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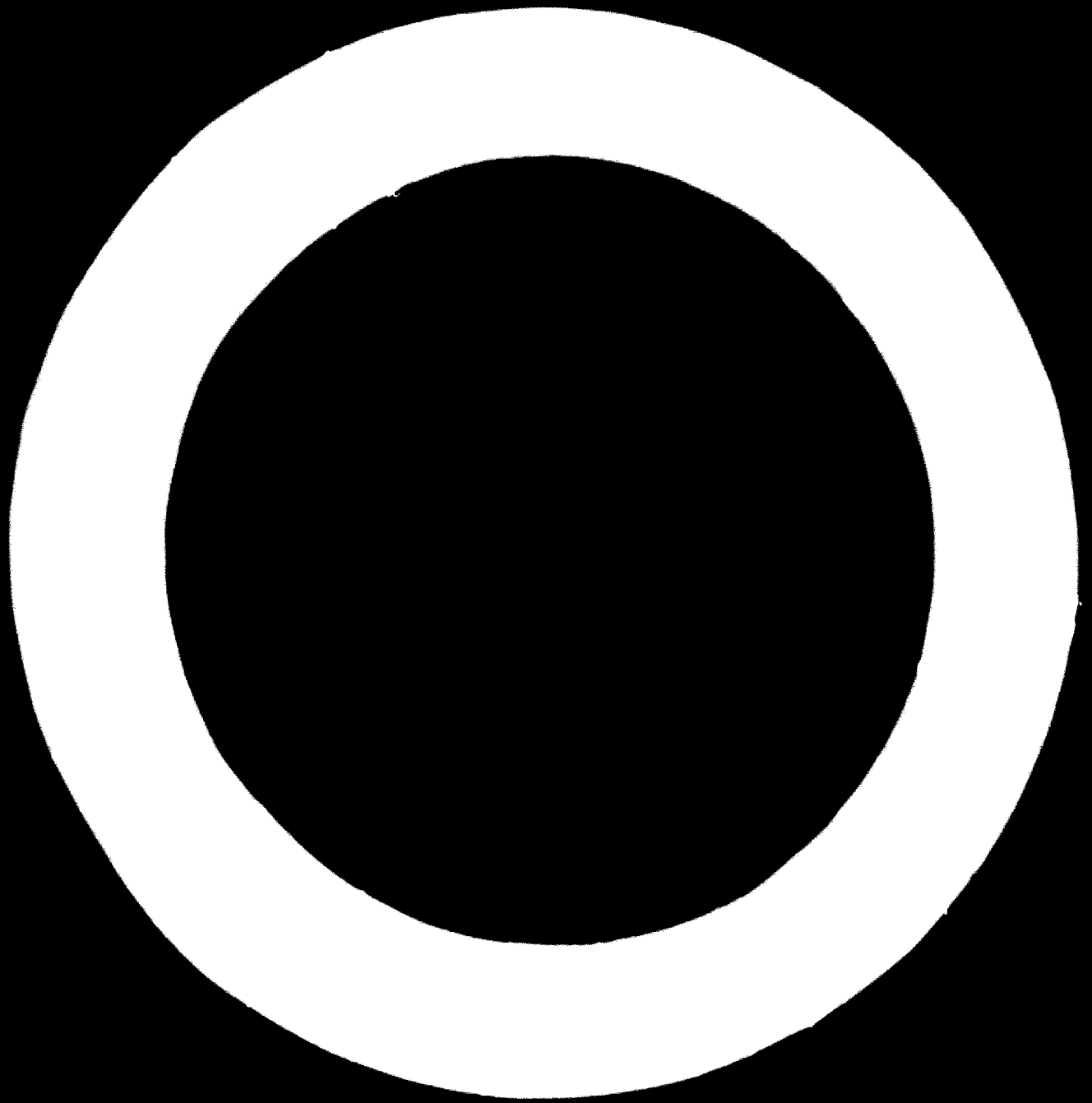
Seminar on the Development of  
the Leather and Leather Products  
Industries in Developing Countries,  
Regional Project for Africa

Vienna, Austria, 22 February - 5 March 1971

R E P O R T  
ON THE SEMINAR ON THE DEVELOPMENT OF THE LEATHER  
AND LEATHER PRODUCTS INDUSTRIES IN DEVELOPING  
COUNTRIES, REGIONAL PROJECT FOR AFRICA <sup>1/</sup>

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R E P O R T

ON THE SEMINAR ON THE DEVELOPMENT OF THE LEATHER  
AND LEATHER PRODUCTS INDUSTRIES IN DEVELOPING  
COUNTRIES, REGIONAL PROJECT FOR AFRICA

BACKGROUND AND OBJECTIVES

The principal objective of this United Nations Industrial Development Organization (UNIDO) Leather Seminar was to bring together a group of selected people concerned with various aspects of the leather and leather products industries to discuss basic problems concerning these industries, and to work out practical answers to existing specific and general problems relative to the industrial development of this sector in developing countries, with particular reference to Africa.

INTRODUCTORY STATEMENTS

Mr. N.K. Grigoriev, Director, Industrial Technology Division, speaking on behalf of Mr. I.H. Abdel-Rahman, Executive Director, welcomed the participants and outlined the objectives of UNIDO's activities with special reference to the seminar and possible follow-up activities.

Mr. M. Mautner, Chief of the Light Industries Section of the Industrial Technology Division, also addressed the participants and spoke of UNIDO's endeavours to utilize its limited resources to obtain the best possible results. He felt that UNIDO should first of all co-operate on projects which are considered to have optimum effect on the economy of the country concerned. Therefore, UNIDO prefers to back projects where a profitable market already exists or can be readily developed and where long-range export drives can be started.

Mr. J.W. Nicholson, Senior Adviser, Industrial Policies and Programming Division of UNIDO, took the opportunity to outline briefly UNIDO's role in furthering rapid industrialization in developing countries with particular reference to investment promotion and joint ventures.

Mr. E.A. Asselbergs, Chief, Food and Agricultural Industries Services, Food and Agriculture Organisation, Rome, addressed the seminar and referred to the co-operation between FAO and UNIDO in this particular sector of industry. He pointed out that both organizations had their own fields of responsibility yet complemented each other.

## IMPLEMENTATION OF THE SEMINAR

In order to fulfil the aims of the seminar, UNIDO invited participants from various African countries. Some 75 participants from fourteen African countries were selected by their respective governments. They represented various sectors of the leather and leather products industries, and fifteen papers were presented by invited specialists to aid their deliberations. The papers covered the whole spectrum of the leather industry sector dealing with hides and skins improvement, tanning technology, leather industry development, industrial production of footwear and leather goods, as well as by-products utilization. In addition, certain papers were prepared by the African participants and delivered to the seminar as country statements. To obtain a fully integrated approach some subjects such as investment promotion and sub-contracting and export marketing and promotion of leather and leather products were also included in the agenda.

The presence of representatives of the Food and Agriculture Organization of the United Nations as well as of the United Nations Conference on Trade and Development, together with more than 50 observers who represented governments, international trade organizations and associations, research and development institutes and many commercial undertakings broadened the discussions and their extensive experience greatly assisted the seminar in attaining its objectives.

In addition to these verbal deliberations, visits to factories in Austria were arranged to give participants an insight into the practical operation of industrial plants within the leather and leather footwear industries sector. The participants were thus able to evaluate in true perspective the potential industrial developments discussed during the seminar.

At the first session of the seminar the agenda and programme of work, as reproduced in Appendix III, were adopted. Mr. J.A. Rant (Yugoslavia) was elected rapporteur.

Chairmen of the various technical sessions were:

- 1st day: Messrs. R. Poeschl sen. and R. Poeschl jun. (Austria)
- 2nd day: Mr. Y. Nayudamma (India)
- 3rd day: Messrs. A. Colomer-Munmany (Spain) and T.J. Johnson (United Kingdom)
- 4th day: Mr. I. Jullien (France)



5th day: Messrs. G. McWatters (United Kingdom) and I. Intonu (Nigeria)  
6th day: Messrs. J.A. Sagoschen (Austria) and A.R. A.H.A. Obeid (Sudan)  
9th day: Mr. R.G.H. Elliott (United Kingdom).

English and French were the official working languages of the seminar.

## RESULTS

The seminar exceeded all expectations and the participants felt that much useful ground had been covered. Attention was drawn to the many opportunities for new African projects in the leather and leather products sector. The participants gained a clearer picture of possible avenues of industrial development in their respective countries and were able to appreciate the various types of assistance which UNIDO could offer them in order to reach their goal.

Several commercially viable propositions were brought to light during the seminar and preliminary discussions were held by participants with interested observers who, it is understood, would be willing to undertake joint ventures to allow these projects to materialize. In addition to these concrete commercial propositions, the seminar adopted recommendations which offered guidelines to governments wishing to industrialize the leather and leather products sector.

## RECOMMENDATIONS

The recommendations mentioned above were:

- (1) THAT it should be recognized that the leather and leather products industries offer outstanding development opportunities to developing countries with domestic sources of hides and skins as well as abundant labour;
- (2) THAT developing countries in order to ensure maximum utilization of raw hides and skins should intensify their activities in the field of hides and skins improvement;
- (3) THAT developing countries should concentrate on the establishment of modern abattoir facilities, where possible, and the maintenance of strict meat hygiene as these two factors would assist the production of better quality raw materials for the leather industry;

- (4) THAT each developing country should be encouraged to co-ordinate sectoral interests and prepare integrated plans of development for its leather and leather products sectors which should be included in the national development schemes of the countries concerned;
- (5) THAT in view of the catalytic action of tanneries in improving the quality of hides and skins, developing countries should proceed to the establishment of industrialized tanneries;
- (6) THAT following a decision to establish an industrialized tannery, due regard should be given to the overall national economic gain and to the full utilization of indigenous resources;
- (7) THAT due regard should be given to existing tanneries when drawing up plans for the industrialization of the leather sector;
- (8) THAT in the early stages of development, tanneries should plan their production programme in accordance with market demands, but they should not lose sight of the short or long-term necessity to produce finished leathers;
- (9) THAT governments should devote particular attention to adjusting financial and taxation systems in order to encourage industrialization, by adopting such measures as flexible export levies on raw and processed hides, the refunding of import duties and the offering of credit, etc.;
- (10) THAT in view of the leather and leather products industries' need for external aid, the developing countries should accept those offers which comply with their plans for the leather sector subject to the inclusion of certain safeguards;
- (11) THAT the development of the footwear industry throughout the region should be accelerated, due consideration being given to the balance between local demand and production;
- (12) THAT it should be recognized that the current trend towards the mass production of footwear using synthetic materials in developed countries opens up good prospects for the manufacture of quality leather footwear in developing countries;
- (13) THAT the countries concerned should also explore the possibility of establishing leather goods industries as a means of making full use of local leather resources

- (14) THAT international agencies take steps, in co-operation with the developing countries, to promote the training of personnel at all levels in the fields of technology of leather and leather products, management and marketing;
- (15) THAT developing countries should initiate marketing studies or seek assistance to do so in order to promote the exportation of the products offered by their leather and leather products industries;
- (16) THAT developing countries should pay close attention to the maintenance of strict quality control standards in the fields of leather and leather products as this would promote the exportation of leather and also uphold the rightful position of leather as being undeniably superior to synthetic materials;
- (17) THAT developing countries should also give serious thought to the application of quality control at all stages of production, especially with regard to the acceptance of chemicals and auxiliaries for reasons of economy and product quality;
- (18) THAT governments should be encouraged to take advantage of the various technical assistance services offered by UNIDO and other international agencies as well as UNIDO's sub-contracting and investment promotion programmes, so as to ensure the controlled rapid industrialization of their leather and leather products industries;
- (19) THAT developing countries, in particular those with limited resources and consumption, should initiate studies so that regional co-operation may be promoted between countries to the greatest extent possible;
- (20) THAT the seminar's success indicates the necessity of holding regular seminars on the African continent so as to facilitate follow-up procedure and permit a careful analysis of the results achieved as well as the steps taken to implement these recommendations.

## TECHNICAL SESSION I

The Chairman, Mr. P. Foeschl Sr. (Austria), introduced Mr. Y. Nayudamma (India), who presented his paper:

### "The Problems and Prospects for Development of the Leather Industry in Developing Countries"

The theme of this paper was that developing countries had rich raw material resources, large availability of labour, together with traditional skills, rising population and growing internal demand. Their major asset, however, was the overriding ambition and enthusiasm to make fuller and better use of these factors. This revolution of rising expectation could only be met by careful planning and competent execution as well as by the application of the most modern scientific, technological and management concepts. These countries should learn from past failures and the experience of advanced countries and progress rapidly by the "leap-frog" technique.

The speaker's views were based on his own experiences in India as well as on his visits to numerous other countries, both developed and developing. He outlined the existing situation in certain countries where tanning is traditionally carried out in small units. Such operation by small scattered tanneries yielding low standards of living to the operatives has in the past hindered rapid development of the industry, as the age-old industry is hampered by tradition, blocked by inertia and highly resistant to change. He advocated improving this situation by utilizing extension services and raising general levels of education. The speaker also suggested that the answer probably lay in the selection of appropriate technologies that could be rapidly applied and easily assimilated by these small units.

The speaker indicated that before development could proceed systematic planning was necessitated. This would require careful surveys of existing resources, as well as conscientious interpretation of the market intelligence data available. Based on these two criteria, it should be possible to prepare a blue-print for development indicating resources, number and type of tanning, footwear and leather goods units to be established. The balance between domestic consumption and export as well as the need for the development of exports would also have to be determined and applied. Once such a plan for an integrated leather industry sector was accepted, its implementation would have to be considered. Here one of the major bottle-necks is the lack of

practical mechanics for implementing such plans. In cases where private industry was slow in developing, the government should consider setting up model units on its own or in collaboration with a private entrepreneur. Where the levels of organization and management are low, they must be improved radically to take advantage of available resources. The speaker said that such plans should encompass the whole sector from raw hides through tanning to the manufacture of leather products. He felt that only by improving the animal products sector could the leather industry be effectively developed on a long-term basis. He stated that the total return from animal products (in the Economic Commission for Asia and the Far East (ECAFE) region) was roughly twelve times less than in the United Kingdom from meat, milk and hides alone, while slaughter is between 4 and 10 per cent in contrast to 40 to 50 per cent in advanced countries. He pointed out that India may lose over US\$ 70 million per year by not fully utilizing the carcass by-products. It was said that small and large units should be able to co-exist and several possible means of implementing this were described. In his study of production problems, the speaker suggested that poor business management coupled with poor production control and accounting systems must be overcome by using more professionally trained management.

In the section on marketing, the author pointed out that many countries have weak marketing and trade channels. The deficiencies of the present system were discussed and possible means of opening new trade channels suggested. The author stressed the desirability of a positive export programme based on stable support measures. Such export plans should spell out in specific terms the products for export, targets, technology gaps, policies, support measures and incentives need to back the plan.

The author suggested that as technology was the foundation of every development, it is best obtained from any available source subject to adaptation and improvement. He emphasized that a technology was needed suitable for a specific country. The speaker claimed that brainpower could not be borrowed and it was thus necessary for each country to have at its command local human resources.

In order to reach the required levels of technology, training in both entrepreneurship and technical matters was essential. It should be recognized that actual working experience was needed to run a tannery. After being

trained, the personnel should be able to work at all levels in production units and be capable of adapting modern knowledge and of developing know-how appropriate to the level of the operation. They should also be able to give practical demonstrations of modern scientific and technological methods leading to increased revenue for the tanner, as it was a well-known fact that tanners only respond positively when the financial incentive is clearly visible.

The speaker also felt that greater emphasis should be given to training in engineering management and productivity methods. Thought should also be given to the advantages to be obtained by introducing a proper understanding for industrial relations to ensure that the individual and the job were well matched and that there was a certain degree of job satisfaction. Thus, the author felt, that the workers should be kept well informed and given a sense of participation.

The paper outlined the various bilateral and international assistance schemes now being provided, including those of the United Nations organizations and agencies. He accepted that capital may be obtained from different sources, but it was necessary to ensure that such financial assistance be organized in a proper way so as to conform with each individual country's development plans in the sector.

### Discussion

Discussion following the paper was varied and lively and covered many important points: possible sources of capital needed for development, potential markets for the goods produced and problems of a religious nature. It was cited that in India some fifteen to twenty million cattle hides are lost annually for traditional and religious reasons, and it was suggested that more slaughterhouses were essential to ensure better utilization of both the carcass and the hide.

The problems of small tanneries in inaccessible areas were also discussed. It was felt that these small units would have to continue for some time and that there was every indication that they would survive in face of larger factories which were the current trend. In answering some of these queries, the speaker suggested that quality control was obviously better in a larger unit, but efforts must be made to assist the smaller units to absorb modern technical know-how. He suggested that the hide could perhaps be rounded,

the crop being given to a large tannery and the belly and shoulders to the smaller tanning units. Thus, the back or crop, i.e. the most valuable portion of the hide, would receive the best processing and the lesser valued portions would constitute a useful raw material for the smaller less sophisticated tanning units.

Several questions were raised about which countries had tried to integrate their leather industries and how successful these ventures had been. The example of Malaysia was quoted where a medium-scale integrated project is operating successfully: raw hides and skins are obtained and tanned, followed by the production of footwear.

In closing the discussion on this paper, Mr. M. Mautner took the opportunity to mention some ideas put forward by his section and pointed out where they complemented the problems discussed during the session. He felt that the basic difference between the production and quality of goods in developing and developed countries was due to variances in management and production techniques. However, he suggested that this quality gap could be bridged in a relatively short time and pointed out that the more important factor was local purchasing power. In view of the fact that the per-capita income in the developing countries ranged from US\$ 40 to US\$ 200 per annum while the spread in the developed countries was from US\$ 2,000 to US\$ 4,000 per annum, it was obvious that local market conditions would differ completely. This, he felt, greatly affected the productive techniques employed, for only if there was a large demand which lead to increased production, could the economy of scale and profitability recoup the time and investment. Mr. Mautner also emphasized that every country must consider its situation in this sector in the light of a study based on its resources and particular conditions. Any investment, however, must be geared to production on an economic basis. He confirmed the view that the integrated operation in Malaysia was successful and suggested that the question of the plant size may be less important, the main points being trade channels and proper product promotion.

TECHNICAL SESSION II

The Chairman, Mr. R. Poeschl Jr., called upon Mr. S. Abbas (UNCTAD) to introduce the UNCTAD report:

"World Supply and Demand  
The Prospects for Increased Exports from Developing Countries  
Leather and Leather Products: A Summary Report  
A Study by the UNCTAD Secretariat"

The study attempted to assess the demand for leather and leather products by studying world trends in the production and consumption of hides and skins and of leather footwear over the last fifteen years.

It showed that in the United States footwear consumption per head of population had failed to increase proportionately to the rise in real income. In Europe, there had been a steady increase in per capita expenditure on footwear which, it was felt, would not attain the same level of consumption as in the United States. The Eastern European countries with centralized economies have, however, shown a greater increase in footwear consumption.

On the basis of studies of past consumption the paper suggested that the future leather footwear position would be as follows:

Table 1  
Prospects for the Growth of World  
Demand for Leather Footwear

	Estimated share of world consumption in 1970	Projected average rate of growth of demand (per cent per year)	Projected index of demand in 1980 1970 = 100
USSR and Eastern Europe	36	1.7	118
Developed market economy countries	52	1.5	116
Developing market economy countries	12	4.8	160
WORLD*	100	2.0	122

\* Excluding mainland China.

The paper inferred that it was impossible to predict to what extent the substitution of synthetic uppers for real leather will proceed in the future, but felt it would be unreasonable to assume that this substitution will not occur, especially in view of the past experience of the leather goods industry



and the fact that substitute upper materials are already being marketed in limited quantities. Thus, possibly in some developed countries the demand for leather to be used as shoe uppers may stagnate over the decade 1970 to 1980, given only a small projected increase in demand for footwear as a whole.

Statistics available on the consumption of leather goods other than footwear do not suffice for an objective assessment of future prospects for these goods. However, the prospects seem somewhat better than for footwear as many of the goods concerned have already successfully contended with serious competition from synthetics. Real leather goods are actually acquiring the characteristics of luxury goods, the demand for which should continue to grow as income rises, especially in developed countries.

The study continued with an outline of the supply of raw hides and skins, and their availability. It was pointed out that nearly 60 per cent of the world's stock of cattle is held in developing countries. It was stated that the world's stock of cattle, like the human population, has been growing at the rate of 1.9 per cent per year.

The leather industry must be considered relatively slow-growing, when compared to other industries, and hence ranks among the declining industries. Recent trends have shown that even given static consumption within a country, imports of leather or leather products may still grow rapidly at the expense of domestic production. The study cited the example of the penetration of Italian imports into both European and North American markets. Developing countries had many factors in common with the Italian leather and leather products industries and should therefore be able to emulate their example in obtaining an increased share in world production and exports in the sector.

The study also examined the structure of tariffs in developed market economy countries, and such questions as the degree of protection afforded to the local industries in such economy countries. In this respect, it was pointed out that some countries had even restricted imports in this sector, which, when coupled with the relatively unsubstantial assistance given to the sector in the recent round of tariff adjustments, had not offered much aid to the developing countries in this field. The speaker felt that the developed countries must grant freer access to markets to allow the development of this sector in developing countries. He also stressed that he preferred the export of finished goods from developing countries and felt

that some governmental support was often necessary for this. Governments could offer export assistance in various ways, but the speaker felt that producers tended to rely on such aid which often led to indifference and loss of initiative, which was detrimental to long-term competition on world markets.

In his closing remarks, the speaker confirmed that the leather footwear and leather goods industries were most suitable for developing countries because the technology involved is relatively simple, investments are low and labour easily available. He suggested that all the United Nations agencies and organizations should give assistance to this industry as it may easily be developed and that to compete on international markets the developing countries must improve quality, lower prices and realize that to obtain bulk orders in international world markets they must be competitive at all times.

#### Discussion

During the discussion many speakers emphasized that the various United Nations organizations and agencies should co-ordinate their activities in the field of leather and leather products. It was generally agreed that the leather industry deserved priority as it was such a suitable industry for development. Some participants confirmed that it was not always necessary to be completely self-sufficient as in some countries this would be economically impossible.

The necessity for a planned development of the leather and leather products industry was underlined by one African participant who outlined the conditions in his country where, though only 20 percent of the two and a half million inhabitants were able to afford to buy shoes, two million pairs of shoes were produced annually. The country was thus forced to export. While this export was very welcome, there was some apprehension about the difficulty of marketing this relatively large volume when the neighbouring countries had fully developed. The participant felt that his country should perhaps have developed the industry along slightly more conservative lines.

Views varied on the question of the speed at which the leather industry should be developed. Some participants felt that countries should immediately develop both tanning and leather products sectors, other speakers felt that

more gradual approach would yield better long-term benefits. The seminar's attention was drawn to the situation in Spain where 25 years ago 95 per cent of their available raw hides and skins had been exported raw, whereas today the industry was exporting leather products to the value of US\$ 160 million per year. It was suggested that this was due to the gradual development of the industry. Tanning techniques had been fully developed and good quality leathers were available before any effort was made to introduce large-scale production of leather footwear or leather goods, as it had been felt that if leather footwear or leather goods were produced from inferior quality leathers, a poor reputation might be obtained which would greatly hinder subsequent efforts in the fields of development and exportation.

The opposite view was also expressed. It was suggested that even if poor quality leather was produced, it was possible to use this leather internally as there is always a market in developing countries for boots to be supplied to the police and armed forces. It was also suggested that a progressive technical attitude coupled with dynamic management would surely lead to success.

The speaker confirmed his view that planning was necessary at an early stage to facilitate integrated development of the industry. The balance between domestic consumption and production for export must vary according to the country's circumstances, and countries should not attach too much importance to foreign exchange earnings as equal or more value could sometimes be obtained by import substitution.

### TECHNICAL SESSION III

The Chairman of the day, Mr. Y. Nayudamma (India), introduced Mr. T.J. Johnson (United Kingdom) who presented his paper

"The Elaboration and Implementation of a  
Programme for Hides and Skins Importation  
and Marketing in Developing Countries"

The author explained that his paper was based on his experiences gained during a UNIDO assignment in Ethiopia. He agreed that conditions and problems confronting the hides and skins sector varied from country to country but felt that many problems and their solutions were common to other developing countries.

Initially, the Ethiopian hides and skins industry had been greatly disorganized. There had been no legislation pertaining to the control of curing premises, the methods used or the subsequent trade channels. The purchase of raw hides and skins was originally carried out purely on a weight basis with no differentials for either grade or method of curing. Understandably, therefore, the majority of hides and skins coming on to the market were ground dried, and even the few which were air dried were often mixed for sale with inferior material. Slaughter sites were few; many animals were slaughtered, flayed and the carcasses cut up on open ground; the hides were often used as the surface on which the carcasses were butchered giving rise to dirty, knife-cut hides.

Steps to improve the situation had been taken and an advisory panel of interested parties formed. Further steps were being initiated to expand extension services and draft legislation for the buying and marketing of hides and skins.

It was soon realized that in order to obtain improved quality of flaying and curing, financial incentives must be introduced. To this end the speaker had approached tanners, two of whom agreed to pay a 100 per cent differential for suspension dried hides as well as a 25 per cent grade differential. So as to take full advantage of this agreement, the author organized a pilot scheme with five butchers who agreed to operate a joint drying shed. The first batch of hides processed under supervision in the correct manner was marketed, and it was found that the improved products obtained an increased yield of 125 per cent (US\$ 1.52 per hide). News of these increased earnings obtainable by correct flaying and drying procedures spread rapidly, leading to an expansion of the scheme and a rapid increase in the primary producers' income by as much as 200 per cent.

A central hides and skins marketing store was organized to facilitate proper grading and marketing of these increased quantities of suspension dried hides. The hides that are graded were auctioned, which in itself was a new venture in the field of Ethiopian hides and skins marketing. During the speaker's assignment the percentage of frame dried hides rose from nearly zero to 6 per cent, and it is understood that this upward trend has continued in view of the financial incentives offered.

A crash programme was operated by the hides and skins improvement service in the fields of re-training and re-equipping, the aim of which was to ensure effective utilization of manpower and generally raise flaying and curing standards in Ethiopia. The targets set were the levels obtained in other countries and the avoidance of losses due to poor branding/flaying which were calculated to amount to US\$ 300,000 per annum (hides only).

The speaker also referred to the projected installation of a tannery in Ethiopia and raised some doubts as to the availability of good quality hides for the operation of this tannery. He also felt that a greater number of trained personnel were urgently required. However, he was optimistic about the developing countries' chances of entering the world markets with finished products and felt that this could be accomplished within five years providing concentrated efforts were made.

#### Discussion

The discussion which ensued covered a wide range of topics. Many participants felt that by concentrating one's efforts on the installation of improved slaughterhouse facilities, one would automatically obtain better quality and correctly produced hides and skins. It was felt that this approach would yield quicker results than merely expanding traditional hides and skins improvement services. Others felt that the development of industrialized tanneries would have a catalytic effect upon hides and skins improvement as they would undoubtedly increase local demand for top-quality raw materials, thus accentuating the differentials.

Discussion also centred around a means of ensuring that dried hides were free of disease and beetle damage. The speaker suggested that if the moisture content of the hides was less than 14 per cent, there was little risk of bacterial action. He also mentioned several proprietary materials (gammexane, etc.) which were reported to effectively eradicate beetles.

The seminar also discussed the problems which were to be encountered in remote parts of many of the developing countries. Several participants felt that for many years to come small amounts of poorly prepared materials would enter the market from nomadic areas. The problems of trading channels in most of the developing countries present were also discussed and it was felt that too many middlemen were involved who took too large a share of the monies.

The practice whereby middlemen are bound to particular merchants by "cash advances" was also deprecated. It was felt that new trading channels must be organized to ensure that the primary producer receives a larger proportion of the financial reward as only then would he have sufficient incentive to persevere with the quantitative improvement of the raw hides and skins. Several participants mentioned the current world-wide demand for full grain aniline leathers. This produced a demand for better quality hides which could be finished without the grain being buffed. While recognizing this trend, it was generally agreed that until better animal husbandry practices were adopted, grain blemishes would be difficult to eradicate. The speaker suggested that the hides and skins improvement service as organized in the East African countries could be taken as a good model for developments in other countries.

The Chairman then invited Mr. C. Morfaw (Food and Agriculture Organization) to present a statement entitled:

"Paper on Hides, Skins and Leather Development  
Activities presented by Food and Agriculture  
Organization of the United Nations  
to Participants at the UNIDO Leather Seminar"

The speaker pointed out that FAO activities in the sector dated back to 1951. The organization had experts in thirty countries, fifteen of these in Africa. Initially only technical expertise had been provided, but at a later stage the establishment of UNDP (Special Fund) projects had permitted more integrated development assistance; this included the use of experts to advise in the developing countries as well as fellowships which enabled people from the developing countries to be trained at varying levels in developed countries. Equipment for demonstration and training purposes was also made available under the UNDP (Special Fund) scheme. The speaker gave details of two FAO assisted Special Fund projects. One had been in the Sudan where demonstration units including a pilot tannery were set up to assist the development of rural tanneries and hide improvement. Research had also been carried out on indigenous materials to assess their suitability for use in the tanning industry.

The second and larger project had been initiated in Zaria in Nigeria where there is a central institute with teaching and research facilities which is linked to the two pilot tanneries in other parts of the country.

This Special Fund project is providing training at three levels, the most basic being hides and skins improvement work, the middle level being training in leather technology at a craft level, while a high level course is given leading to the award of diplomas in leather technology and science. In addition to these technical assistance programmes, studies of the hides, skins and leather industry are undertaken. In the FAO Commodity Division the first comprehensive study of the world hides, skins and leather industries has just been completed, on the basis of which projections have been made for the industry for the year 1980. The speaker pointed out that FAO co-operated with other United Nations agencies and organizations, including UNIDO. An example of FAO/UNIDO co-operation being a project in Turkey entitled: Central Research and Training Institute for Hides, Skins and Leather, Istanbul, where both organizations were supplying expertise.

The Chairman then called upon Mr. J.H. Atkinson (United Kingdom) to present his paper

"Preservation of Hides and Skins by  
"Low-Veg" or "Fringe Level" Tanning  
for the Development of an Export Industry"

which briefly elaborated the problems confronting the current practice of exporting raw and semi-tanned hides and skins. The speaker described certain factors that had come to light following the development of "low-veg" tanning which he said offered a more suitable form for the export of hides and skins. He said that many of the problems inherent in wet blue production and export could be avoided by using this vegetable process. The process uses just sufficient tannin (less than one third of the normal offering) to ensure a non-putrifiable material. The process may be undertaken in small unsophisticated tanning units as well as in large industrialized tanneries, yet the final product could be processed into a variety of leathers in the importing country.

The paper also considered the various factors to be studied when setting up export industries in this field. These included the cost of production and freight from which it appeared that "low-veg" is more economic than wet blue. Yield (area) was also shown to be slightly higher than for chrome leather, and material utilization was better since the process was applicable to 100 per cent of available hides and skins, whereas the wet blue process was said to be only suitable for some 60 per cent of available material. Physical testing results were quoted in the paper and thought satisfactory.

The paper reviewed the various market considerations and suggested that 'low-veg' material, which is exported dry, was easy to measure and simple to wet back and reprocess. The re-tannage employed by the finishers in the consumer market appears to override the animal original vegetable character. Thus low-level vegetable leathers can be processed as shoe uppers, garment leathers and even sole leathers. It was also stated that garment leathers may even be waterproofed using a newly developed process (a patented process by P. S. Briggs)

A new development of the chrome re-tannage of 'low-veg' materials shows that stripping is unnecessary in the importing country, and it is possible to wet back and chrome the materials simultaneously, giving an instantaneous tannage with no effluent for this part of the process

The author stressed that leathers exported in the 'low-veg' state and then chromed in the importing country yielded products which may be considered a full chrome tannage on hides and skins previously preserved with vegetable extracts.

#### Discussion

In continuation of this paper, the seminar discussed the suitability of various vegetable tanning materials for use in this process. The speaker pointed out that any of the well-known materials, e.g. wattle, queoracho, chestnut, etc. as well as indigenous materials, were suitable if available in extract or spray-dried form. This applied to acacia nilotica (sunt - garad - bagaruwa) which was used in Nigeria and the Sudan.

Some participants felt that though the process may be suitable and logical, difficulties would be encountered when marketing this new processed material. Whereupon the speaker offered to supply names and addresses of people willing to handle the products. In answer to several queries, the speaker pointed out that no more chrome was used during the re-tannage of fringe-level material than would normally be used on a conventional chrome tannage, hence there were no extra material requirements. It was also stressed that oil was unnecessary in the 'low-veg' process and that setting out was not essential. Due to the low percentage of vegetable tannin present oxidation did not take place during drying. This meant that no major problems occurred during drying except in those countries where heavily contaminated (iron) dust conditions are encountered



(e.g. Sudan). The question of dry-cleaning articles made from "low-veg" material that had subsequently been chromed was raised. If the leather behaved in a manner similar to a vegetable tanned leather, some discoloration would be seen. However, the speaker felt that this would not be the case as there was no loose tan.

#### COUNTRY STATEMENTS

In the course of the first III technical sessions, statements relating to the situation in the leather and leather products sectors of the respective African countries were presented by representatives of all the participating countries. A summary of these statements has been prepared and is attached to this report as Appendix I.

#### TECHNICAL SESSION IV

Mr. A. Colomer-Munmany (Spain) took the chair and introduced Mr. Y. Nayudamma (India) who presented a summary of his paper

##### "Wet Blue Chrome Leather for Export"

The paper reviewed in some detail the whole field of industrial production and international marketing of wet blue leathers. The problems experienced by both producer and recipient (finisher) were discussed, and though mainly based on Indian experience the paper was augmented by knowledge of African countries.

The paper showed that in view of the developed countries' preference for semi-processed imports and the developing countries' large share of raw hides and skins resources, the production and export from developing countries of wet blue or similar products could be greatly expanded.

The problems of some developing countries which have many small artisanal units were discussed, and the suggestion was made that wet blue can be produced by the cottage industry as well as in industrial plants, providing technical and organizational aid is given.

The necessity for strict adherence to set standards was emphasized so as to ensure a smooth flow of national and international trade. Quality control in the tannery must be associated with standard specifications and pre-shipment inspection. No international standards exist in this sector, but it was

suggested that the basic parameters should be: moisture content 50-60 per cent; chrome 5-7 per cent ( $Cr_2 O_3$ ) based on hide substance; pH above 3.0.

The processing of skins/hides to the wet blue state was covered in detail and processes were described for the utilization of any rejects to convert them into cheap garment, suede and lining leathers.

Subjects which must be examined in the course of a feasibility study, prior to the establishment of a tannery were also outlined. Basic data were given for setting up a tannery (at several levels of production) to process goat skins and produce wet blue augmented with some vegetable tanned and chrome crust for export.

At the end of this comprehensive study problems were listed which still require further elaboration or solution. These include such perennial problems as coexistence of different sizes of production units, possible detrimental effects of wet blue production on the exporting country, and the "threat" of synthetics.

In presenting his paper the author emphasized certain points. He felt that tanned leathers including wet blue were matching demand throughout the world. Wet blue, although not always very economic to produce (when considered in terms of foreign currency earnings), had the added advantage of encouraging development of a finishing industry, since during the production process a certain percentage of the tanned hides or skins are rejected as being unsuitable for export. The tanner is forced to process any reject leather to the finished state which can then be used in the local production of leather products. With vegetable tanned leathers, however, a much larger percentage is exportable and less pressure is exerted on a tanner to enter the finishing field. The question of balance between domestic consumption and production for export was also stressed, and the speaker felt that by producing both wet blue and other types of tannages one would have better chances of withstanding market fluctuations.

The speaker spoke of the growing world demand for leather and suggested that resources were perhaps limited. For example, if everybody in India were to have one pair of leather shoes, they would need 558 million pairs, and there was not sufficient leather available in the country.

He suggested that with regard to development, the examples of Spain and Italy should be studied, where rapid growth had been achieved in a short period. This was based on relatively small investment in small units, with

each unit specializing in a particular article. He thought that this could be applied to both the shoe and tanning industry, and that all forms of development should be encouraged as long as they led to a long-term rational development of the industry.

### Discussion

The discussion followed various lines. Some participants thought that the development of wet blue production in small rural tanneries as suggested, was too risky and the requirements with regard to capital and know-how too large for these undertakings. Other participants, however, felt that this could be accomplished as soon as the chrome tanning process was rationalized. It was also emphasized that the figures quoted in the feasibility studies were relevant to India and would need some adaptation to conditions and prices in other developing countries.

With regard to development, several participants felt that anything which encouraged industrialization of the leather industry should be accepted, even if in the initial stages the units were uneconomic and needed government assistance. Initial outlay should be considered in the light of long-term benefits.

An optimistic view was expressed by one participant who cited the example of Argentina where the exportation of semi-tanned leathers had undergone a dramatic increase in the last six years. He felt that the minimum economic production figure of a hide tannery was 5,000 hides per month. Production in excess of this offered a tannery every chance of profitable operation, while lower production levels involved a certain degree of economic risk, unless capital requirements could be reduced.

Several speakers emphasized the need for quality control. The example of some European countries which had sent their technicians to developing countries in order to supervise production of wet blue was quoted. Several technical matters were discussed, including the tensile strength and tear test carried out on wet blue leathers as well as the question of pH which had been raised in the paper. The speaker confirmed that he felt that pH 3.5 would be correct, but some exporters had gone as low as 3.0

Throughout the discussion the question of foreign assistance in aiding development in the leather industry was extensively aired and varying views were expressed. The Chairman in closing the discussion also referred to this, and agreed that most foreign investors' thinking was profit-oriented, though he felt this was comparatively unimportant. The significant factors were mutual trust and rapid industrialization. The use of wet blue tanning as a means of developing and industrializing the sector would lead eventually to the production of good quality finished leather.

Further reference was made to the incentives given to the Argentina tanneries exporting wet blue leathers. These included such items as non-payment of export levies, rebate of duty paid on imported chemicals, credits of up to 80 per cent of capital invested and cash advances against export consignments. It was suggested that without these incentives the Argentine export of wet blue would have been minimal.

#### TECHNICAL SESSION V

Mr. T.J. Johnson (United Kingdom) took the chair and introduced Mr. W. Rieger (Federal Republic of Germany) who read his paper entitled

#### "The Planning of a Modern Beamhouse and Tanning Department"

in which he outlined the various stages in the development of a beamhouse and tanning department.

Initially, he suggested that preliminary planning should cover the following aspects: raw materials (indigenous or imported), production capacity, types of leather, balance between domestic consumption and export production, adequacy of water, power and effluent disposal services, plans for the utilization of by-products, need for laboratory and workshop facilities and last but not least, social facilities and training of technical personnel.

He stated that planning should cover four main spheres. The first factor was the technology to be employed which must allow for product flexibility, the second being the building, which he suggested should be single-storied. The third factor was the question of internal transport and whether fork-lift trucks, conveyors or a high degree of mechanization should be included, which depended on the labour intensity requirements of the country. The final factor was the need to allow for future expansion. The paper outlined the

requirements of drums and paddles in the beamhouse and also discussed at what stage splitting should be carried out. The speaker advocated the use of undissolved chrome tanning powders of the self-basifying type and suggested that effluents obtained in the tanning process should be collected in a separate sewer.

The speaker also suggested that in many newly developed tanneries errors were made because insufficient machinery spare parts were available and the machines were often not sturdy enough for the work undertaken. Motors were often underpowered and water supplies sometimes insufficient.

### Discussion

During the discussion that followed, the technicalities of splitting before or after tanning were discussed. It was pointed out that a balance must be obtained between the ability of the machine to split evenly and the relative values of chrome and lime splits and their suitability for further processing.

Several participants expressed the view that they were glad to see that the laboratory facilities had been included as they felt that these were essential in newly developed tanneries, especially when some portion of the production was scheduled for exportation.

The question of equipment used was discussed at length and it was generally agreed that machinery intended for developing countries should not be over-sophisticated as the maintenance facilities may be insufficient. With regard to drum size it was agreed that although the quoted drum size of three and a half metres was perhaps most economic, it may not be the best size for use in a smaller tannery and such questions were best judged in conjunction with the proposed throughput. Several speakers felt that reconditioned machinery could well be used in newly developed tanneries. This was often the case in European countries and entailed very large initial capital savings. Other participants, however, felt that there would be certain social and political objections to the use of such machines in the developing countries.

Following Mr. Rieger's paper, Mr. M. Gergely (Yugoslavia) presented an outline of his paper

"The Tanning and Industrial Production  
of Reptile Leather under Conditions  
Encountered in Developing Countries"

which reviewed the current position of reptile production throughout the world.

Statistics as to supply are poor but the speaker felt that for discussion purposes the following may be assumed: one million crocodile skins per annum (equivalent 15 inches wide); six million lizard skins and three million snake skins. As the tanning of reptile skins increased in developing countries lesser amounts entered the world market in the raw form. The paper included a review of the histological characteristics of reptiles followed by a wide survey of nomenclature and sources of commercial reptile skins. Some notes on crocodile farming, and its problems, suggested that this may be the best way of guaranteeing future supplies as the reptile population is being decimated by indiscriminate killing.

The general processes of reptile leather production were described with emphasis on the most important sectors; liming to ensure removal of scales/membrane without destruction of natural markings; tanning, usually mixed to afford possibility of drying to crust; and finishing. Notes were also given on simple everyday process control techniques.

The economic aspects of tanning reptile skins were covered, likewise the production of leather goods from tanned skins. Typical costings for tannage of lizard skins were quoted. The paper pleaded for an integration of tanning and leather goods production and an outline was given of the required capital and machinery to set up a combined plant capable of producing 500 sets monthly (matching ladies' shoes and handbags).

Detailed process formulations were given covering white and natural tannage for lizards and snakes, and crocodile processes were also quoted.

Discussion

A lively technical discussion followed the paper and a noted expert on reptile tanning refuted some of the statements made in Mr. Gergely's paper. Several suggestions were made that some classifications which had been included

were incorrect, and erroneous descriptions had been given of some of the reptiles under discussion. It was also felt that the paper should have elaborated the question of pigment distribution in the various reptiles and lizards referred to in the paper.

The same questioner suggested that Mr. Gergely's views on finishing techniques were not in accord with current technology and that he had confused glazing and plating which were entirely different operations

Other discussions centred around the possibility of developing countries establishing reptile tanneries or integrated tanning and leather products production units. It was generally understood that reptile processing was a difficult and specialized operation, but some countries felt that they should make the effort providing they had sufficient indigenous materials to justify the establishment of such a plant.

The speaker in answering the questions suggested that some differences which had been raised in the discussion were due to the fact that he had worked in South East Asia and the material for other areas had been gathered from such limited sources as were available, whereas other people had an intimate knowledge of the South American situation which differed slightly. He also felt that the problems of setting up a reptile processing plant were not so severe, as such a unit could assist in the hunting and collecting of the reptiles, thus ensuring a proper supply of well-processed material.

#### TECHNICAL SESSION VI

The Chairman, Mr. I. Jullien (France), called upon Mr. J.A. Villa (Argentina) to present his paper

#### "Guideline Figures to Establish the Interrelation between the various Parameters of the Leather Industry"

which described a novel method of evaluating leather factories' productive capacity.

The paper gave general technological characteristics and tannery dimensions and showed that this statistical evaluation method could be used to measure the "efficiency" of one tannery against another or might be used to formulate the requirements of a new leather factory.

This, the author suggested that an inventory of the industrial characteristics of a tannery be drawn up and laid down 24 applicable parameters. These included many of the traditional yardsticks of the leather industry such as footage produced, number of hides tanned, kilogrammes of raw hide, and hours worked, as well as many additional factors not usually measured such as weight in Kilogrammes of machines installed and litre capacity of drums installed.

Based on the data of the 24 parameters, the author established 32 "key numbers". These are the most significant coefficients which may be obtained by interrelating the established parameters. These include traditional measures such as:

$$\text{productivity} = \frac{\text{sq. ft. of tanned leather}}{\text{man hours}}; \quad \text{yield} = \frac{\text{sq. ft. of tanned leather}}{\text{number of tanned hides}}$$

as well as many new coefficients:  $\text{power factor} = \frac{\text{sq. m. of tanned leather}}{\text{horsepower installed}}$

$$\text{output of drum} = \frac{\text{number of tanned hides}}{\text{total capacity in litres of drums installed}}$$

After establishing the differences between four categories of hide (large, medium, small, very small), based on Argentine material, normal average values were quoted for the above 32 coefficients, based on a detailed study of the Argentine tanning industry. The coefficients for tanneries under evaluation may be compared with these norms. Where deviations are found one must explore deeper to discover the reasons.

On the basis of these coefficients (i.e. norms established) a complete picture is built up of a leather factory capable of producing 300 hides a day directed towards an initial parameter (i.e. basic coefficient) of

$$1.5 \frac{\text{sq. ft. of tanned leather}}{\text{kg of raw hides processed}}$$

Once this initial basic coefficient and the number of hides to be processed are established, one may complete the overall picture of the dimensions of the tannery and equipment, including calculations of all possible parametrical combinations which the author presented in tabular form in his paper.

This methodological approach may be employed in studying any size of projected or existing hide tannery, but certain adjustments must be made where conditions differ from those in the Argentine.



## Discussion

This highly original paper which presented a unique viewpoint of the leather industry's production and capacity, aroused a lively discussion. The speaker amplified several points which had not been fully brought out in the paper. He pointed out that the tanneries which had been studied were in the Argentine and were producing hides tanned to the wet blue, "ready to finish" or finished states. Consequently the coefficients which the author felt were relative would need some adjustment in view of other conditions and the use of skins.

Discussion centred on whether it was possible to adapt the system outlined to include some further factors, for example capital invested, as it was felt that this would have a large bearing upon productivity. A simple comparison of productivity without knowing the degree of capital investment would perhaps be irrelevant. It was asked whether such a relationship could be introduced in order to automatically compensate the productivity figure by making allowance for capital investment. This was especially relevant in view of the feelings expressed by certain African participants who felt that some degree of labour intensity should be employed in their countries and that a need to measure the effect of this was felt.

Other participants were of the opinion that some account should also be taken of the cost of labour, as obviously the use of skilled or unskilled labour would have some bearing on productivity and might be balanced out when allowance is made for the differential in wages paid.

Adaptability would also be necessary in other fields as certain participants suggested that working under severe conditions, for example in the Sudan, output per man would vary due to the severe climatic conditions. It was suggested that perhaps an Argentine worker could work at the rate of 90, whereas in the Sudan, due to the climate, in the morning one may perhaps obtain a figure of 60 which in the course of the afternoon would drop to 40. The speaker agreed that allowances would have to be made for this type of local variation.

Questions were also raised as to the reference to the use of public and self-generated electricity supplies. The situation in various countries was discussed, in some of which the supply services were a state monopoly and no

self generation was permitted. The speaker, however, felt that, where possible, independent electricity and water should be available to avoid catastrophes which occurred when public services break down.

It was also pointed out that under varying developing conditions it had been observed that an investment of US\$ 150 per skin capacity was usually required, but no figure seemed available for a hide tannery. Other participants felt that the slaughter of herds should be controlled so as to ensure steady stock growth, coupled with optimum annual kill.

Many of those present expressed the view that this paper was of unique value and would greatly assist the development of the industry in the developing countries as it would give some guidelines which could be followed by prospective investors and governments alike, when suitably adapted to local conditions.

After replying to the questions put to him, the speaker gave a quick outline of the situation of the leather and leather products industries in the Argentine which he felt would help put his paper in the correct perspective. He said that the Argentine had some 43 million cattle. Most of the cattle were slaughtered in "frigorificos", flaying is near perfect and flay cuts are minimal.

In the year 1965, 14 million hides were produced in the Argentine, 75 per cent of which being exported raw, while 25 per cent were tanned locally. The situation has changed and in 1970 45 per cent of the hides were tanned in the Argentine. There are some 300 tanneries in the Argentine today, but only 40 to 50 of them can be considered large. Two really large ones are equal to any in the developed countries and they soak 4 - 5,000 hides daily. The country has not yet reached self-sufficiency in the production of chemicals or machines, but is rapidly proceeding towards this end. The speaker admitted that the technical perfection of European machines had not yet been achieved in the Argentine, although local products had proved very durable and robust.

Argentine production of leather shoes was said to be some 35 million pairs a year and some limited numbers are exported to Brazil and elsewhere. Leather goods, such as handbags, suitcases, saddles, etc., are also produced and are of high quality.

TECHNICAL SESSION VII

The Chairman, Mr. G.F. McWatters (United Kingdom) asked Mr. J. Horak (Czechoslovakia) to present his paper entitled

"The Development of the Leather Footwear Manufacturing Industry in Developing Countries"

which contained a detailed study of the organizational and technical requirements of a shoe factory suitable for installation in a developing country.

The paper outlined a production unit that would be considered "small" or "medium" in a developed country but would be considered a "large" unit in a developing country.

The speaker analysed the items to be examined and evaluated during a feasibility study prior to the installation of a shoe factory: (a) marketing conditions; (b) capital requirements; (c) other conditions.

Differences in organization and operation of shoe factories were given according to size of production, and development trends were discussed including the relative merits and demerits of vertical and horizontal organizational structures. Pre-production work was outlined, covering the establishment of a "collection" (sample models), shoe design, internal technical documentation and costing.

Production requirements were analysed in the following sectors: machinery, manpower, space and transport. Organization of production processes was outlined and the necessity for good internal communications was stressed in order to obtain swift economic manufacture of shoes against customers orders. The paper also examined current shoe technology and possible new developments.

Following this paper, the Chairman called upon Mr. D.E. Gorrod (United Kingdom) to present his paper

"Establishing Mechanized Shoe Production Units"

in the course of which the requirements for study prior to the installation of a shoe factory were briefly analysed.

The speaker dealt with them under four main headings:

Machinery: The speaker stressed that the choice was dependent upon the method of construction that was anticipated, but felt that two main types were

of interest (a) cemented soles and (b) direct moulded soles. The machinery requirements for these two types of production were outlined.

Materials: Emphasis was laid on the necessity for consistent materials and components in order to permit the manufacture of regular quality footwear. This included upper leather, counters, in-soles, eyelets and toe puffs, etc. The need for modern materials, e.g. adhesives and plastic compounds, was also referred to.

Manpower: Mechanized shoemaking reduced the workload but demanded high levels of training to utilize machines to the best possible extent. Methods of training were discussed, including technical tie-ups with existing factories, governmental and international assistance, machinery suppliers training maintenance engineers and the use of training facilities in developed countries.

Management: To ensure optimum utilization of industrialized footwear production units, management becomes very demanding and high levels of training are necessary in order to derive the greatest possible advantage from works transportation systems, production, planning and control, costing, marketing feedback and forecasting.

In summing up his paper, the speaker suggested that one should start modestly with some degree of specialization, taking maximum advantage of benefits offered by mechanization. Where possible, a tie-up with an established producer in a developed country should be made to supply technical and managerial expertise as well as market intelligence which would be invaluable, especially if part of the production was for exportation.

### Discussion

Following the presentation of these two most interesting papers discussion centred on several important topics. The advantages of small artisan workshops when compared with industrialized factory production was discussed with regard to flexibility of products, but it was felt that production control (quality) was difficult at an artisan level.

Where it was expected that some of the products would be for exportation, it was considered desirable to inject a large labour element in the manufacture of "all leather" shoes as this combination was apparently in demand in world markets.

It was generally agreed that for domestic consumption many of the footwear producers in developing African countries would need to produce both shoes of leather and of synthetic materials to meet the growing local demand for cheap footwear. This demand was expected to grow rapidly due to the rising of living standards throughout the region. All agreed that quality standards must be strictly controlled and it was felt that to achieve the necessary standards, a limited number of key personnel should receive high level training at institutions in developed countries but the utilization of "in-plant" training of operatives was of equal importance.

The seminar expressed strongly its view that correction was needed to the current trend whereby foot comfort had been subordinated to "ease of manufacture". This trend which encouraged the use of synthetic materials apparently ignored consumer preference and foot comfort, both of which favoured the use of leather in shoemaking.

The Chairman then called on Mr. D. Winters (UNIDO) to present his paper entitled

"Marketing and Export Possibilities of  
Leather and Leather Products Manufactured in  
Developing Countries"

The speaker suggested that conditions in the developed countries typified by high wages, concern for clean environment, etc., have created a situation whereby developing countries could easily export leather and leather products to these former major producers.

He suggested that tanneries concentrate on the production of dry tanned goods, preferably in the "ready to finish" form. This would ensure optimum "added value" as well as remove many of the technical problems and complaints associated with the production of wet blue leather which today forms a large percentage of the exports.

Footwear could be exported if assistance was given to small-medium mechanized artisanal producers. If they were modernized and organized in associations and co-operatives, they could produce a "complete leather shoe" either "fashion" style or "classical", which today contributes the bulk (in value) of international trade. Given better market information and design assistance many developing countries should also be able to export leather goods.

The paper further offered an analysis of the general styles of leather goods and shoes which the speaker felt would yield maximum return to the producer and open up the largest possible markets.

The markets for the above goods are large and expanding, though most developing countries have not yet been able to reap the possible benefits. The speaker thought that in order to raise exports to worthwhile levels, many factors must be examined, including: (a) possibilities of developing countries establishing finishing plants (for leather) in the market countries; (b) reassessment of export taxes on raw hides and skins to ensure higher added value of exported goods; (c) closer contact with importers to be obtained by government trade missions or representatives travelling on behalf of associations of producers; (d) possibility of establishing showroom/warehouses in consumer markets; (e) more flexible government attitude towards importation of chemicals and accessories when the finished product is to be exported; (f) specific market studies to find the correct product/style/design for a particular country suited to its production capacities.

#### Discussion

During the discussion following the paper, the question of ensuring a balance between domestic consumption and exportation was discussed, whereupon it was agreed that production solely for export purposes contained a certain element of risk. In some African countries, however, where demand for leather shoes and leather goods was limited, it might prove necessary to produce with the object of exporting the bulk of production. This, in general, could only be achieved when strong contacts existed with the consuming countries, which meant that the production units in developing countries had to have close links with an existing producer or marketing organization in the market country.

The possibilities for production and exportation of traditional articles for the tourist trade was aired and it was generally agreed that though these had some appeal, it was limited and expansion of exports in this sector was difficult.

The different earning potential of fashion articles as compared with traditional articles was also discussed, and it was felt that if marketing channels could be established, newly developed industries should attempt to enter the fashion fields as higher values were obtainable and technical/quality requirements were not so stringent.

There were mixed views on the question of utilizing reptile skins in developing countries in the leather goods sector. Some participants felt that the industry should use cheaper materials in the initial stage until the levels of workmanship justified the use of these more expensive materials.

The necessity for establishing new forms of marketing channels to suit the circumstances in the developing countries was discussed. The speaker agreed that governments should give assistance in some form to newly established industries in this sector and went on to outline the various possibilities for government assistance. In this connexion, mention was made of governmental incentives: refunds of duties paid on any materials incorporated into the exported product; ability to import machinery duty-free; low interest loans for modernization; cash advances against export consignments and government export credit guarantees.

#### TECHNICAL SESSION VIII

The Vice Chairman, Mr. I. Entonu (Nigeria) called on Mr. J.A. Rant (Yugoslavia) to present his paper entitled

#### "Fancy Leather Goods Factory for Developing Countries"

which covered in some detail the subjects to be studied prior to the installation of a leather goods factory. Full details were given concerning the equipping and operation of such a factory. The facts and figures quoted are based on a study for a particular projected plant but can be used as a basis for the establishment of leather goods factories elsewhere, subject to adjustment of certain costs, e.g. building, wages, etc.

The paper presented "process outlines" and basic data relative to the establishment of a plant employing 70 people on a floor area of 700 square metres, which required an initial capital investment of US\$ 434,000 and yielded a profit of 20.5 per cent on capital employed (13 per cent on sales).

This study assumed that four basic items would be produced: handbags, document cases, belts, and billfolds in three top grade materials, i.e. crocodile, lizard and python. The workmanship levels suggested are high so as to ensure full utilization of the materials employed and to allow exportation to the quality conscious markets of North America and Europe (e.g. ex-factory price of a crocodile handbag being US\$ 95).

The paper included detailed production layouts and flowcharts as well as schedules of materials and labour requirements, and cost and profitability calculations. A schedule of requirements, operation and sales calculations were also given for a unit with twice the output.

It was suggested that if sufficient local expertise was not available, a visiting expert could decide in the course of a one-month study on the project's feasibility. If implemented, it was suggested that four experts would be needed to assist in the initial operation and installation period until the staff was sufficiently trained.

Initial production would be sold on the domestic market (for tourists) and in adjacent countries, whereas long-term sales would be directed towards Europe and North America where large markets exist. Hence the speaker recommended an association of some form with a producer in one of the market areas.

#### Discussion

During the discussion following the paper, the problems of reptile farming were also discussed. Several participants felt that some research was necessary in this field to overcome the problems encountered in reptile breeding. The question of certain tannages' suitability for reptile skins destined for use in the leather goods industry was also discussed and the difference between possible tannages was explained by several expert observers present.

The utilization of camel hides also aroused interest, and it was generally felt that countries developing leather goods production should endeavour to utilize such materials. The question whether leather goods production should be in large or small units was raised and the respective advantages enumerated.

The Vice Chairman then called upon Mr. S. Zampetti (UNIDO) to make a statement on

#### "The Role of UNIDO in the International Sub-contracting Programme".

He explained the inherent advantages of "contracts manufacture", and UNIDO's role in this sector. Whereas the contractor could advantageously utilize the large labour force available in the developing world, the contractee would



enjoy the benefits offered by the placement of regular large orders, in the form of rationalized manufacture, guaranteed outlets, possibly under existing trademarks and assured marketing channels.

The speaker pointed out that sub-contracting contributed to the diversification of export products and helped prevent a lop-sided export structure with excessive dependence upon foreign exchange earnings from a limited range of products. Sub-contracting also helped to create additional outlets which allowed the adoption of the economies of scale and greater scope for specialization. It also enabled developing countries to be competitive since, as the main contractor sold the product under his own trademark, no marketing costs were involved. Manufacture according to strict specifications and under control of the main contractor offered the contractee excellent experience and provided manufacturing and export know-how.

The speaker was convinced that sub-contracting activities would have a multiplying effect and act as a catalyst by attracting additional capital which could widen the scope of locally added value as well as diversify the range of products.

The speaker informed the seminar that UNIDO was arranging to visit sixteen countries in Europe in order to implement this programme. The organization would delegate officers to spend three to four weeks in each country visiting selected firms and seeking production bottlenecks which could be eased with the aid of a sub-contracting programme. UNIDO then hoped to find partners in the developing countries, one an inventory of available capacities had been compiled.

#### Discussion

During the ensuing discussion several participants expressed reservation to some aspects of sub-contracting, feeling that there could be a loss of authority for those firms which accepted contract work due to the dominant role of the contractor and the subsequently weaker position of the contractee. The speaker assuaged some of the above misgivings by pointing out several examples of successful contract manufacture and explaining that a plant should not devote its entire capacity to contract work. It was also indicated that after a period of sub-contracting, the producer in the developing country would be able to proceed on his own account for not only would his technical

standards have been well adjusted during the contract programme, but he would also have enjoyed the advantage of market intelligence which he could subsequently use to promote his own product.

It was suggested that tanning could be undertaken on a contract manufacture basis and also the preparation of gloves and shoe uppers appeared most suitable for this arrangement, especially in view of their high degree of labour intensity which appeared most suitable for developing countries under current conditions.

The Chairman then called upon Mr. J.W. Nicholson (UNIDO) to open a discussion on

"Investment Promotion in Developing Countries".

In his introduction, Mr. Nicholson outlined UNIDO's programme for the promotion of specific industrial projects from developing countries. Wherever an industrial project put forward by the government of a developing country called for some component of foreign investment, whether of equity or loan capital, know-how or management, UNIDO would endeavour to locate and introduce appropriate partners from the industrialized countries able and willing to supply what was asked for. The main instrument of this programme had been the Regional Meetings in Africa and Asia, co-sponsored by ECA and ECAFE respectively, at which projects submitted from the government of many developing countries from every sector of industry had been discussed in pre-scheduled person-to-person meetings with interested foreign partners. He suggested that the development of the leather and leather products industries would be ideally suited to take advantage of this service.

In reply to questions and doubts raised by some participants as to the desirability of equity joint ventures between a developing country and foreign partners, the speaker pointed out that there were alternative forms of collaboration based on purely contractual relationships. Such arrangements for the purchase, contracting or licensing of technical equipment, management services and know-how avoided the sharing of control or profits with foreigners, but did not, as did the equity joint venture, have the advantage of involving the foreign partner directly in the profitability and risks of the project. Various permutations and combinations could be worked out to suit the requirements of each case. In response to requests from many participants the

speaker circulated project questionnaire forms and confirmed UNIDO's willingness to assist developing countries in the preparation and negotiation of projects for investors

### TECHNICAL SESSION III

The Chairman, Professor J.A. Sagoschen (Austria) called upon Mr. C. Halamek (CSSR) to present his part of the paper

#### "The Proper Utilization of By-products from Hides and Skins, Leather and Leather Products Industries"

The speaker spoke on the

##### "Survey of Occurrence and Use of Tannery and Shoemaking Wastes"

in the course of which he subdivided possible tannery wastes into three categories: untanned collagenous wastes, tanned collagenous wastes and miscellaneous wastes. These categories were discussed with regard to possible end products, ease of processing, commercial exploitation and potential value of the finished product in relation to raw waste material.

A survey relating to the "losses of proteinous material" was quoted which indicated that more than half of the original protein of the raw hide is lost by the time the leather is converted into a shoe. This stressed the economic necessity of finding a means of utilizing these waste materials. Untanned collagenous wastes were shown to be far easier/cheaper to process, while tanned wastes proved difficult and expensive to convert to available collagenous materials and were therefor mainly suitable for the production of fibrous materials.

Outline production processes were given for artificial casings, surgical materials, glues and gelatines and fodder from untanned wastes. Fodder production from limed glue stock was said to yield an economic product which was a valuable feedstuff with an 8-10 per cent digestible protein content which could be produced in liquid or dry forms. Glue, fertilizer and fodder can also be produced from tanned wastes, though yields and quantities are lower than similar products from limed material due to denaturization during detannization. The speaker reported that 32 per cent yield of dry fodder can be obtained from chrome clicking wastes, however, due to its stickiness, it is only used as an additive.

The paper showed that no economically utilizable materials had been recovered from tannery effluents to date. Growing world demand was said to be encouraging better utilization of wastes and by-products. The speaker felt that untanned wastes would become more valuable as they became scarcer since developing countries were increasing their tanned hide production, thus reducing raw hide availability.

The paper also included techno-economic data for casings, glue and gelatine, fibrous leather, hydrolysate of glutin (fodder) and felt, covering capital, cost of equipment, consumption of steam, water and energy as well as an evaluation coefficient  $\frac{\text{product price}}{\text{waste price}}$ .

The Chairman then asked Mr. A. Suchomel (CSSR) to present his part of this paper entitled

"Production of Fibrous Leather from Leather Wastes".

In view of the fact that tanned waste was unsuitable economically for production into glue/gelatine and casings, etc., the speaker proposed an economic means of producing leather board from sole-leather scrap and chrome shavings. He suggested that leather board, or "reconstituted leather" as it is sometimes termed, should be considered a new alternative to leather and not an inferior substitute. He felt that the material might be superior in some respects as its properties could be adjusted during manufacture to obtain optimum performance. He suggested that the material could be used as counters, mid-soles, insoles and even soles for some house slippers.

He discussed in some detail basic processes needed to produce leather board, including the machinery requirements.

Milling, the initial process, is carried out on the cleaned blended material either dry, using hammer or disc mills, or wet, using a "Condux" mill. If chrome shavings are used, a converted paper "Hollander" is recommended.

Following this, the fibres are prepared by stirring to obtain a homogeneous suspension, the properties being adjusted by addition of sulphated oils and hydrophobic agents (glueing) to improve stability in wet medium. The necessary binding agents are also added at this stage, e.g. elastomers such as copolymers of butadiene/styrene, etc., and plastomer materials, such as polyvinyl acetate or latex.

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Dewatering must then be carefully carried out to ensure correct felting of the fibres. The paper gave details of five different machines, some of which were suitable for batch processing, others for continuous processing. The machines' capital costs/productivity were mentioned together with the differences in fibre orientation.

Pressing by means of a hydraulic press was said to be necessary to reduce the water content from 80 per cent to 50 per cent, as well as to yield compact sheets. The subsequent drying process may be performed on a variety of machines, conditions being regulated to suit the original raw materials. The speaker indicated that slower drying was needed for blends containing high proportions of vegetable tanned scrap. Finishing may be by calendering, buffing or pigmenting.

The material had proved most economic as counters owing to the high price of genuine leather and as it offered an effective means of disposing of tannery and shoe factory scrap materials.

#### Discussion

During the discussion following these two papers mention was made of other possible uses of by-products from the tanning industries. It was felt that eventually experiments would prove successful and a nutritious feedstuff would be obtained.

Technical discussion of milling methods clarified certain issues. The differences between glue and gelatine were explained as well as the extraction procedures applicable to each. It was pointed out that the minimum economic size of a by-product utilization plant would be of the order of 400 tons of end product per annum. Thus, such plants could only be installed in areas where there was a heavy concentration of tanning industry.

The Chairman then called upon Mr. V. Pektor (CSSR) to read his part of this paper entitled

**"Using the Tannery Wastes for the Production  
of Semi-synthetic Poromeric Upper Leather"**

in the course of which the speaker analysed existing poromerics and compared the properties of a newly developed Czechoslovak product with others. The raw material employed is limed or chrome tanned splits, and the speaker described the processes involved.

After preparing the collagenous fibrous material by milling scrap after suitable chemical treatment, a web formation is obtained by mixing the collagenous fibres with synthetic fibres, e.g. polypropylene. This stage is followed by machine processing, needling and precipitation. Polyurethanes with a dimethyl formamide solvent may be used to bind the web. A microporous grain layer is then prepared from linear polyurethanes and a reinforcing fabric is often laminated between the grain and web to improve mechanical properties. The most difficult process, according to the speaker, was the binding of web to grain using special adhesives and machines.

Finishing was originally carried out using thin polyurethane films but newer processes yield results more similar in appearance to leather.

Four different grades/styles of this material are available, each having different properties and constituents. Some notes were also given covering the handling and usage of the material in shoemaking processes and techniques, explaining where they differed to those employed on genuine leather.

It was felt that prospects should be good for poromeric semi-synthetic materials as their properties approached those of genuine leather and the effective price was comparable with leather. Due to the high world demand for leather, the speaker felt that a place for these semi-synthetics seemed assured, especially in the field of cheap shoes.

The speaker, in summarizing his paper, emphasized that initially poromeric material had been produced solely as a means of utilizing by-products in the leather and leather products industries. However, he felt that as improved living standards throughout the world were giving rise to an increased demand for footwear, it was obvious that supplies of hides and skins would be insufficient to satisfy this demand. He, therefore, felt that it was imperative to fully utilize the available material and when this proved insufficient, supplies would have to be augmented with fully synthetic materials.

#### Discussion

In the discussion following the presentation of the paper, passionate views were expressed with regard to the growing usage of synthetic materials for shoe uppers and bottoms. Many participants felt that consumer education was essential, so that people would appreciate the outstanding comfort and sanitary qualities of leather footwear as opposed to footwear produced from

plastic and synthetic materials. The differences between "plastics" and poromerics was stressed with regard to foot comfort and hygiene and general properties.

Some participants felt that the growing use in developing countries of injection moulded poly-vinyl-chloride and vinyl footwear created a threat to the foot health of people in these countries.

It was generally agreed that poromerics have not yet reached comfort standards equal to those of leather. But, given time, these man-made products would doubtlessly acquire properties similar to the natural material. It was pointed out that the high proportion of hides and skins which had been finished with corrected grain, and were heavily pigmented, had, to some extent, lowered the comfort factor of leather footwear and thus aided the entry of poromerics into this field. In order to preserve its position, leather, if possible, should be finished "full grain" without heavy doping, thus yielding a more natural product with better properties.

The African participants expressed strong views on the undesirability of introducing semi-synthetic or synthetic leathers into their region as they felt that they represented not only a health hazard, but were also potentially detrimental to the development of the leather industry which was based on the utilization of indigenous material which did not necessitate the expenditure of foreign currencies.

#### TECHNICAL SESSION X

Under the chairmanship of Mr. A.R.A.H.A. Obeid (Sudan)

##### "general discussions"

were held covering development of the leather and leather products industries in Africa, as well as synthetics and their effect on leather production. The substance of these discussions has been included elsewhere in the relevant sections of this report.

The Chairman then called upon Mr. O. Ebel (Israel) to present a statement on

##### "An Alternative Method of Flaying Bovine Hides",

which involved using a side cut as opposed to using the traditional belly cut. The advantages were said to be that a whole bend and a complete bully piece

were obtained. Flaying in this fashion was said to facilitate tanning of this larger belly unit which was claimed to be more easily machine-processed than the traditional half belly, the distinct commercial advantages of this method being thus apparent.

During the discussion following this statement, it was generally agreed that although this flaying method may well be more economic, the possibility of its adoption by industry in general seemed distant as it was agreed that the industry is unfortunately most conservative. It was suggested that there would be little advantage with this type of cut when processing African humped hides which are best processed as sides.

It was thought that the subject justified investigation and that this perhaps could be carried out when a new slaughterhouse was established, since it would be free of traditional prejudices and thus in a position to undertake a fair comparative evaluation of the two systems.

#### TECHNICAL SESSION XI

Following the visits to some factories in the leather and leather footwear sectors in Austria (a brief description of these visits is given in Appendix II), a session was devoted to the discussion of the relevance of the impressions gained during these visits to the development of these sectors in developing countries. It was felt that much had been learnt during these visits. It was evident, however, that the plant operations and production techniques seen would have to be adjusted to suit differing conditions. In order to put the situation in true perspective, a small panel of experts was formed to give their views on the lessons to be learned from the visits.

It proved necessary to give a short outline of the evolution and development of the tanneries visited to explain the reasons for the apparently illogical layout of machinery, the non-use of equipment and the under-utilization of the plants' capacity. The tanneries visited had, of course, developed over different periods. One of them was started more than a hundred years ago and had originally been a sole-leather tannery, while its conversion to upper leather production had been gradual. Owing to current trading conditions, full utilization of capacity was not obtained.



In this respect, tanneries in developing countries would be able to introduce much better procedures as, in most cases, they were relatively new and the flow of work and machines could be properly planned and organized and no great change in products had yet been undertaken. Most African countries assisted home industries by offering them a relatively high degree of "protection" unlike the lack of consideration shown by governments to tanneries in Europe. Discussion centred on the question whether African development in the tanning industry should include mechanical aids such as fork lift trucks for loading drums, etc.

Similar discussion also revolved around the shoe factories visited concerning the necessity for conveyors and mechanical aids and the degree to which other forms of mechanization should be introduced. Several participants present felt strongly that there were great advantages to be derived from operating smaller units using minimum equipment, basically sewing machines and lasting machines. The shoe expert, on the panel, suggested that while daily production of shoes was under 800 pairs, there was little justification for conveyors especially in countries where labour was abundant.

#### TECHNICAL SESSION XII

Under the chairmanship of Mr. R.G.H. Elliott (United Kingdom) a

##### "General Discussion"

was held on possible avenues along which development of the leather and leather products industries could proceed. Emphasis was laid on the role which the United Nations organizations could play in this development and several participants felt that closer co-operation should be sought between African governments in order to ensure better utilization of the various hide, skin and leather industries and institutes now existing in Africa.

Discussion also turned to whether governments should give more assistance to existing tanneries rather than develop new tanneries. In many cases, it appeared that the installation of new plants which were often subsidized by governments or given various forms of incentives (tax-free holidays, etc.) had a serious effect upon existing small mechanized tanneries which did not receive any assistance.

Many participants stressed that feasibility studies were essential, if the problems were to be avoided which some of the newly established tanneries had encountered. With a growing demand for shoes and other leather products in the African region, all participants felt that there was ample scope for the development of these sectors, and that when establishing such plants, due regard must be given to the possibility of exporting surplus production to the developed countries.

During the discussion, the question was raised as to whether all countries should try to be self-sufficient even if their internal markets were limited. Various views were put forward. Some participants suggested that where internal markets and the production of hides and skins were small, it may not be economic to set up a modern well-equipped tannery, as the throughput would not justify the capital investment (unless some cheaper machinery was available). Others felt that national interests, for example the supply of footwear to police and armies, makes it imperative for all countries to be independent, even if some of the industries were non-economic. It was concluded that individual countries must make these decisions themselves, but United Nations organizations could give much assistance in putting the facts before the various countries so that they might make their decision in accordance with existing situations, knowing what economic independence would cost them.

Possible means of promoting development were discussed once more. It was generally agreed that the joint venture approach as well as the sub-contracting programme outlined at various sessions could be instrumental in this development. With regard to leather products, it was felt that some relationship with a concern in a developed country could prove to be of much value and help companies to keep abreast of current fashion trends and other market intelligence. Effective marketing channels could thus be obtained cheaply and the exportation of manufactures be promoted. It was also felt that UNIDO should assist the developing countries in evaluating offers of aid so as to ensure that individual countries' long and short term interests were safeguarded.

The seminar then proceeded to discuss at great length the recommendations prior to amending and accepting them.

UNIDO's Field Activities within the  
Leather and Leather Products Industries'

Mr. M. Nestvold (UNIDO), officer-in-charge of the seminar, pointed out that this leather seminar was the first such venture undertaken by the organization in support of its field activities within this sector of industry. He presented a brief outline of UNIDO's field activities concerning the leather and leather products industries. During the last three years UNIDO had given or is giving technical assistance to this industrial sector in 26 countries. At present more than 20 experts were in the field or under active recruitment. The field activities could be classified as follows:

- surveys of this industrial sector in individual countries, e.g. Ethiopia and Thailand,
- direct technical assistance to specific factories, e.g. in the Sudan,
- long-term assistance for establishing and operating integrated factories (tannery, leather footwear and leather goods), e.g. Malaysia;
- feasibility studies and planning of new tanneries, e.g. Uganda and Fiji;
- establishment of experimental centres for this industrial sector, e.g. Mongolia;
- assistance and advice on marketing and export possibilities in the sector, e.g. Argentina, Brazil and the Philippines.

This brief outline was given to present information on the main field activities of UNIDO in this industrial sector, thereby indicating the kind of technical assistance UNIDO can provide.

UNIDO Leather Seminar  
Vienna, Austria  
22 February - 5 March 1961

APPENDIX I

SUMMARIES OF COUNTRY STATEMENTS

During the seminar participants from African countries presented statements outlining the conditions existing in the sector of hides and skins, leather and leather utilization industries in their respective countries.

These statements have been summarized by the UNIDO secretariat as follows.

DAHOMY

Cattle breeding is a more prosperous occupation in the northern savannah zone but not so efficient in the afforested southern zone. Hides and skins are poorly prepared as slaughterhouses and trained butchers are not available, while the tanning industry is not developed.

ETHIOPIA

Livestock is a traditional major source of income in Ethiopia, the significance of which can be derived from the following figures:

26.2 million cattle which yield	2.7 million hides per annum
12.7 million sheep which yield	7.0 million skins per annum
11.3 million goats which yield	7.0 million skins per annum.

Of the available hides:

- 250,000 are processed in industrial tanneries
- 750,000 are exported raw
- 1,000,000 are processed by rural tanners
- 700,000 are lost to commerce or smuggled.

The majority of hides produced are ground dried and only 25 per cent are air dried. Five and a half million sheep and five million goat skins are exported raw annually. Ethiopia has a recently established hides and skins improvement service.

Four medium and six small tanneries process 10 per cent of the cattle hides and 20 per cent of skins produced annually, but still have much unutilized capacity. There are also many rural tanners producing tanned material for domestic consumption. No tannery by-products are utilized.

Handbags of cowhide, reptile and fur skins are produced but briefcases etc. are still imported.

There are 4,500 people employed in the footwear industry, which produces 2.4 million pairs of leather shoes, some of which are exported.

Livestock and meat authority is aiming to develop slaughtering facilities and tanneries, but lack trained technologists to plan such projects.

#### GAMBIA

Gambia has little history in the hides and skins field. In 1967 a pilot scheme was started to improve flaying and curing, and in 1969 aid was obtained from the United Kingdom Government to assist in this sector.

The cattle population is some 250,000 but hide recovery is poor (60 per cent) and efforts are being made to recover the lost hides and skins.

No industrial tanning or leather products manufacture exists and only limited amounts are produced by rural tanners which are used to manufacture handbags, etc., for the tourist trade.

#### KENYA

Hides and skins production is estimated at:

- 810,000 cattle hides per annum
- 800,000 sheep skins per annum
- 1,100,000 goat skins per annum.

Of the cattle hides 300,000 are tanned in the country, the rest is exported raw (salted or dried).

At present, the bulk of the available goat skins are tanned internally and by 1975 all of them will be tanned locally. However, the bulk of sheep skins are exported raw as a good market has not yet been found for tanned sheep.

Curing standards are good (only 2 per cent ground dried), owing to the large well organized Hides Improvement Service. Kenya also has an institute

to train people in the techniques of hides and skins improvement as well as in tanning technology (Animal Health and Industry Training Institute (AHITI)).

Four major tanneries exist, two hide tanneries (one integrated with a shoe factory) and two goat tanneries, which mostly process to semi-tanned and wet blue states. It is hoped that they will proceed to fully finished materials. A dozen or so small tanneries, employing 15-20 people each, also exist and are mainly engaged in game skins processing, while there are numerous rural tanneries as well.

No large-scale leather goods manufacture is undertaken but a large shoe factory produces:

- 2 million pairs of leather shoes per annum, and
- 4-5 million pairs of plastic shoes per annum

#### MALI

The livestock population is estimated at:

- 6 million cattle which yield 200,000 hides per annum
- 11 million sheep and goat which yield 800,000 skins per annum.

Bovine hides are prepared by the "frigorificos" and butchers (arsenicated). Goat and sheep skins are mainly ground dried. Reptile skins are available in reduced quantities due to indiscriminate killing.

One tannery, with 200 workers, exists and processes some 20 per cent of the available raw material, supplying the one existing footwear factory in addition to artisans.

#### MOROCCO

Some twenty well equipped industrial tanneries, employing 1,600 persons, together with a few existing cottage industries are thought to consume annually:

- 900,000 pieces bovine hides
- 3,500,000 pieces sheep skins
- 2,000,000 pieces goat skins
- 30,000 pieces camel hides.

Altogether the tanning and leather utilization industries employ some 25,000 persons in the manufacture of a wide variety of shoes and leather goods.

including many small leather goods articles fabricated from the famous Morocco leather. Some of this leather utilization production is the result of co-operative ventures.

An ILO assisted leather institute provides training at various levels in all branches of the industry.

### NIGER

The livestock population is estimated at:

4.0 million cattle which yield	250,000 hides per annum
2.7 million sheep which yield	520,000 skins per annum
5.7 million goats which yield	1,400,000 skins per annum.

No industrial tanneries exist. Rural tanneries and local footwear production are limited and said to be declining due to use of plastic footwear. Many of the hides and skins are therefore exported raw, e.g. 1969 exports of raw hides/skins:

- 70,000 cattle hides
- 189,000 sheep skins
- 301,000 goat skins
- 50,000 reptile skins.

Plans to modernize existing rural units are being prepared as well as schemes for "semi-tanning" hides and skins and for the development of the tanning industry in general.

### NIGERIA

The country has an age-old tradition of rural tanning using pods of acacia nilotica (bagaruwa). Surplus leather was traditionally transported by camel across the Sahara and exported via Morocco, hence the skins are still called "Morocco".

Statistics are poor but suggest that annual hides and skins production is:

- 1 million hides
- 2 million sheep skins
- 7 million goat skins.

These are disposed of as follows:

- 75% exported raw
- 10% processed by two industrial tanneries at Kano into finished leather
- 5% processed by two industrial tanneries into pickled and wet blue for export
- 10% processed into vegetable crust leathers by commercial and traditional tanners.

Although a well organized hides and skins improvement service exists, the marketing of hides and skins is poor. Primary producers still have little incentive to improve quality and middlemen continue to make a large profit and therefore new trade channels are being sought.

There are ten well established shoe factories producing 20 million pairs per annum, which is still insufficient for the 60 million inhabitants. Military boots, etc., are still imported.

Leather goods production is in its infancy. However, good scope, adequate raw material, plentiful labour and Government assistance are available for those interested in developing this sector.

A leather institute at Zaria, an FAO assisted Special Fund project, is now operating and carries out training in the field of hides and skins improvement, tanning technology as well as research and extension activities.

### SOMALIA

Somali economy is mainly agricultural, and livestock and animal products form the largest volume of export. Currently some two million live animals are exported annually (mainly sheep and goat, but also some cattle and camels). The Government is attempting to export in carcass form so as to have at its disposal the hides and skins and other by-products.

Estimated livestock population is:

- 2.5 million cattle
- 2.5 million camels
- 16.0 million sheep/goats.

Tanning in the country is limited to two commercial tanneries and some rural tanneries, consequently much of the available raw material is exported



raw. A pickling/tanning plant is being constructed in one area and a pickling/wet blue plant is being installed adjacent to a meat factory.

An FAO assisted Special Fund project, the Training Centre for Hides, Skins and Leather Development, is operating, helping to improve quality of raw hides and skins, and training tanning technicians to aid development of the industry.

### SUDAN

Sudan is a pastoral country with:

12 million cattle

8 million sheep

6 million goats

3 million camels,

plus large herds of game. The country is well supplied with raw material, though much of it is damaged due to the nomadic habits of the population.

The Sudan Hides, Skins and Leather Institute is operating with the aim of improving flaying and curing standards and assisting rural tanners. It also carries out research work on indigenous materials suitable for use in the tanning industry.

A large governmental tannery was installed in 1961 and now produces daily: 15,000 sq. ft. of bovine leather - both finished upper leather and other forms, and 2,000 pieces pickled sheep skins.

Four modern shoe factories exist as well as numerous artisan workshops. Only one leather goods workshop operates to satisfy local demand for handbags, belts, etc.

### TOGO

There is no industrialized leather industry in Togo, and there is only a limited number of cottage tanners whose products are used in the manufacture of articles for local consumption.

The Government hopes to be able to develop pilot tanneries as it feels, when trained personnel are available, a small tanning industry would be feasible. One footwear production plant is operating using imported materials.

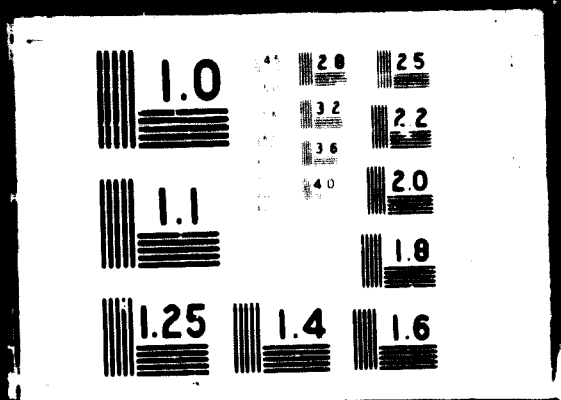


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### TUNISIA

The Tunisian leather and leather products industries employ some 4,000 people with a turnover of some US\$ 3 - 3.5 million.

Slaughtering and flaying is well organized and controlled, and internal consumption of hides has to be augmented with imports to supply the raw material for the seven industrial tanneries, employing more than 400 persons. One large tannery produces up to 550,000 square feet per month at internationally accepted quality levels. In 1969, the twelve modern shoe factories produced two million pairs of leather shoes and two million pairs of textile and plastic shoes.

### UGANDA

The country's soil and climatic conditions favour the breeding of cattle, of which there are said to be 4.5 million. The hides from these animals are mostly exported raw. Skins from sheep and goat are also exported raw after "triple-wire drying".

In 1970, the exports of raw hides and skins were:

- 520,000 cattle hides
- 1,180,000 goat skins
- 220,000 sheep skins.

No commercial tanneries exist and only a few rural tanneries are in operation. There is a tannery/leather craft school assisted by ILO, but facilities are limited and it needs to be expanded to include a complete model tannery and laboratories.

Game skins and reptiles are available in limited quantities. Some, such as lizards, are wasted, while others are sold raw to other countries.

### UPPER VOLTA

Hides, skins and leather are important to the country's economy. Some modern slaughter facilities exist and will be expanded, but in other areas hides and skins are poorly processed, leading to flay cuts, putrefaction and insect damage.

The tanning industry is not well developed and much rural tanning is still carried out. A tanning centre to improve techniques is being operated, producing wet blue, chrome crust and vegetable leathers.

A new shoe factory is operating and produces 40,000 plastic, 20,000 canvas and 60,000 leather shoes per annum.

Leather goods are produced in small artisan units only.

All sectors of the leather and leather products industry need assistance.

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APPENDIX II

FACTORY VISITS

SHOE FACTORIES

Standard Shoe Factory - Münchendorf, Lower Austria  
(Visit on 24 February 1971)

This factory, which was installed in 1956, produces some 1,200 - 1,500 pairs of ladies' shoes daily. The production is evenly divided between shoes with leather uppers and shoes with synthetic uppers. Some 100 production workers are employed in this well equipped plant. A conveyor transport system is used both in the stitching department and in the assembly sector.

Ex-factory prices were given as AS 140-150 for shoes with leather uppers, and AS 120-140 for shoes with synthetic uppers.

Richter and Co., Children's Shoe Manufacturers - Linz-Haag, Upper Austria  
(Visit on 2 March 1971)

This factory started production in 1945 and produces only children's shoes, the majority of which are with leather uppers. The construction is both cemented and welted. The factory has 300 workers and the daily production is now 2,200 - 2,500 pairs. Modern machinery is installed including a manually assisted conveyor belt.

Typical ex-factory price of the shoes produced is approximately AS 100.

Oswald Shoe Factory - Attersee, Upper Austria  
(Visit on 3 March 1971)

This factory also started production in 1945. It has now expanded its activities by setting up branch factories in the Federal Republic of Germany. The plant at Attersee, with a workforce of some 380 persons, produces 4,200 pairs of ladies' shoes daily. All shoes produced are cemented, and approximately 50 per cent of the production are shoes with leather uppers.

A high degree of mechanization exists in this factory which has also installed a computer to assist both in the accounting section as well as in stock control and production programming.

Ex-factory prices for a typical pair of ladies' pumps were given as AS 170 for shoes with synthetic uppers, and AS 210 for shoes with leather uppers.

### LEATHER FACTORIES

#### Vogl Leather Factory - Mattighofen, Upper Austria (Visit on 2 March 1971)

This factory was originally set up as a sole leather factory more than hundred years ago. Today the main production is upper leathers, but also some other types of leather are produced. The workforce is approximately 450 persons and current production from a monthly input of 500 tons of hides is one million square feet of upper leather and other leather types, plus some sole leather.

The factory has been gradually re-equipped with modern machinery suitable for the present production programme.

#### Wurm Leather Factory - Neumarkt, Upper Austria (Visit on 3 March 1971)

This factory, with a current workforce of 150 persons, has a monthly input of 300 tons of hides and produces per month approximately 450,000 square feet of upper leather, plus some sole leather.

The plant is well equipped and advantage is taken of labour-saving devices, i.e. drums are loaded by means of fork lift trucks. Spacious cold storage facilities are available for the raw hides.

#### Gumpoldskirchner Leather Factory - Gumpoldskirchen, Lower Austria (Visit on 5 March 1971)

This plant, though small, is well equipped and well organized especially in the beamhouse. It employs 50 persons and the monthly input is 130 tons of hides. The plant produces monthly 150,000 square feet of upper leathers as well as 30,000 square feet of split leathers.

UNIDO Leather Seminar  
Vienna, Austria  
22 February - 5 March 1971

APPENDIX III

AGENDA AND PROGRAMME OF WORK

Monday, 22 February 1971

9.00

Opening Session:

Opening address on behalf of Mr. I.H. Abdel-Rahman, Executive Director, presented by Mr. N.K. Grigoriev, Director, Industrial Technology Division

General introduction by Mr. M. Mautner, Chief, Light Industries Section

An introduction to "Investment aspects of the seminar" by Mr. J.W. Nicholson, Senior Adviser, Industrial Policies and Financing Section, Industrial Policies and Programming Division

Opening address by Mr. E.A. Asselbergs, Chief, Food and Agricultural Industries Services, Agricultural Services Division of the Food and Agriculture Organization

Registration

11.00

Technical Sessions:

Problems and Prospects for the Development of Leather Industry in Developing Countries  
by Mr. Y. Nayudamma

Discussion

12.30

Lunch Interval

14.00

Brief statements by the participants from African countries on the situation of the leather and leather products industries in their respective countries

16.00

World Supply and Demand: Prospects for Increased Exports from Developing Countries. Leather and Leather Products: A Summary Report.  
A Study by the UNCTAD Secretariat presented by Mr. S. Abbas

18.30

Cocktail Party in the UNIDO restaurant, Hostel Building, Lerchenfelderstrasse 1



Tuesday, 23 February 1971

- 9.00 The Elaboration and Implementation of a Programme for Hides and Skins Improvement and Marketing in Developing Countries  
by Mr. T.J. Johnson
- 11.00 Paper on Hides, Skins and Leather Development Activities presented by Food and Agriculture Organization of the United Nations to participants at the UNIDO Leather Seminar  
by Mr. C. Morfaw
- Discussion
- 12.30 Lunch Interval
- 14.00 Continuation of brief country statements by African participants
- 16.00 Preservation of Hides and Skins by "Low-Veg" or "Fringe Level" Tanning for the Development of an Export Industry  
by Mr. J.H. Atkinson
- Discussion

Wednesday, 24 February 1971

- 9.00 Wet Blue Chrome Leather for Export  
by Mr. Y. Nayudamma
- Discussion
- 12.30 Lunch Interval
- 14.00 Planning of Modern Beamhouse and Tanning Departments  
by Mr. W. Rieger
- Discussion
- 16.00 The Tanning and Industrial Production of Reptile Leather under Conditions encountered in Developing Countries  
by Mr. M. Gergely
- Discussion

Thursday, 25 February 1971

- 9 00 Guidelines Figures to Establish the Interrelation  
between the various Parameters of the Leather  
Industry  
by Mr. J. A. Villa  
Discussion
- 11 00 Marketing and Export Possibilities of Semi-processed  
and Finished Leathers  
by Mr. D. Winters  
Discussion
- 12.00 Lunch Interval
- 13.20 Bus leaving UNIDO, Lerchenfelderstrasse 1
- 13.30 Bus leaving Hofburg  
Plant visit to the STANDARD shoe factory at  
Münchendorf (25 km outside Vienna)

Friday, 26 February 1971

- 9.00 The Development of the Leather Footwear Manufacturing  
Industry in Developing Countries  
by Mr. J. Horak  
Establishing Mechanized Shoe Production Units  
by Mr. D. E. Gorrod  
Discussion  
Marketing and Export Possibilities of Leather  
Footwear and Other Leather Products  
by Mr. D. Winters  
Discussion
- 12.30 Lunch Interval
- 14.00 Fancy Leather Goods Factory for Developing Countries  
by Mr. J. A. Rant  
Discussion  
A statement on the role of UNIDO in the international  
sub-contracting programme  
by Mr. S. Zampetti
- 16.00 A discussion on investment opportunities in  
developing countries  
introduced by Mr. J. W. Nicholson  
Discussion

Monday, 1 March 1971

- 9.00 The Proper Utilization of By-products from Hides and Skins, Leather and Leather Products Industries
- (a) The Survey of Occurrence and Use of Tannery and Shoemaking Wastes  
by Mr. C. Halamek
  - (b) Production of Fibrous Leather from Leather Wastes  
by Mr. A. Suchomel
- Discussion
- (c) Using the Tannery Wastes for the Production of Semi-synthetic Poromeric Upper Leather  
by Mr. V. Pektor
- Discussion
- 12.30 Lunch Interval
- 14.00 General Discussion

Tuesday, 2 March 1971

- 7.30 Bus leaving from Hotel de France, Schottenring 3, for plant visits in Upper Austria
- Estimated arrival in Lins-Haag at 10.00 to visit:  
RICHTER and CO. - Children's Shoe Manufacturers
- Lunch in Lins-Haag
- 12.30 Bus leaving from Lins to Mattighofen
- Estimated arrival at 14.00 to visit:  
WOGL Leather Factory
- Evening and night will be spent in Salzburg;  
Accommodation booked at Hotel Pitter

Wednesday, 3 March 1971

9 00 Bus leaving Hotel Pitter, Salzburg, for Attersee  
10.00 Visit to the OSWALD Shoe Factory, Attersee  
Lunch in Attersee  
13.00 Departure from Attersee to Neumarkt  
14.00 Visit to the WURM Leather Factory, Neumarkt  
Returning to Vienna in the evening

Thursday, 4 March 1971

9.00 Discussion on impressions and experiences gained  
during plant visits  
11.00 Initial discussions concerning follow-up activities  
12.30 Lunch Interval  
14.00 Elaboration of recommendations for follow-up  
activities

Friday, 5 March 1971

8.30 Bus leaving from Hotel de France, Schottenring 3,  
for plant visit to the GUMPOLDSKIRCHNER Leather  
Factory  
14.00 Finalisation of recommendations from the seminar  
16.00 Closing session

UNIDO Leather Seminar  
Vienna, Austria  
22 February - 5 March 1971

APPENDIX IV

LIST OF PARTICIPANTS

<u>NAME</u>	<u>FUNCTION</u>	<u>MAILING ADDRESS</u>
<u>DAHOMEY</u>		
Mr. Dominique HOJINSA	Directeur du Commerce	Direction Générale des Affaires Économiques B.P. 363, Cotonou
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Mr. Haile M. AMARE	Employee of Small Scale Industry Section	Ministry of Commerce and Industry P.O.B. 1769, Addis Ababa
Mr. Kejela GELANA	Head, Meat Industry Development Section	Livestock and Meat Board P.O.B. 1052, Addis Ababa
Mr. Mustafa M. IMAN	Head, Production and Processing Department	Livestock and Meat Board P.O.B. 1052, Addis Ababa
<u>GAMBIA</u>		
Mr. Joseph R. TAYLOR	Officer in Charge, Hides and Skins Improve- ment Service	Ministry of Agriculture and Natural Resources Veterinary Department Abuko
Mr. Wally S.M. N'DOW	Chief, Veterinary Officer	Ministry of Agriculture and Natural Resources Veterinary Department Abuko
<u>KENYA</u>		
Mr. Ronald K.M. RONOH	Tannery Officer	Animal Health and Industry Training Institute (AHITI) P.O. Kabete
Mr. Richard C. KINYA	Senior Hides and Skins Improvement Officer	Veterinary Research Laboratory P.O. Kabete
<u>MALI</u>		
Mr. Samba SOW	Directeur	Société des Tanneries Maliennes B.P. 188, Bamako

<u>NAME</u>	<u>FUNCTION</u>	<u>MAILING ADDRESS</u>
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Mr. Mohammed ALAOUI	Directeur de l'Artisanat	Ministère d'Etat Charge de la Promotion Nationale et de l'Artisanat 6, Tariq El Marsa, Rabat
Mr. Mohammed LAILOU	Directeur	Institut National du Cuir et du Textile B.P. 31, Fes
<u>NIGER</u>		
Mr. Moussa HAROUNA	Technicien des cuirs et des peaux	Ministère de l'Economie Rurale, Service de l'Elevage et des Industries Animales Niamey
Mr. Rabiou N'DAH	Ingénieur d'Elevage Directeur Adjoint du Service de l'Elevage	Ministère de l'Economie Rurale, Service de l'Elevage et des Industries Animales Niamey
<u>NIGERIA</u>		
Mr. Inalegwu ENTONU	Principal Leather Technologist and Co-Manager UNDP/FAO Hides, Skins and Leather Demonstration and Training Project in Nigeria	The Leather Institute P.M.B. 1052, Zaria
Mr. Emanuel S. SORUNKE	Supervisor (upper leather cutting, training, quality control, inter-flow management)	BATA Shoe Co. (Nigeria) Limited P.O.B. 548, Lagos
<u>SOMALIA</u>		
Mr. Ahmed SALLAM	Senior Technical Officer in charge of the Tannery	Hides, Skins and Leather Development Centre P.O.B. 24, Mogadiscio
Mr. Ahmed M. NURADDIN	Co-Project Manager	Hides, Skins and Leather Development Centre P.O.B. 24, Mogadiscio
<u>SUDAN</u>		
Mr. Abdel Rahman Abdel Halim Ahmed OBEID	General Manager	Khartoum Tannery P.O.B. 134, Khartoum South
Mr. Gamal Mohamed AHMED	Technology Research Officer	Hides, Skins and Leather Institute P.O.B. 8, Khartoum South

<u>NAME</u>	<u>FUNCTION</u>	<u>MAILING ADDRESS</u>
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Mr. Jules Joachim K. HADZI	Chef du Service de l'Artisanat	Ministère de Commerce, de l'Industrie et du Tourisme, Direction de l'Industrie B.P. 105, Lomé
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Mr. Ridha TURKI	Attaché de Direction	Centre National du Cuir et Chaussures 29, Ave. Habib Bourguiba Tunis
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Mr. W. Yoweri KEDI	Senior Hide Improvement Officer	Ministry of Animal Industry, Game and Fisheries, Regional Veterinary Office P.O.B. 508, Mbale
Mr. John MUKIBI	Veterinary Officer	Principal Veterinary Training Institute P.O.B. 112, Entebbe
<u>UPPER VOLTA</u>		
Mr. Mamadou OUEDRAOGO	Chef de Secrétariat du Développement Industriel	Direction du Développement Industriel et de l'Artisanat, Ministère du Plan B.P. 258, Ouagadougou
<u>IDCAS</u>		
Mr. Asmy Mustafa ALI	Chemical Engineer	Industrial Development Centre for Arab States P.O.B. 1277, Cairo U.A.R.

LECTURERS

Mr. M. GERCELY	Leather Technologist Almeria Tannery	Dobridol br. 50 Zagreb, Yugoslavia
Mr. C. HALÁMEK	Head, Research Group on Collagen Utilization	National Research Institute for Shoe, Leather and Allied Industries (SVUK) Gottwaldov, CSSR

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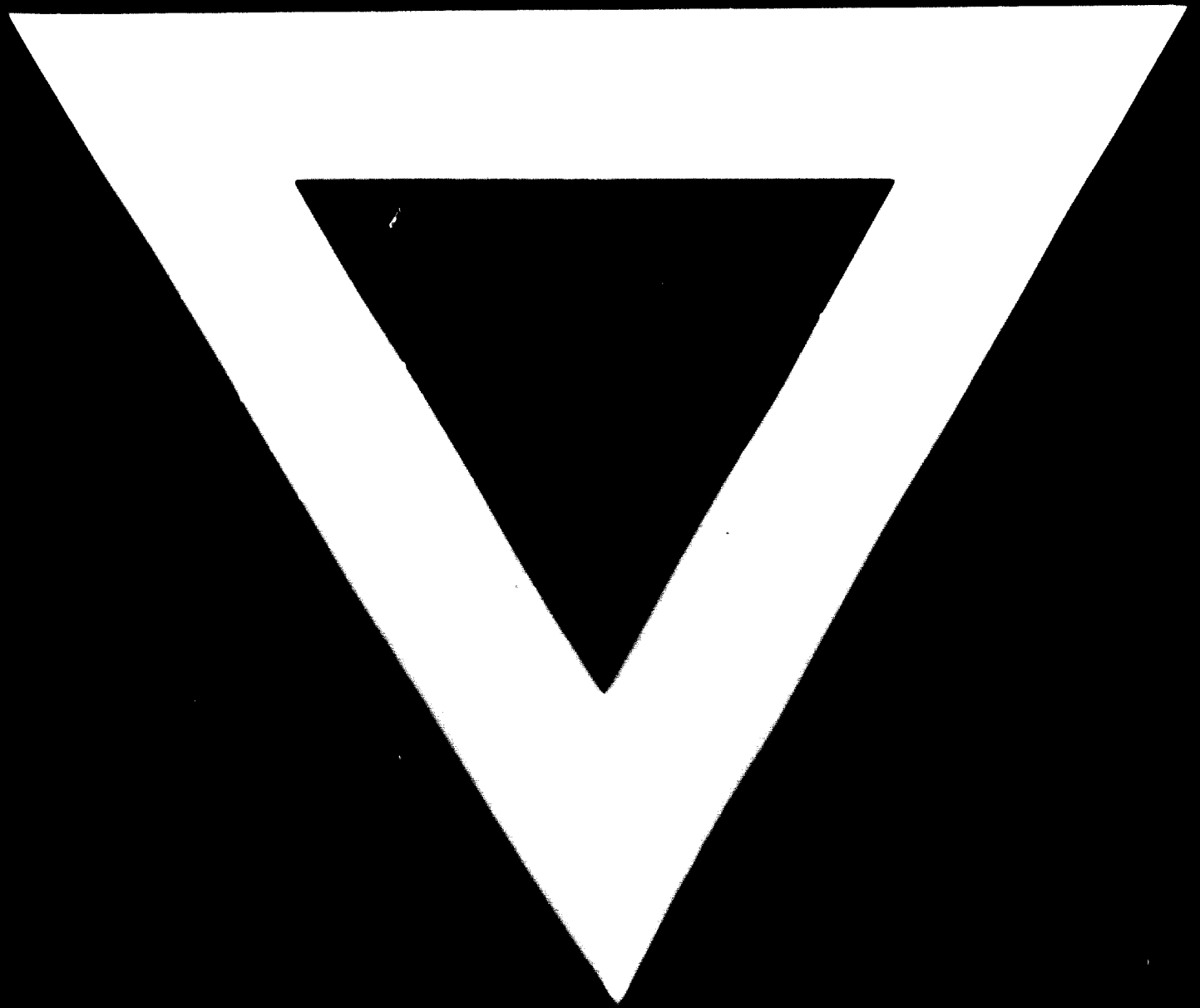
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Mr. R. NOTAVA	Protocol and Liaison (Austrian Government) Division of Administration Conferences and General Services
Miss N. FIEDINGER	Secretary, Light Industries Section Industrial Technology Division





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