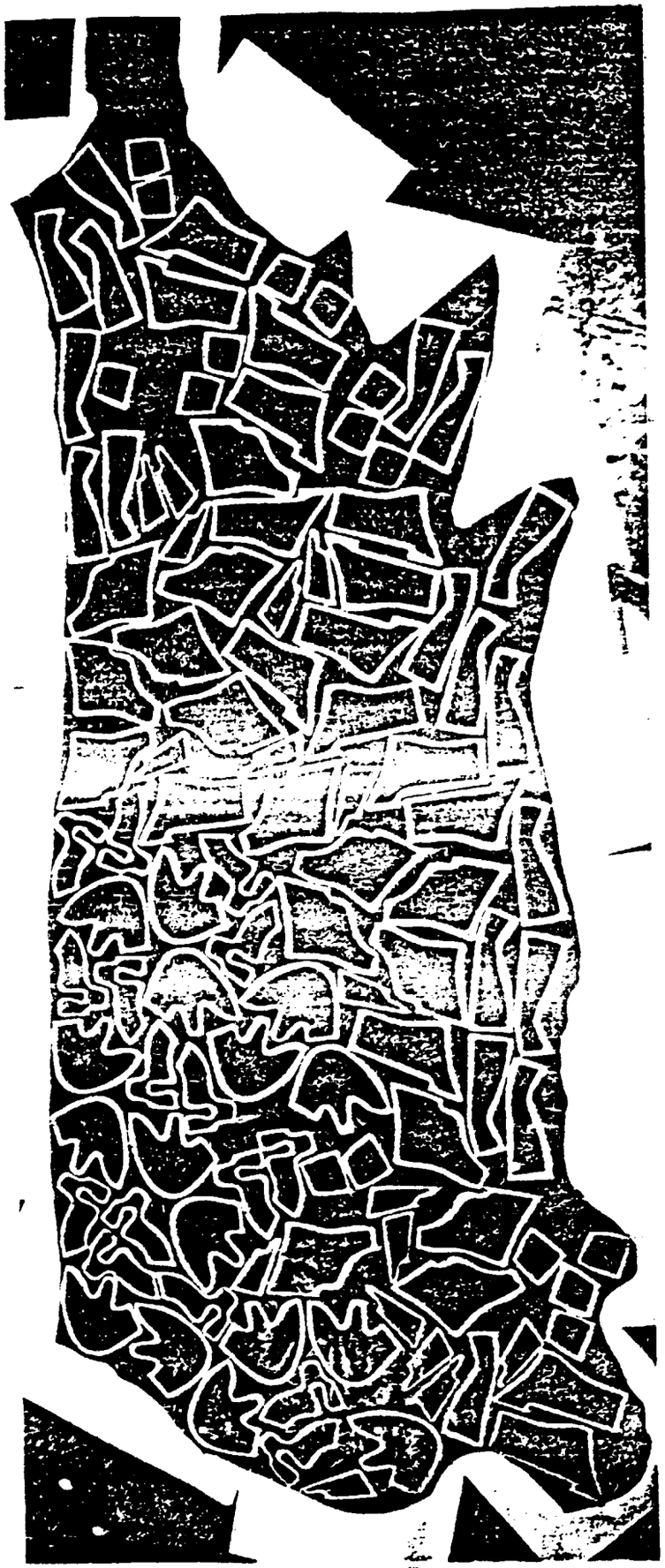


APPENDIX III.

Example of S.L.M. Pattern Assessment with the Pattern Assessment form recording areas and percentages.



APPENDIX IIII. Layout of Pattern 6602.



Details of instruction based on this layout were prepared and translated.

Note: gaps in the layout are due to marks on the skin which did not show clearly in the photographs