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

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APPLIED [redacted] AND EXPERIMENTAL [redacted] FOR LEATHER AND LEATHER GOODS INDUSTRY, ULAN BATOR

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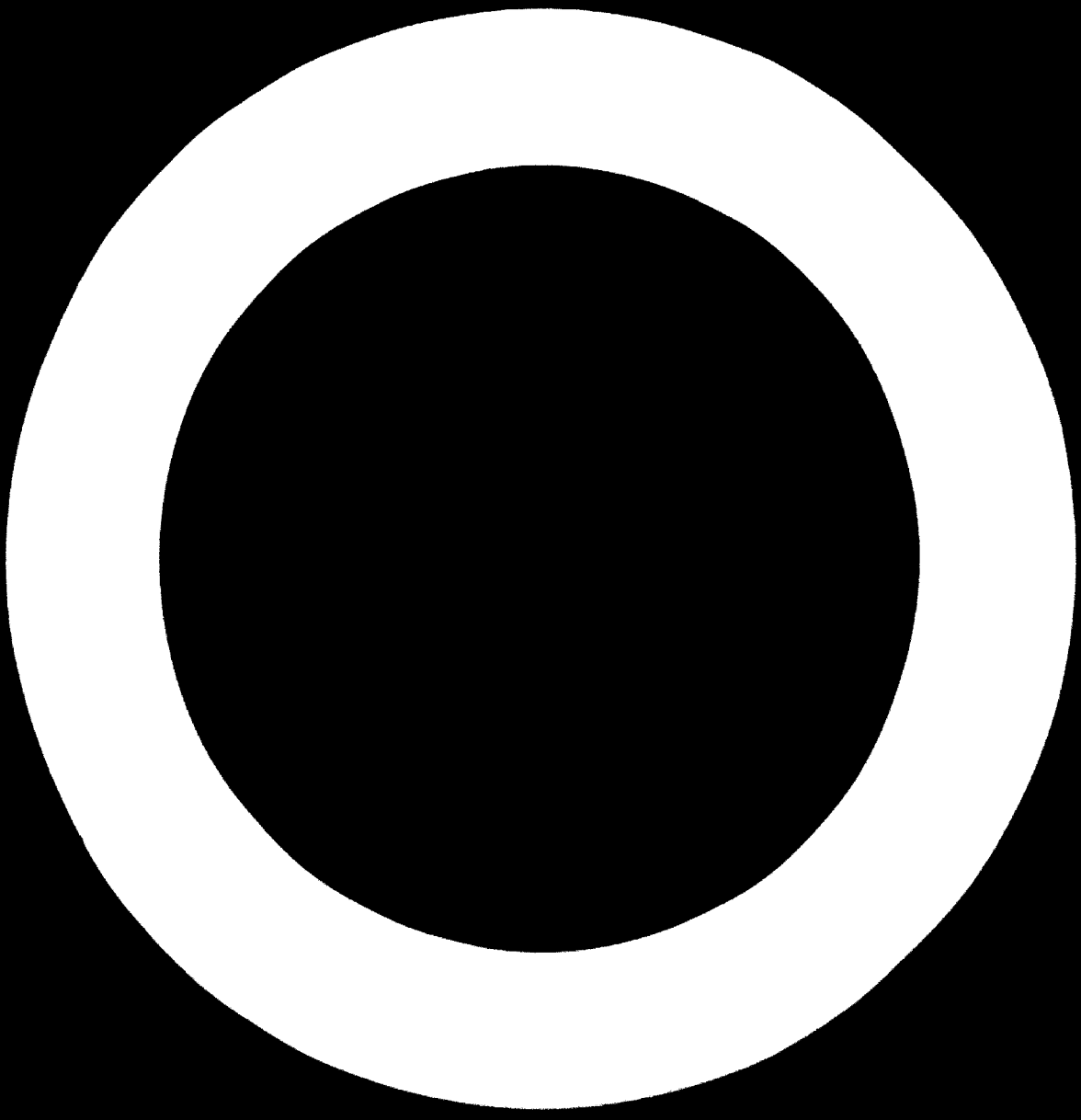

United Nations Development Programme

APPLIED RESEARCH AND EXPERIMENTAL CENTRE FOR THE LEATHER AND LEATHER GOODS INDUSTRY, ULAN BATOR

DP/MON/70/006

MONGOLIAN PEOPLE'S REPUBLIC

Project findings and recommendations

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

Based on the work of V. A. Zhurovsky, leather technologist

United Nations Industrial Development Organization
Vienna, 1975

Explanatory notes

Use of a hyphen (-) between dates representing years signifies the full period involved, including the beginning and end years, e.g. 1971-1973.

Reference to "dollars" ($) indicates United States dollars, unless otherwise stated.

The monetary unit of the Mongolian People's Republic is the tugrik (T). During the period of the project its value in relation to the United States dollar was $US 1 = T 3.68.

In text, thousands and millions are distinguished by commas; in tables, they are distinguished by spaces.

The term "m/m" means "man-months".

CMEA is the Council for Mutual Economic Assistance.

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SUMMARY

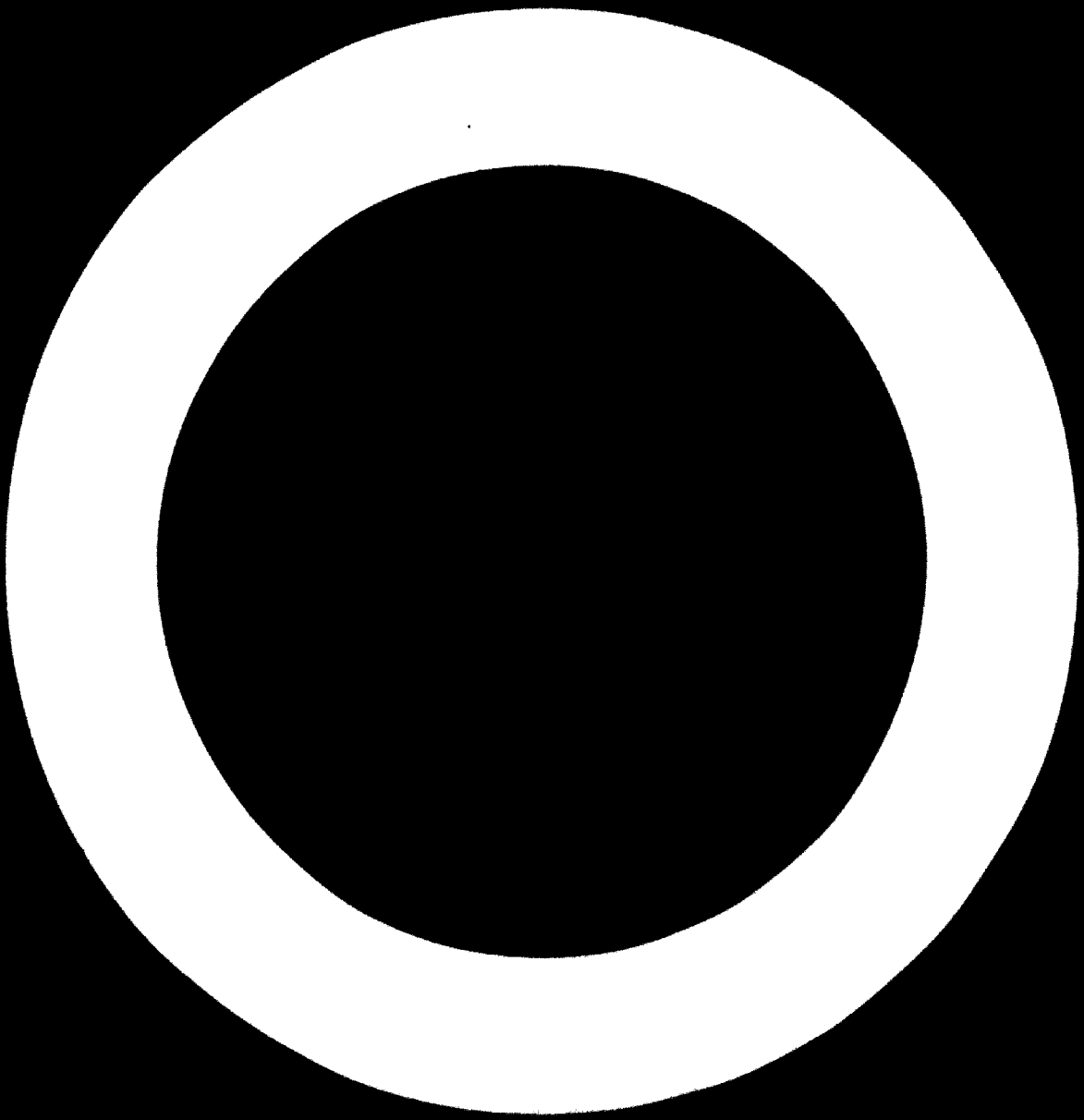
The project "Applied Research and Experimental Centre for the Leather and Leather Goods Industry" (DP/MON/70/506) was implemented with the technical assistance of UNDP. The executing agency was the United Nations Industrial Development Organization (UNIDO), and the governmental co-operating agency was the Ministry of the Light and Food Industries of the Mongolian People's Republic. The project work began on 1 January 1971 and ended on 30 June 1975.

Unfavourable local conditions for the construction of the premises of the Centre made it necessary to devote considerable time to preparatory work, which was performed during 1971-1972. These tasks included such matters as the elaboration of budget and project documentation, the drawing up of subcontracts, the selection of the construction site and the allocation of funds for construction.

The Centre was established as an autonomous organization in 1972, when the first four experts arrived at the project site. Pending the erection of the project premises, the Mongolian Government placed at the disposal of the Centre some specially equipped experimental shops in existing factories. It thus became possible for the Centre to perform research and to train counterpart personnel. In addition to these counterparts, a number of engineers and technicians from the Association of Leather and Footwear Industries were assigned to the institution.

Working from this temporary base, the experts organized instruction and introduced the organisation of planning and performing research.
The availability of local personnel, although they were but few in the second half of 1972, permitted organisation of the project activities on a truly institutional basis, making it possible to perform investigations that were of importance to Mongolian industry while simultaneously training the local personnel. During the period of project activities, research on 32 subjects was completed, and a number of methodical programmes, instructions, standards and norms were elaborated, and 20 research workers, laboratory assistants and administrative personnel were trained.

In addition to the assistance rendered to the leather and footwear industries branches, the international project personnel were able to extend help to other organizations. The objectives foreseen in the project document were achieved, and the obligations of the executing agency and of the government co-operating agency have been met.



INTRODUCTION

Despite considerable industrial development during recent years, agriculture remains the decisive branch in which the development of the economy of the Mongolian People's Republic depends. The principal branch of agriculture is stock breeding, which accounts for 70 per cent of its output; its products constitute nearly 70 per cent of Mongolian exports. A considerable part of these consist of raw materials, that is, of non-manufactured products derived from stock breeding. Cattle breeding provides the main raw materials basis for the light and food industries, which account for more than 50 per cent of the total industrial output of the country.

Sheep breeding and cattle breeding are the most important. The former accounts for 40 per cent of total income from stock breeding. Cattle breeding is second in importance. Much attention is given to camel breeding, particularly in the south of the country. Horse breeding is traditional and is developing constantly.

A certain disproportion exists between the quantity of raw materials available and the capacity of existing leather and leather-goods plants. For this reason, some kinds of raw materials have traditionally been exported; for example, no camel skins or other non-standard leather raw materials are processed domestically. The rectification of this imbalance has become the main objective of Mongolia's leather and footwear industry; the Government devotes particular attention to increasing the production of leather and leather goods. In addition to the already successful enterprises in these fields, an existing footwear factory is being rebuilt and the construction of a new one is under way. A total annual capacity of 5.5 million pairs is anticipated. A new plant for processing cattle hides is also being built that will have an annual capacity of 700,000 square meters (m^2). The reconstruction and complete mechanization of the existing leather and fur enterprises are being gradually implemented.

Simultaneously, the need has arisen to develop associated branches of production, such as the manufacture of chemicals, the processing of protein-containing and other by-products and the production of devices for large- and small-scale mechanization. Particular stress is being laid on the need for considerable improvement of product quality and for broadening the assortment

of consumer goods which, being in excess of domestic demand, should assume some importance in the world market.

Since it was aware of the importance of scientific methods of producing consumer goods, the Government decided to establish the Applied Research and Experimental Centre for the Leather and Leather Goods Industry, with the assistance of UNDP and UNIDO.

In 1968, with the participation of a UNIDO mission, the request of the Government for the project was prepared. In 1969, after a careful on-the-spot analysis, UNIDO prepared and presented the plan of operation. The objective of the project was to assist the Government in establishing and constructing the Applied Research and Experimental Centre for the Leather and Leather Goods Industry as well as to help in improving production technology so as to up-grade leather raw materials and leather goods, to assist in introducing into industry the production of new types of goods, and to increase the effectiveness of the leather, footwear, leather goods and fur industries.

UNDP and UNIDO have helped the Government by providing experts in various specialities, supplying technological equipment and laboratory devices, training specialists, and the technical supervision of project activities. The Government was responsible for the construction of the premises for the Centre, providing the local personnel and the delivery of certain equipment. The UNDP and government contributions are presented in annex I, A, B and C.

The premises of the Centre were designed by the Czechoslovak institution Centroprojekt; the work was executed by the national construction organization, with technical assistance from another Czechoslovak intitution, the Investa trading corporation.

Owing to delays in the construction of the premises, the extension of the duration of the project and the increases in the costs of equipment that resulted from a decline in the exchange rate of the United States dollar ($), it became necessary to revise the project budget. As shown in annex I, the project revision of 1973-1974 provided for a UNDP contribution of $1,162,120 (A) and a Government contribution of Mongolian tugriks (₮) 17,091,312 (B). The project was scheduled for completion on 30 June 1975.

PROJECT ACTIVITIES

Main stages of the development of the project

During the initial stage (1970-1971) there were considerable delays, mainly primarily to difficulties encountered by the Government in the construction of the premises. Nevertheless, during this period it was possible to perform the basic preparatory work on such tasks as designing, working out technical projects, preparing drawings for construction and selecting subcontractors. It was during this period that UNIDO recruited practically all of the candidates for posts as experts (annex II, A).

The phase of activities and real implementation of the project began with the arrival of the experts at the project site. In May of that year, intensive preparations for the construction of the premises were initiated. The Government nominated counterpart personnel (annex II, B), and the Centre was established as an independent organization. The requisitions for technological equipment and laboratory equipment were prepared, and steps were taken to prepare for the construction of the project premises.

The decree of the Council of Ministers of the Mongolian People's Republic regarding this question, dated 23 June 1972, gave the first priority to the construction of the Centre's premises, allocated funds according to the financial estimates and planned the conclusion of subcontracts with Czechoslovakia for the delivery of materials and technical assistance. The date for the start of actual construction was set at 1 August 1972.

For the interim period, at the request of the Project Manager, the Government provided temporary quarters for the project. These consisted of experimental shops in existing enterprises, with equipment, laboratory devices and staff. In the latter part of 1972, a plan of subjects for research was elaborated; each was assigned to experts and their counterparts, who were trained on the job while the work was being performed.

The period 1973-1974 saw the intensive development of all aspects of the project: completion of the construction of the premises, the start of the installation of the equipment, the gradual transfer of counterparts to independent work, the continuation of the training of local staff in both theory and in the handling of laboratory devices, the preparation and partial training

f candidates for fellowships and the delivery of the basi technological equipment and devices.

During the final stage, in 1975, all of the technological equipment of the leather and footwear shops was assembled and tested. As soon as construction work permitted, laboratory devices were installed; the training of the counterpart specialists in their use was continued. The experts rendered consultative aid to their counterparts in the performance of research projects and helped to plan to long-term activities of the Centre.

The training of local personnel

Light industry, which holds a leading place in the economy of Mongolia, employs more than 900 specialists with higher and technical education. When it is noted that most of them have been graduated from the technical schools of developed countries, and that the level of national education has been improved, it can be stated that they have sufficient general background knowledge. On the other hand, the lack of specialized technical literature in the national language and the difficulty of using literature published in other languages require special forms and methods of training research workers and the careful selection and proper training of the individuals found to be best suited to perform research work.

In this connexion, due acknowledgement must be made to the Ministry of the Light and Food Industries. Despite the acute shortage of qualified personnel in industry, it was able to provide the Centre with highly qualified specialists with great experience in production. These people became the core of the staff of the Centre.

The system of training in research included the gradual introduction of counterparts into the details and complexities of research work and increasing their responsibilities until they attained maximum independence. The distribution of the functions of the experts and their counterparts during the period of the activities of the project is shown in the following table.

Distribution of the functions of experts (E) and counterparts (C) during the period 1972-1974

Functions	1972	1973	1974
Planning of current work	E C	E C	E,C
Long-term planning	E	E,C	E,C
Review of the basic literature on the topic	E	E,C	C
Elaboration of programme details	E	E,C	C
Estimation of the economic effectiveness of programmes	E	E	E,C
Performing experiments	E C	E,C	C
Generalising the information obtained	E C	C	C
Discussion of the experimental results	E C	E,C	E,C
Development of methods and recommendations for their application	E	E,C	E,C
Organisation of scientific research meetings	E	E	C
Production tests	E C	E C	C
Supervision of the introduction research findings into industry	C	C	C
Calculation of the economic effectiveness of the applied results of research in industry	E C	E C	E C

The raising of the general technical level of the counterparts was accomplished through the systematic lectures, seminars, industrial and scientific meetings listed in annex III. As soon as construction work permitted, laboratory devices were installed temporarily and counterparts were trained on them. For each device, the experts elaborated detailed instructions, including theoretical aspects of the method being used, instructions for adjustment and principles of operation. UNIDO fellowships for training abroad were provided for 14 specialists, most of whom had completed their training and, on their return, assumed leading posts in the Centre (annex IV).

In February 1975, by means of a specially prepared questionnaire, the counterparts were examined. Seventeen research workers were found to be capable of performing independent work at posts in various sectors, laboratories and departments of the Centre. Five laboratory assistants have assimilated the main principles of physico-chemical analysis of raw materials, semi-manufactured materials and semi-manufactured and manufactured leather. One counterpart has

been prepared to begin the post-graduate course and subsequently to defend his thesis; another is completing preparation for the post-graduate course.

Performing research and rendering assistance to industrial enterprises

During the project, the experts, in co-operation with their counterparts, completed 32 research projects concerned with improving the technologies of leather and footwear production, the creation of new shoe models and types of leather, and establishing progressive norms for the utilization of raw materials. The annual savings achieved by the introduction of the results obtained from completed research projects into industry amount to T 22.2 million, and this sum covers only topics that could be evaluated from the financial standpoint. Technical reports have been drawn up on all of these completed topics, and a number of other research findings have already been introduced into industry or will be very soon.

In addition, the experts have elaborated and transferred to the Ministry of the Light and Food Industries and to various industrial enterprises the completed studies listed below:

Technological methods	15
Suggestions, instruction and recommendations	40
Techno-economic bases for the establishment of new enterprises	3
Conclusions of experts concerning new enterprises	5
Drafts of standards and norms	4

Also, assistance was rendered to the Ministry of the Light and Food Industries and to the Committee for Science in the following areas:

The principal directions of scientific and technical research in the leather, footwear, leather goods and fur industries during the period 1975-1990

Prospects for the introduction of results of research work into the leather, footwear, leather goods and fur industry for the period 1976-1990

Stages of long-term realisation of research projects on leather and fur raw materials in the field of leather, footwear and leather goods production for the period 1972-1990

Plans for the co-ordination of research work with similar institutes in Czechoslovakia, German Democratic Republic, Hungary, Romania, Poland and the Union of Soviet Socialist Republics for the period 1975-1980

A technical information service has been organized in the Centre that will maintain an exchange of technical information with other research institutes of the leather and footwear industry (exchanges of plans, reports on completed works, periodical publications etc.). The Centre is a client of the informational system Crystal Legptom (USSR). Bilateral agreements with a number of countries provide for annual travel of Mongolian specialists for advanced training abroad, while scientists from other countries will carry out fundamental and applied research work, using the local technical basis.

Plans for the organization of experimental production shops in leather, footwear and fancy-goods have been elaborated, including structures, technological regimes, supply and sale systems, and relations with research laboratories and industrial enterprises.

Equipment of the Centre

The requirements for industrial equipment and laboratory devices are almost fully met within the limit of UNDP allocations. Correct selection of equipment for use in production shops and laboratories, properly installed and adjusted, and provided in sufficient quantity and at the appropriate technical level, will enable wide research to be done in the field of leather and fur goods, in raw materials, manufactures, requisite chemicals and other auxiliary industries, as well as in the treatment of production wastes.

Delivery of the equipment and devices listed in annex V was completed on time, which made it possible to complete the installation of the technological equipment of the leather shop in February 1975 and of the footwear shop in March 1975. Since 1974, laboratory devices were being installed simultaneously with the completion of research sector premises. In this connexion it should be pointed out that there was good co-operation between UNIDO and the Czechoslovak trading corporation Investa, which made its deliveries promptly and rendered considerable assistance in the installation and adjustment of the technological equipment.

The Government of Mongolia delivered non-standard equipment, office furniture, parts of machines for footwear shops and all expendable equipment. The project staff compiled the list of non-standard equipment, glassware, chemicals,

devices and small accessories for current and long-term requirements. At the time of completion of the project, all of the equipment and laboratory devices were in working condition and were being operated by the Mongolian specialists on the staff of the Centre.

Other problems

During the project, the international staff rendered over-all assistance to the Government in the implementation of its contribution. All of the organizational problems concerning the construction of the premises and the accommodation of technological equipment and its installation were solved by the joint efforts of the Ministry of the Light and Food Industries, the construction contractor, Czechoslovak technical assistance personnel and the international staff of the project. There was mutual understanding among the parties during the entire period of the project.

Some of the administrative support staff of the project (two drivers, a secretary-translator and a typist) were financed from UNDP funds. Experience proved that such financing was justified. Had these positions been financed from the government contribution, considerable difficulties would have arisen that would have had a negative influence on the working conditions of the international staff.

In addition to rendering technical and consultative assistance to the leather and footwear branches, the international personnel of the project extended aid to other organizations and groups, among them the chemical and pharmaceutical plant, in obtaining and testing larch extract for tanning; the metal goods plant in the introduction of accessories for leather and footwear; the meat-processing plant in the organization of skin-curing shops; the Polytechnic Institute (a UNESCO project) in training teachers in leather and footwear; and post-graduate students of the Forestry Institute and the Academy of Sciences in the preparation of their theses.

During the period of the project, the Project Manager prepared and submitted semi-annual reports and quarterly information for UNIDO, the Government, and the Resident Representative of UNDP in the Mongolian People's Republic. Financial reports were sent to the Financial Implementation Management Section of UNIDO each month.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

All of the aims and objectives of the project were achieved. During its implementation, assistance was rendered to the Government in the organization and construction of the Applied Research and Experimental Centre for Leather and Leather Goods Industry at Ulan Bator.

Despite delays in the construction of the premises which shortened the effective time of the experts' services, the executing agency, the Government of Mongolia and the project personnel found ways to obtain the maximum effectiveness of the project even without proper premises. During the entire period of the work of the international staff in temporary premises provided by the Government, the counterpart personnel were systematically and practically trained with the existing equipment, in the process of performing research. The local personnel were also trained to use modern laboratory devices, even before they were properly installed, as soon as they had been received and were temporarily set up.

The time of completion of the project practically coincided with the time of completion of building construction, the installation of technological equipment and its testing, the completion of the installation of laboratory devices and the preparation of a group of Mongolian specialists for independent work as personnel of the Centre. Consequently, the most intensive period of the project activities occurred at the end of the phase of rendering assistance in carrying out research, that is, in implementing the plans made and objectives set.

It can be seen that the new research institution requires optimal organizational forms and the solution of many problems at various administrative levels within the country and with external aid, mainly from organisations in the United Nations system, from other member countries of CMEA, and from similar institutions in some of the more developed countries.

During the project, a number of organisational and technical measures were worked out, some of which were implemented successfully, while the solution of some other problems had to be postponed. An analysis of the specific conditions of development of this industrial branch, a study of its present situation and future prospects, needs and possibilities, as well as the existence of the

material and technical basis created by the project, provide the basis for realistic recommendations for the achievement of the short-term and long-term objectives foreseen for the Centre.

Short-term recommendations

Taking into account the present levels of development of science and technology, the vast flow of information on new methods of manufacturing leather and shoes, and the close links that Mongolia has with a number of developed countries, the principal direction of the Centre over the next five years or so should be the development of research projects of a practical nature. While making due allowance for the special circumstances of Mongolia, maximum use should be made of the experience of other countries. Methods, machinery and chemicals of proven value should be selected for use. A list of projects suitable for implementation during the period 1976-1980 is presented in annex VI.

For proper implementation of the long-term plan of research, the Centre will require qualified external aid, primarily because full staffing will be achieved only gradually. Most of the personnel who will be recruited during the period 1976-1980 will have no experience in research work and no familiarity with the new production and laboratory equipment. The needed aid can be rendered in two ways: first, by the implementation of phase II of the project by UNIDO and UNDP, and secondly, by exchanges of specialists between the Centre and corresponding institutions in countries that co-operate with Mongolia in the improvement of the leather and footwear industry. Parallel activities in both directions are possible, not only by working on joint topics but also by dividing the spheres of activities within the framework of a long-term plan.

In phase II of the project, UNIDO and UNDP could render assistance by sending experts and consultants, training fellows and supplying some special equipment. The estimated UNDP contribution for this phase II of the project can be seen in annex I, C.

The exchange of specialists of the Centre with similar institutions in other countries can be accomplished by co-ordinating the work with CMEA countries or by bilateral agreements. Annex VII gives the planned requests for specialists to render technical assistance in various subjects on bilateral basis in the period 1975-1976.

Taking into consideration the fact that the entire leather and footwear industry of Mongolia is centralized in a single association located in the vicinity of the Centre, it is advisable to organize as soon as possible through the close collaboration of the Centre with the association, a production and research complex under centralized management that would, however, provide maximum autonomy for the Centre in matters relating to research activities. Under this plan the Centre's Director would be Deputy Director of the complex in charge of science and technology. In addition to its usual functions, namely research activities, the Centre would be assigned to perform a number of duties connected with the regulation of and control over the quality of production and introduction of technical and technological innovations. Furthermore, the Centre would act as a decision-making body in such areas as methods and instructions, the ordering of new equipment and chemicals, and standardization and technical conditions etc. The association would perform all services of repair and maintenance of equipment and would be responsible for the supply of materials, marketing etc. The planning of research, discussion on its results, industrial tests and introduction of innovations would be carried out jointly by the association and the Centre. Detailed justifications, recommendations and efficiency estimates have been provided to the Government.

For the effective functioning of the Centre and to permit collaboration with UNIDO and UNEP, and co-ordination of its work with similar work being done in other member countries of CMEA, or by bilateral agreements, the means listed in annex I, D must be provided. The leather, footwear and fur industries of Mongolia face a number of very important problems that can be solved only through the joint efforts of several ministries, departments and organisations. For example, the improvement of the quality of raw materials must involve agricultural workers, veterinaries, purchasing agents and factories for primary processing. Similarly, the production of high-quality chemicals must involve the Ministry of Geology, the Institute of Chemistry and the leather manufacturers, among other. The State Committee for Science and Technology has, among its other responsibilities, that of co-ordinating the activities of various organizations in the solution of common problems. It would seem to be highly advisable to combine efforts and to assign definite spheres of activity when carrying out the research projects listed in annex VIII.

A laboratory for the processing of scrap leather has been established at the Centre. It will oversee the work on the introduction, testing and improvement of technology at the new plant for this purpose that is being established (project MON/71/509). The Centre will provide the basis for training national personnel for this new branch of the industry.

As the leader of technical progress in the leather and footwear industry, the Centre should send its representatives to international meetings on this speciality, carry out plans for co-ordination of joint efforts with other member countries of CMEA and determine short-term and long-term priorities for the entire industrial branch.

Long-term recommendations

The Centre, as part of the Scientific Production Complex, should become engaged not only in the investigation of new techniques and technologies, but should also become a centre for the training of research workers for the industrial branch. Initially, such activities should be restricted to the selection and preliminary training of candidates for post-graduate study abroad until national post-graduate courses have been organized. The Scientific Production Complex should also organize the systematic training of foremen, laboratory assistants and other specially qualified workers for the various industrial enterprises included in the branch, but primarily for the Centre itself.

It is recommended that the mechanization and automation department of the leather and footwear industry be expanded and completed so as to be able to provide its staff with appropriate training. This should be done to make possible the gradual transfer of the designing of leather and footwear machinery, apparatuses and devices to national personnel. This goal can be achieved only after a properly planned and co-ordinated national mechanical plant has been brought into being.

The technical information department should lead in organising work on specialised periodical publications and the translation and publication of textbooks in the national language, particularly those suitable for lower-level engineers and technicians and workers in various specialities. Much work has already been done in this area. All the technical documentation of the Centre

is based on the experience of leading research institutions in light industry. Such areas as regulations and rules, the structure of management, the planning and performance of research, the organization of research findings and introducing them into industry, the drafting of economic contracts, and the recruitment, training and assignment of personnel have all been covered. A list of the technical documentation developed by the project and transferred to the Government is presented in annex IX.

Comments

Although the difficulties that followed from the delayed completion of the project premises were overcome, it is clear that project implementation would have been simpler and easier had the experts been able to start training their counterparts in the completed building and on properly installed equipment and laboratory devices.

As was also the case with the related project Experimental and Demonstration Plant for the Utilization of Scrap Leather (MON/70/506), the early arrival of the experts was justifiable not only because the international staff introduced the system of maximum efficiency, which made it possible to begin the activities of the Centre two and one-half years ahead of schedule, but because the entire implementation of the project was greatly expedited. Some concrete examples are the following:

(a) With the arrival of the experts in the second half of 1972, the Centre was established with independent status and, consequently, its own financing. It was thus possible to begin recruiting the local staff. The system prevailing in Mongolia provides for the financing of institutions only where a concrete return can be expected. Thus, if research activities had not been performed and their results given practical application simultaneously with the receipt of assistance from the Government, there would have been no means available for the recruitment of personnel. The arrival of the experts made research work possible;

(b) The organisation of the Centre at that early stage made it possible for the Government to select the staff gradually, which was very important in view of the acute shortage of specialists at that time;

(c) The successes in research already accomplished in 1972-1973 convinced government authorities that there were real possibilities for establishing a highly effective institution. They were thus favourably disposed towards expediting the construction of the premises and finding rapid solutions of problems connected with the implementation of the project and nominating the counterpart personnel;

(d) The role of the international staff was considerable in organising construction. They participated in the scheduling of work, the requisitioning of building materials, the drawing up of subcontracts for technical assistance and exercising control over construction and the implementation of the obligations of the contractors;

(e) The authority of the international staff and their good relationship with the governmental authorities facilitated the solution of important questions and thus expedited the implementation of the project.

Annex I

PROJECT BUDGET

A. UNDP contribution, Phase I
(US dollars)

	Original plan of operation	D revision [a]	E revision	Actual expenditure [b]
Project personnel	484 800	665 285 [c]	691 663	694 934
Fellowships	46 000	60 600	59 567	59 567
Equipment	300 000	368 715	368 715	368 715
Miscellaneous	29 100	43 231	42 154	38 904
Executing agency costs	94 600	-	-	-
UNDP direct costs	3 000	-	-	-
Total	957 500	1 137 831	1 162 099	1 162 120

[a] The B and C revisions reflected only insignificant changes.

[b] Expected result.

[c] Including $37,925 for administrative personnel.

B. Government contribution, Phase I
(Mongolian tugriks)

	Original plan of operation	D revision	E revision	Actual expenditure [a]
Personnel services, technical and administrative assistance	1 764 000	611 300	956 300	764 800
Site and building	2 700 000	10 897 000	10 897 000	10 897 812
Subcontract	-	3 710 000	3 710 000	3 710 000
Equipment	1 600 000	1 600 000	1 600 000	896 400
Miscellaneous	1 880 000	962 785	790 800	829 300
Total	7 944 000	17 781 085	17 954 100	17 098 312
Equivalent [b] US dollars	2 158 700	4 831 817	4 878 831	4 646 280

[a] As of 30 June 1975

[b] $1.00 = ₮ 3.68

C. UNDP contribution, Phase II
(Man-months and US dollars)

	Total		1976		1977	
	m/m	$	m/m	$	m/m	$
Project Personnel						
Component total	72	216 000	24	72 000	48	144 000
Training						
Component total	18	16 800	12	11 600	6	5 200
Equipment						
Component total		10 000		10 000		
Miscellaneous						
Component total	—	4 500	—	1 500	—	3 000
Grand totals	90	247 300	36	95 100	54	152 200

D. Financial and labour requirements of the Centre during 1975-1976
(Man-months and Mongolian tugriks)

	Units	Years	
		1975	1976
General expenditures on scientific research work	Tugriks (thousands)	350 000	660 000
Number, totals	Man-months	790	1 816
Staff	Man-months	490	612 a/
Other personnel	Man-months	300	1 200
Expenditures on equipment (expendable and non-expendable)	Tugriks (thousands)	650 000	150 000
Project phase II expenditures	Tugriks (thousands)		727 600 b/
Capital investment	Tugriks (thousands)	730 000	-

a/ Including workers in experimental shops.

b/ Including expenditures per items above.

Annex II

PROJECT EXPERTS AND COUNTERPART STAFF

A. Project experts[1]

Experts[2]	Field of specialization	Duration of contract[3] From	To
V. F. Grishin	Project manager (Leather technologist)	6 Feb. 1970	14 Apr. 1972
P. R. Babchuk	By-products utilization	17 Feb. 1972	15 Aug. 1974
K. I. Epifanov	Footwear technologist	17 Feb. 1972	16 June 1975
K. A. Grigorian	Leather chemist	3 Mar. 1972	30 Sept. 1975
V. A. Zhuravsky	Project manager (Leather technologist)	15 May 1972	14 Sept. 1975
A. M. Ukhov	Industrial economist	11 Aug. 1972	30 June 1975
E. M. Durov	Mechanical engineer	11 Aug. 1972	30 Sept. 1975
A. I. Yakushev	Senior researcher in fur	11 July 1974	11 July 1975
O. V. Dorofeev	Technical information	4 Sept. 1974	30 Aug. 1975

B. Counterpart staff (Research workers)

Name	Position held earlier	Position in the Centre	Remarks
L. Senjen	Chief engineer of a leather plant	Director of the Centre	Since August 1974, post-graduate studies in Czechoslovakia
A. Tumjee	Chief of Standardization Department, Ministry of the Light and Food Industry	Director of the Centre	
E. Sorokumen	Chief of central laboratory of the industrial complex	Chief engineer	

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[1] All from the Union of Soviet Socialist Republics.

[2] In order of their arrival.

[3] Dates of arrival to and departure from the field.

S. Gungaa	Chief engineer of a fancy-goods factory	Chief of footwear and fancy-goods sector	
C. Tseremchimed	Chief of the technical control department of a leather plant	Research worker	
O. Chimidregizen	Chief of the technical control department of a footwear factory	Research worker	Left in 1974
H. Tsetsen	Chief of Material and technical provision department of the industrial complex	Research worker	
M. Baldorj	Staff member, Ministry of Construction	Research worker	
D. Urnaa	Chemical engineer in central laboratory of the industrial complex	Research worker	
B. Khandsuh	Technologist at a leather factory	Research worker	
N. Terbish	Staff member, Personnel Department of industrial complex	Research worker	
G. Enkee	Laboratory assistant at the Agricultural Institute	Research worker	
C. Baljinjam	Chief, central laboratory of the industrial complex	Research worker	
Z. Avirmid	Chief engineer of a footwear factory	Research worker	
B. Ichinkhorloo	Student	Junior research worker	
G. Tumurbaatar	Mechanic of the industrial complex	Research worker	

B. Okun	Chief rat-catter of the industrial complex	Research worker
B. Khorgolikhun	Chief, laboratory of the industrial complex	Chief, Laboratory for physicochemical research
G. Darinchuluun	Technologist of a goat-leather plant	Chief of the leather shop
C. Sonimbayar	Mechanic of a hides plant	Chief Mechanic

Annex III

LECTURES DELIVERED BY THE EXPERTS TO THE PERSONNEL OF THE CENTRE AND TO THE ENGINEERS AND TECHNICIANS OF THE LEATHER COMPLEX a/

Organization of research work: planning of topics, elaboration of programme systematics, working programmes, keeping of diaries, compilation of the results of completed projects, industrial tests and introduction of research results into practice

Certain special methods for determining the economic effectiveness of introducing new techniques and technologies into research

Main principles of planning and production management

The elaboration of calendar plans and the estimation of expenditures on research

Systematics for conducting analyses of the implementation of planned labour productivity and of the number of workers

Elaboration of plans for labour and salaries in research institutes

Systematics for the estimation of economic effectiveness of the introduction of new techniques, technology and research works

A self-supporting system for research institutes and for designing construction bureaux in some industrial branches

The application of methods of statistical economics in experimental investigations

Methods of chemical-analytical and technological control in the leather industry

The principal present directions of development of the technology of leather production

Recommendations of CHEA on methods of chemical and mechanical analysis of auxiliary materials used in the leather industry

The Applied Research and Experimental Centre and its significance for future development of leather and footwear industry of Mongolia

New methods for the preservation and storage of leather raw materials; Determining the deterioration of leather clothing after long storage

The influence of the processes of neutralization, fat-liquoring and filling on the quality of chrome leather for shoe uppers and fancy goods

Covering compositions used in finishing leather goods for shoe uppers

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a/ Some of these lectures were followed by seminars and practical studies.

Some special qualities of natural leather as material for shoes

The structure and qualities of collagen

The possibilities offered by microscopic methods in research in the leather industry

The use of improved methods of research in the leather industry

Perspectives for the development of footwear and fancy goods production

New materials for use in footwear production and new developments in footwear technology

The design and modelling of shoes. The history of the development of the applied arts. Ensembles in clothing, changes of ensembles with fashion

The aesthetics of shoe design; new findings in the creation of functional and decorative footwear accessories from various materials

Fashions in clothes and footwear in 1974

The principal directions of techniques and technology of footwear industry abroad

The development of the footwear industry in the Union of Soviet Socialist Republics

The production of last models from standard drawings in the Union of Soviet Socialist Republics

The deformation of cuttings during lasting operations in footwear production

A modern system for cutting leather materials for shoe uppers

The basic principles of rational shoe last design

Various methods and equipment for drying semi-manufactured leather

The principal tendencies toward mechanization and automation in leather production

Methods for elaborating structural schemes for the automation of production processes

The servicing of testing and measuring devices and automats in light industry enterprises

The testing and adjustment of controlling and adjusting devices

The state system of scientific and technical information in the Soviet Union

The principal sources of scientific and technical information and their utilization. Information sources on scientific research and development

The branch system of scientific and technical information in light industry in the Soviet Union. The "Crystal-Leprom" automatic information system

The organization of work with technical literature: annotations, summaries, reviews, reference cards and indexes

A system for the selective distribution of information, and an information service to the management staff in enterprises and organizations

The complex use of information in conducting research work

The organization and use of reference materials available at enterprises and organizations of light industry

Annex IV

FELLOWSHIPS GRANTED BY UNIDO

Fellow	Field of study	Place of study	Period of study	Position upon return
M. Gerelsuren	Organization of research work in leather production; modern laboratory techniques	Research Institute of the Leather and Footwear Industry, Gottwaldov, Czechoslovakia	27 Jan. - 4 June 1973	Chief engineer
		Institute of the Leather Industry, Lods, Poland	4 June - 8 Oct. 1973	
		Central Research Institute for the Leather and Footwear Industry, Moscow, Union of Soviet Socialist Republics	8 Oct. - 8 Dec. 1973	
C. Tserenchimed	Organization of research work in production; modern	Research Institute of the Leather and Footwear Industry, Gottwaldov, Czechoslovakia	24 May - 25 July 1973	Research worker
		Institute of the Leather Industry, Lods, Poland	27 July - 4 Oct. 1973	
		Central Research Institute for the Leather and Footwear Industry, Moscow, Union of Soviet Socialist Republics	7 Oct. - 7 Dec. 1973	

Fellow	Field of study	Place of study	Period of study	Position upon return
O. Gungaa	Acquiring experience in conducting research work in the field of designing, manufacturing, forming of leather goods and clothing	Research Institute for the Leather Goods Industry, Czechoslovakia	1 Mar. - 31 Mar. 1973	Chief of sector
		Research Institute for Leather Clothing, Czechoslovakia	1 Apr. - 1 June 1973	
		Research Institutes in Lodz, Krakow and Warsaw; Fur plant, Bielsko-Oliwiec, Poland	4 June - 8 Oct. 1973	
C. Chimidregzen	Improving knowledge, acquiring practical experience in research work in footwear production	Research Institute for Leather and Footwear Industry, Gottwaldov; Leather and Footwear enterprise "Svit", Czechoslovakia	2 Feb. -25 May 1973	Chief of laboratory
		Research Institute for the Leather and Footwear industry, Budapest, Hungary	4 June -18 June 1973	
		Central Laboratory for the Footwear Industry in Krakow, Poland; Institute for the Leather and Footwear Industry, Lodz; Designing Bureau, Warsaw, Poland	18 June- 8 Oct. 1973	

Fellow	Field of study	Place of study	Period of study	Position upon return
		Central Research Institute for the Leather and Footwear Industry; Footwear factories "Burevestnik", Parizhskaya komuna" and "Fashion House", Moscow, Union of Soviet Socialist Republics	8 Oct. - 8 Dec. 1973	
H. Tsetsen	Problems of concrete economics of research institutes and leather and footwear enterprises	Research Institute for the Leather and Footwear Industry, Gottwaldov, Czechoslovakia	5 July - 5 Sept. 1973	Research worker
		Central Research Institute of the Leather and Footwear Industry, Moscow, Union of Soviet Socialist Republics; Ukrainian Research Institute of the Leather and Footwear Industry, Kiev, Ukrainian Soviet Socialist Republic	8 Oct. - 8 Dec. 1973	
K. Ayurzanaa	Improving knowledge acquiring experience in research work in fur industry	German Democratic Republic	17 Jan. 1975	Chief of laboratory

Fellow	Field of study	Place of study	Period of study	Position upon return
K. Baldorj	New methods of by-products manufacturing	Yugoslavia	22 Jan. 1975	Research worker
G. Tumurbaatar	Improving knowledge, acquiring practical experience in mechanization of leather production	Union of Soviet Socialist Republics	28 Jan. 1975	Research worker
S. Avirmed	Improving knowledge, acquiring experience in research work in footwear production	Union of Soviet Socialist Republics	27 Mar. 1975 - 30 June 1975	Research worker
C. Baljinyam	Acquiring experience in theoretical and practical knowledge in organization and carrying out research work in chemistry of leather production and auxiliary materials	Union of Soviet Socialist Republics	Placement pending	Research worker

Fellow	Field of study	Place of study	Period of study	Position upon return
G. Davaa[1]	Acquiring of theoretical and practical knowledge on organisation and conducting of research work in leather and fur raw materials	Union of Soviet Socialist Republics	16 Sept. 1975 - 15 Mar. 1976	Chief of laboratory
Z. Terbish[1]	Organisation and carrying out of research work in chemical technology of footwear	Union of Soviet Socialist Republics	Placement pending	Research worker
Orsoo[1]	Organisation of technical information service in research institutes and enterprises	Union of Soviet Socialist Republics	Placement pending	Chief technical information section
A. Tumjee[1]	Problems of organisation and management of research institutions of leather and footwear industry	United Kingdom	6 Oct. 1975 - 7 Dec. 1975	Director of the Centre

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[1] Continues studies on the date of reporting.

[2] Will be sent for studies during the period of project activities.

Annex V

EQUIPMENT SUPPLIED UNDER THE TERMS OF THE UNIDO/UNDP ASSISTANCE AGREEMENT

Tannery equipment	Model numbers	Number
Drum	52520	3
Small testing drum	07529/P5	4
Fleshing machine	07735/P1	1
Splitting machine	07564/P1	1
Rotary sammying machine	07316/P3	1
Shaving machine	07724/P2	1
Setting-out machine	07755/P2	1
Leather cabinet dryer	07361/P1	1
Continuous vibrating staking machine	07705/P2	1
Buffing machine	07488/P3	1
Buffing machine	07325/P4	1
Leather-brushing machine	07090/P1	1
Dryer for dressed leather	07358/P2	5
Leather-spraying booth	07340/P2	1
Hydraulic ironing press	07547/P1	1
Measuring machine	07483/P2	1
Reactors	(50-100 litres; 400-500 litres; 1 500-2 000 litres)	3
Truck with platform	07466/B23/P2	2
Truck with bucket	07422/B1/P2	5
Trestle trucks	07228/B12/P2	10
Paint sprayers	P85	5
Footwear equipment		
Spraying chamber	18612/P2	1
Bevelling machine	01291/P1	1
Single-needle flat sewing machine	325	3
Single-needle flat sewing machine	72128-101	4
Double-needle flat sewing machine	M 326-2	1
Double-needle flat sewing machine	72204-102	3

Zig-zag sewing machine	335-121.2	2
Post-stitching machine for trimming, with knife mechanism	521-4	4
Sewing machine for edge piping	01118/P1	1
Machine for inserting shoelace-hole fastenings	01099/P3	1
Machine for inserting buttons	01095/P[illegible]	2
Seam-straightening machine	01299/P2	1
Machine for folding the edges of of upper sections	01280/P1	2
Machine for straightening counters after they have been inserted in the upper	02[illegible]2/P1	1
Machine for lasting the sides with wire	02087/P1	1
All-purpose Heel lasting machine	02038/P2	1
Nail-lasting machine	02128/P1	1
Ploughing-out machine	04313/P3	1
Heel-glazing machine	04311/P3	1
Machine for applying adhesives	02068/P6	1
Heeling machine	04222/P1	1
Press for sticking soles (single pair)	04286/P11	2
Machine for removing footwear from the last	04213/P3	1
Machine for pressing the upper with a hot iron	04219/P5	1
Machine for cutting sole edges	04105/P6	1
Machine for hot-polishing sole edges	04207/P3	1
Machine for shaping lasted footwear	04286/P22	1
Machine for lasting the toe caps of welted footwear	240 S	1
High-speed welt-sewing machine	357 [illegible]	1
Rolling-Blake-type sewing machine	03012/P2	1
Milling machine, with attachments	63[illegible]0	1
Heel-cutting machine	04074/P3	1
Single-roller buffing machine	04127/P10	1
Knife-grinding machine	06019/P5	1
Machine for stamping uppers	06126/P2	1
Machine for removing and trimming the welt	171 [illegible]0	1

Machine for removing surplus materials from the lasted edge	02010/P1	1
Sewing machine for stitching gloves	TH-5	2
Sewing machine for embroidering gloves	[illegible]-55	1
Hydraulic [illegible]king machine	06102/P2	1
Upper-leather splitting machine	06101/P1	1
Single-needle sewing machine	Pfaff 335-H3-2/01BL	1
Sewing machine for stitching	Success PTHP	
Cement side-lasting machine	413 TH-111	1
Bifurcated rivet machine	[illegible] 72	1
Stapling gun		1
Heavy board and vulcanized-fibre bending machine	[illegible]	1
Pneumatic upper-turning machine for boots	133-109	1
Combination forepart-lasting machine	02160/P1	1
Chamfering machine	Pudole 05258/P1	1
Heel-scrowing machine for low shoes	04299/P3	1
Vertical sole margin roughing machine	05303/P1	1
Sewing machine	Adler 105-[illegible] 25/Bp75	1
Single-needle, cylinder-bed sewing machine	Pfaff 20-55/01 GL	1
Machine for sewing moccasin uppers	317 [illegible]	1
Laboratory furniture and office equipment		
Double laboratory bench, complete fume cupboard, laboratory cabinet	2-127-0-4[illegible]	17 sets
Laboratory benches	? 15-05	1
	? 16-05	1
	? 15-04	1
	? 31-05	2
	? 35-4	2
Titration bench (4 sections)		3
Chair, laboratory		100
Calculating machine	[illegible]-5	4
Typewriter with detachable letters	General	2
Photocopier	Olivetti 205	1

Vehicles

Vehicle	UAZ-469	1
Vehicle	PAZ 672	1
Vehicle	GAZ-69 (written off)	1

Laboratory equipment and instruments

Machine for the coarse reduction of leather samples		1
Machine for the fine reduction of samples of stiff and chrome leathers		1
Agitating device	TE 3	6
Centrifuge	CLO-4	3
Centrifuge	T-23	2
Microtome	MS 490 A	1
Biological microscope	MN 816 B1	1
Luminescent microscope	MN 716 CB	1
Analytical scale	AR-200	8
Quick-weighing scales	P2-200	3
Quick-weighing scales		2
Technical scales	RDB-10	3
Technical scales	T1-500	3
Technical scales	T2-1 000	2
Thermostat	Vetra U-10	2
Thermostat, air	TVP-5	4
Thermostat, air, with water jacket	TS-51	2
Drying cabinet with stepless temperature regulation		13
Vacuum cabinet	VDC 35	2
Muffle furnace, electric	SN-2	2
Laboratory crucible furnace	S-99	3
Viscosimeters	Rotary	1
	Ford	2
	Engler	2
	Brookfield	2
	Ubbelode	1
	Keppler	2

pH meter	7020	4
Photocolorimeter		2
Markusson device		1
Surface and interfacial tension apparatus		1
Instrument for rapid determination of moisture in leather		2
Automatic fraction receiver		1
Reflectometers	Abbe	1
Extraction apparatuses	Soxhlet	2
Kjeldahl apparatus		2
Micro-kjeldahlization apparatus		2
Instrument for determining moisture	Aufhauser-Denshut	2
Distillation apparatus	Parnas-Wagner	3
Homogeniser	S-79325	1
Instrument for determining the light-fastness of skin colouring		1
Instrument for determining the flexural resistance of coatings		1
Instrument for testing the flexural resistance of patent leather		1
Instrument for determining adhesion		1
Instrument for determining the resistance of dyes to friction		1
AATCC Crockmeter	CM-5	1
Heater, infrared	HB-262	2
Lamp, ultraviolet	LH 530	2
Instrument for determining water absorption by volume and rate of water absorption		2
Instrument for establishing the vapour permeability of leather (Mertfeld vessels)		2
Instrument for determining the air-permeability of leather		1
Penetrometer		1
Bench with deep-freeze unit		1
Density balance	513-118	1
Densimeter chatelier		1
Instrument for determining melting points		1

Spectrophotometer	[illegible]	1
Instrument for determining heat resistance		1
Instrument for determining initial adhesion		1
Instrument for determining the stiffness of footwear toes and counters		1
Instrument for testing counters for cocking		1
Tensile-strength testing machine for physical and mechanical testing of skins, furs and leather articles		1
Climatic chamber		1
Thermohydrograph		1
Stirrer	SB-300	1
Magnetic stirrer	SB-660	4
Four-section water-bath		1
Two-section water-bath		10
One-section water-bath		4
Electric sand bath		6
Sand/oil bath		1
Hot-air sterilizer	ST 5042	1
Finish rub-fastness tester	STM 102	1
Plantegraph for obtaining prints of the plantar surface of the foot		1
Last contourgraph	STD 202	1
Finish heat-resistance tester	STM 111	1
Last-coordinating instrument for checking the elevation of the toe section		1
Electrical hydrometer	FIG. 2113	1
Laboratory sieves, complete control screens		2
One-ring hot-plates		10
Two-ring hot-plates		6
Electric iron with temperature control		1
Auxiliary testing and measuring instruments:		
Outside calipers		2
Laboratory scissors		10
Stop-watches		6
Laboratory timer		5

Tachometer	1
Magnifying glasses	15
Laboratory accessories for general use:	
Set of hand drills for plugs	2
Press for corks	2
Metal stands with set of lugs,	
signs, muffs and forks	10
Crucible tongs	10
Screw clamps	30
Spring clamps	30
Set of tools for assembling and adjusting laboratory instruments	1

Annex VI

MAJOR PROBLEMS AND TOPICS FOR IMPLEMENTATION BY THE CENTRE DURING THE PERIOD 1976-1980

Problem	Principal means for solving it	Period for implementation (quarter, year)
Development of new methods for the rational utilization of leather raw materials and the processing and utilization of albumen-containing wastes, so as to improve the quality and volume of production	Development and introduction of progressive methods of contouring of raw material and effective utilization of skin ends	1976-1979
	Detecting the major trends of research and development of effective methods of processing and utilization of albumen-containing wastes of the leather and shoe industry in Mongolia	1977-1979
	Development and industrial assimilation of technology of utilization of animal wastes (fats, fermental preparation of pancreas)	1976-1979
Improvement of the storage system, primary treatment and storing of leather and fur raw material	Development and introduction of effective methods of curing and storing leather and fur raw material on the basis of application of modern technology and new chemicals, with a study of centralized systems of the storage of raw materials	1976-1978
	Development of the technologies of storage and curing of leather raw materials, with an investigation of non-centralized storage in Mongolia	1976-1978
Improvement of the existing methods and development of new methods of leather production on the basis of intensification of technological processes, using new chemicals and highly productive equipment, aiming at increase	Development and introduction of industrial technology of tanning of leather for shoe uppers on the basis of mineral tanning, ensuring maximum absorption of tanning complexes and their equal distribution on the thickness of the corium	1976-1980
	Development and introduction of effective methods of intensification of technological processes in	1976-1978

f labour productivity, improvement of quality and extension of the range of produced goods	the production of leather shoe soles and uppers on the basis of application of new chemical and fermental preparations, wetting agents (PAV) and progressive equipment	
	Development and industrial assimilation of a unified technology for finishing leather for shoe uppers on the basis of application of new high molecular combinations and watery dispersons of polymers	1976-1980
	Development and introduction of methods of production of leather for shoe uppers and soles from horse, camel and wild animal skins	1976-1979
Study of natural sources of raw materials that would permit the production of local chemicals for the leather, shoe and fur industries	Development of technology and preparation of recommendations for industrial production of vegetable tanning materials from tannin-containing wood species available in Mongolia	1976-1978
Development of new assortments and progressive technology of production of shoes fancy goods and fur goods on the basis of the achievements of modern technology, application of new materials and mechanized lines	Study of factors determining the exploitation qualities of shoes and making recommendations for the improvement of technology of shoe production	1976-1978
	Development and introduction of improved technology of shoe production in the direction of improving quality and broadening of the assortment on the basis of new materials, new methods of attaching of bottom and upper details of shoes, and modern equipment	1976-1980
	Development of the assortment of national lasts and making recommendations for the industrial assimilation of production technology acceptable in Mongolia	1976-1980
	Development of the technology of production and the application of	1976-1977

	pressure-sensitive adhesives, and making the necessary recommendations introducing them into industry	1976-1977
	Development of a new assortment and improvement of production of fancy-goods leather on the basis of the application of new materials and the achievements of modern technology	1976-1979
Improvement of the technology of production of fur from wild animal skins, fur and wool sheepskins on the basis of the application of new chemicals and progressive methods, ensuring considerable increase in labour productivity and quality of production	Development and industrial assimilation of modern technology of finishing of fur and wool sheepskins	1977-1980

Annex VII

REQUESTS FOR SPECIALISTS TO RENDER TECHNICAL ASSISTANCE ON CERTAIN TOPICS ON A BILATERAL BASIS DURING 1975-1976

Department of the Centre	Description of the specialist's work	Time of service
Sector of Leather Technology	Development of optimal technology for curing and storing leather raw materials applicable to districts with decentralized procurement	Three man/months fourth quarter, 1975
	Seeking new and effective curing materials for the initial manufacturing of leather raw materials	Six man/months second quarter, 1976
	Development of technology of non-vegetable tanning of leather for shoe uppers and soles, using new synthetic tanning materials	Three man/months fourth quarter, 1975
	Development of technology of production of high-quality splits, on the basis of using soaking groundings and high-covering compositions	Three man/months fourth quarter, 1975
	Development of a technology for impregnating leather for shoe uppers and soles, using various amino-resins, providing equalization of data by topographical areas and increase of output by rationalising cutting	Twelve man/months, four quarters 1976
	Study of the influence of impregnating materials on the qualities of shoe uppers	Three man/months fourth quarter, 1975
	Study of physico-mechanical qualities of covering compositions	Three man/months second quarter, 1976
Footwear and fancy-Goods Technological Sector	Development and introduction of scientifically based technology of production of shoe lasts applicable to Mongolian conditions	12 man/months four quarters 1976
	Development and improved technology of shoe production applicable to Mongolia	12 man/months fourth quarter, 1975 to third quarter, 1976
	Development of improved technology of fancy goods	

Department of the Centre	Description of the specialist's work	Time of service
Physico-mechanical and Chemical Analysis Sector	Development of effective methods of chemical and combined cleaning of sewage	Twelve man/months four quarters 1976
Department of Mechanization and Automation of Leather and Footwear Production	Training specialists of the Centre to design and construct the means of small-scale mechanization	Six man/months, first and second quarters, 1976

Annex XVII

SUGGESTED PARTICIPATION OF SOME MONGOLIAN INSTITUTIONS IN THE SOLUTION OF THE OVER-ALL PROBLEMS OF THE LEATHER AND FOOTWEAR INDUSTRY

Problem	Agency participating in implementation of topic	Questions solved by participating agency
Improvement of the system for preserving, processing and preserving leather materials	Institute of Agriculture	Investigation and development of measures to reduce natural defects of skins and to improve their initial treatment in the provinces
	Institute of Chemistry of the Academy of Sciences	Development of preparations for treatment of leather raw materials (sterilizers and preservatives)
Study of natural sources of raw materials; providing production of natural chemicals for the leather and footwear and fur industries	Institute of Chemistry of the Academy of Sciences	Seeking possibilities of using some natural salts in the leather industry
	Institute of Forestry	Providing conditions of initial treatment and preparation of raw material for the tanning extract industry of Mongolia
Development of a new assortment and modern technology of shoe production on the basis of the achievements of modern technology, and the utilization of new materials and mechanization	Institute of Medicine	Development of technical tasks for orthopedical and special shoes
	Institute of Forestry of the Academy of Sciences	Finding kinds of wood and developing technical conditions and methods for the initial preparation of wood for the production of shoe lasts

Annex 12

TECHNICAL DOCUMENTATION DEVELOPED BY THE PROJECT AND TRANSFERRED TO THE GOVERNMENT a/

Planning, organizational, methodological instructs, documentation

Status of the Applied Research and Experimental Centre for the Leather and Leather Goods Industry

Plans for the structure of the management of the Centre during 1972-1973

Specifications of furniture and equipment for the Centre to be provided from the government contribution

Specifications of the building materials, equipment, machinery halls, ventilation and air conditioning for the Centre

Prognosis of the development of research of Mongolian light industry for 1976-1990

Principal directions of development of research in the Mongolian food industry, 1976-1990

Study programmes and plans for the organization of training of the personnel of the Centre

Plan for the technical re-equipment of the pilot plant of the complex

Work regulations of the central laboratory of the complex

Guide-lines for research work in the Centre

Draft plan for co-operation of the Centre with similar institutions of other countries of CMEA during 1972-1975

Plan of work co-ordination of the Centre and the leather industrial complex during 1972-1973

Forms of economic contracts and other relations of the Centre with industrial complexes

Schedules for scientific meetings in the Centre during 1973-'4

Provisions for the introduction of research work results at the enterprises of the Ministry of the Light and Food Industries

Provisions for the admission and registration of personnel of the Centre (for the Personnel Department)

Plan for the introduction of research work in 1973-1976. Stages of long-term development of research in the Centre

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a/ There are copies of all listed documents at the Centre.

List of the main problems for solution by the Centre in 1974-1975

Techno-economic justification of the establishment of the Research Institute of Leather and Footwear Industry in Mongolia

List of non-standard equipment for the Centre that should be manufactured at the mechanical plant of the complex in 1974-1975

List of laboratory glassware, chemicals, small laboratory instruments etc. to be imported

Forms for the reception, inventory, storage and distribution for installation of equipment delivered for the Centre. Index cards for equipment

Measures for expediting the construction of the Centre premises and for providing conditions for the implementation of the approved work schedule

The plan of co-ordination of the research of the Centre with that of other CMEA countries for 1976-1980

Plan of collaborative research of the Centre with Teplomassobmen, Academy of Sciences of the Mongolian People's Republic

Proposals for the organization of the research and industrial complex

Plans for solving major problems in leather and footwear industry in 1976-1980

Plan for the introduction of research work for 1976-1980

Organization of a pilot footwear shop at the Centre

Organization of a pilot leather shop at the Centre

Status of the Department of Economics and Planning of the Research and Designing Institute

Proposals for raising of labour productivity in the leather and footwear industry of Mongolia

Status of the Department of Technical Control of the fur enterprises of Mongolia

Status of the Department of Technical and Scientific Information of the Research and Design Institute of the Ministry of the Light and Food Industries

Provisions for the organization of technical information services at enterprises of the light industry and the food industry of Mongolia

Status of the Mechanization and Automatization Department of the Centre

A systematic reference card index on the leather industry

A reference card index for light industry (economics, general problems etc.)

Provisions for the organization of the work of groups of responsible experts to study and use information at enterprises of the light and food industries

Proposals for finding additional resources within a branch by reducing its personnel

Programmes and schedules of training of the centre staff in new technologies and apparatuses available at the laboratories of the centres (first quarter of 1975)

Reports on research topics a/

The development of improved methods for staining and drying leather and fur raw materials in Mongolia

The development of methods for the rational utilization of commercial type hides and skins

The development of a progressive technology for finishing of leather from cattle hides for shoe uppers

The development of technical documentation on shoe production by the direct vulcanization method

The development and introduction into industry of new types of decorative accessories made from local materials

The development of new types of shoes and clothing with the use of decorative accessories made from local materials

The study of possibilities of replacing natural tanning materials by synthetic ones in the production of shoes and insole leather

The development of production technology of bridle leather from the hides of cattle and camels

The development of new models and technology for the production of special shoes

The intensification of liming and soaking processes with the use of surface-active substances and other materials

The development of technology of chrome-tanning of hides for shoe uppers, using masking additions

Working out the progressive technologies for fat-liquoring and dyeing and filling of leather with the use of new materials such as polymers and synthetic and vegetable tannins

The development of methods of thermoresistant Russian leather for the production of cemented and vulcanized shoes

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a/ The methodical programmes, calendar plans, estimated expenditures and drafts of commercial contracts have been elaborated for all topics.

The development of measures for the reduction of wastes in shoe production

A study of the conditions and elaboration of recommendations on the industrial production of lasts in Mongolia

An investigation of leather and the technological qualities of larch extract in Mongolia

The development of a scheme for the automatic regulation of the work of drums in leather production

Determination of the level of mechanization and automation of leather production on the basis of a progressive method of evaluating production units and sets of equipment

The development of recommendations on the establishment of mechanized means of collecting and transporting leather wastes

A study of the conditions and an elaboration of recommendations for the optimal cutting of leather by improving the clicking of various shoe details

The improvement of technology for the production of men's chrome-leather boots with leather soles

The development of a rational technology for goat leather production for shoes that reduces shrinkage during finishing

Technological improvement in the production of sheepskin leather for clothing; the extension of degreasing over several stages

The rational use of camel hides and the development of a new technology for the production of various goods from them

The development of a technology based on polyurethane resins to produce patent leather from low-grade hides

The elaboration of progressive norms of output of leather goods from sheep and goat skins

Calculating the economic effectiveness of the introduction of new types and fashions of shoes into the industry

The development of a technology to produce chrome tanned sole leather with high resistance to water and wear

A study of the origin of defects in sheep leather that originate during slaughtering, storing, transportation and curing, and the development of optimal methods of initial treatment of sheepskins in Mongolia

The development of construction and highly productive technology for women's shoes with average heels

The development of a progressive technology for manufacturing and painting marmot skins as luxury furs

Methods, instructions, standards, technical conditions etc.

The formulation of groundings and upper coverings (films), using of non-casein pigment concentrates

Methods of production of thermoresistant insoles from camel and cattle hides

Methods of production from camel hides of harness leather for saddles

Methods of determining labour consumption during the installation of technological equipment in the pilot-plant shops of the Centre

The development of grease compositions for sheep and goat leather for clothing

Formulations for black dyeing leather for shoe uppers and other leather goods without using black pigment concentrates

Methods for norming the main types of fur raw materials, wool, sheepskin, auxiliary and other materials in the fur industry

Methods of manufacturing of furs from foal and calf skins

A formulation for colouring sheep wool skins

Methods for colouring fur scraps with metal-containing paints

The formulation of covering dressings and increasing their adhesion

The technology of production of house slippers

The development of patents for sectional lasts for children's shoes

Instructions on the determination of capacity of wool sheepskin production in the fur industry

Instructions on the storing of fur and wool sheepskin raw materials

Conclusions and recommendations of the reports

Recommendations on the exploitation, repair and dimensioning of shoe lasts

Recommendations on the elimination of defects such as breakings and shrinkings in production of Russian leather and chrome leather for shoe uppers

Recommendations and proposals on a new hides plant in Ulan Bator

Statement on the detection of violations of technology at the leather plant of the complex

The correction of some parameters of technology of chrome Russian leather production

Recommendations on the introduction into the industry of two-phase [illegible] tanning of leather for shoe uppers

Recommendations on the finishing of sheep leather for [illegible] and the [illegible] ration of grease spots

Conclusions of experts on designs of plants for manufacturing [illegible] and [illegible] fur skins

Techno-economic justification of a plant for the initial treatment of leather raw materials in Ulan Bator

Conclusion on the design of a glue plant in Ulan Bator

Recommendations on the determination of the production capacity of leather plants in Mongolia

Recommendations on the improvement of leather quality and broadening the assortment of leather for shoe uppers

Recommendations on the improvement of quality and broadening of assortment of shoes

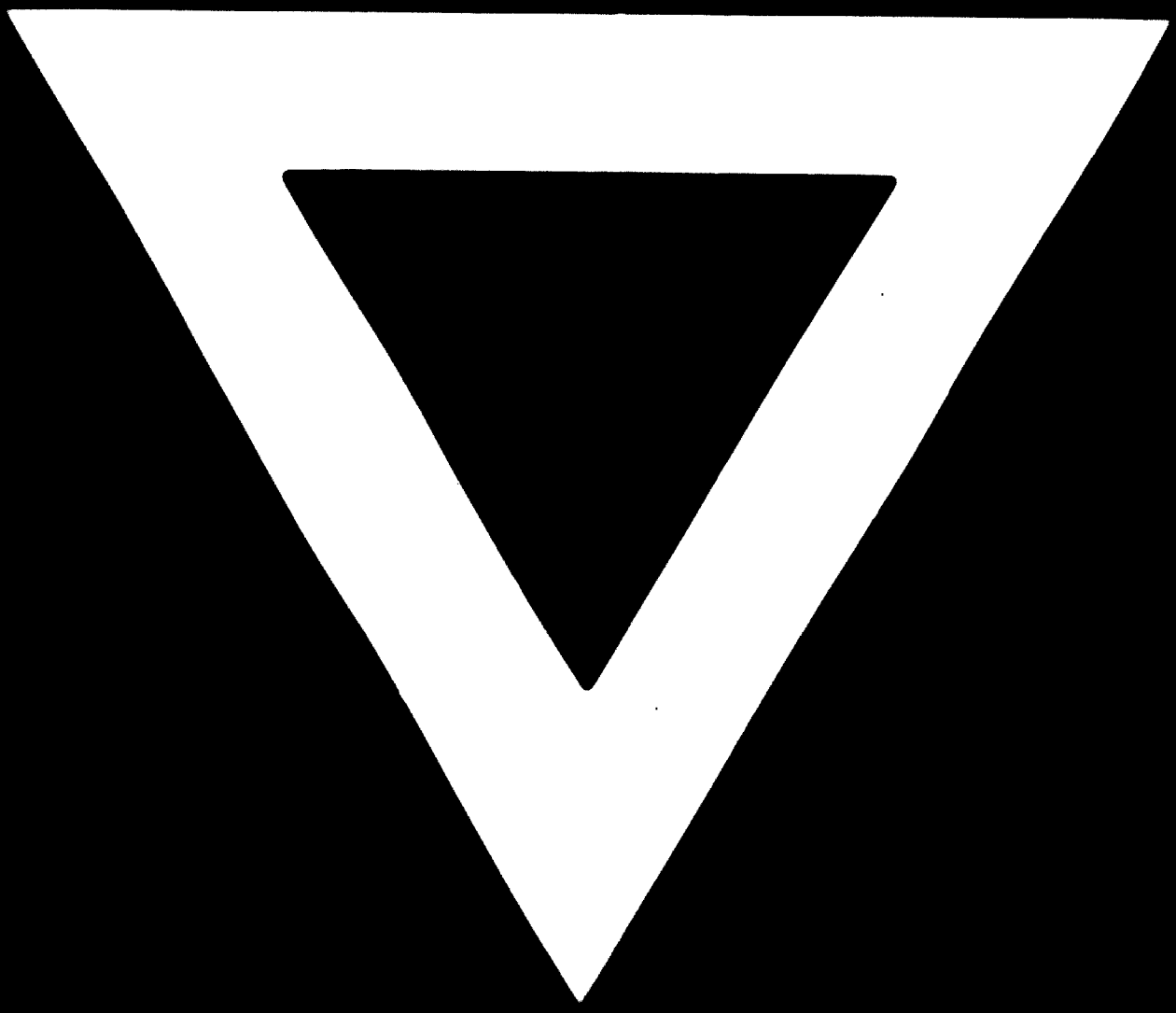
Recommendations concerning the design of a [illegible] leather shop

Recommendations on the maintenance of shearing sheep goats

Recommendations on the rational utilization of semi-manufactured fur materials in the fur industry

Recommendations on the norming of materials used in the leather and footwear industry in Mongolia

[redacted]



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