NATIONAL BUREAU OF STANDARDS REPORT

8074

Report on South American Travel

May 27 - June 29, 1963

Joseph R. Kanagy, Consultant on Leather
National Bureau of Standards

and

Joseph Naghski, Chief
Hides and Leather Laboratory
U. S. Department of Agriculture

U. S. DEPARTMENT OF COMMERCE
NATIONAL BUREAU OF STANDARDS

THE NATIONAL BUREAU OF STANDARDS

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Report on South American Travel
concerning
Standards in the Leather Industry
May 27 - June 29, 1963

by

Joseph R. Kanagy, Consultant on Leather
Polymers Division
National Bureau of Standards
U. S. Department of Commerce

and

Joseph Naghski, Chief
Hides and Leather Laboratory
U. S. Department of Agriculture
600 East Mermaid Lane,
Philadelphia 18, Pa.

U. S. DEPARTMENT OF COMMERCE
NATIONAL BUREAU OF STANDARDS

FOREWORD

This is a report of a visit during May and June, 1963 of the authors to Brazil, Uruguay, Argentina, Paraguay, Chile and Peru under sponsorship of the Agency for International Development (AID) to investigate the status of standards used in the Leather Industry.

This report is restricted and should not be distributed without the consent of one of the authors or Dr. A. T. McPherson, Special Assistant to the Director for International Standards, National Bureau of Standards.

A. SUMMARY

Visits were made in Brazil at Rio de Janeiro, Sao Paulo, and Campinas; Uruguay, Montevideo; Argentina, Buenos Aires and La Plata; Paraguay, Asuncion; Chile, Santiago; and Lima, Peru. Conferences were held with those concerned with the development of Pan American Standards (COPANT), with the official standard writing bodies of each country; with scientists and technicians in leather factories, shoe factories, frigorificos and Universities.

At the present time none of the countries visited in South America have official standard methods for leather. The methods used generally are taken from those of the International Union of Leather Societies or the British, German, or French Societies. Since most of the technical personnel are of Central European extraction, they are quite well acquainted with these methods. Two years ago the first proposed Pan American Standards for Leather were submitted for comment to the members of COPANT. The adoption of these methods will constitute the first official methods for any country in South America.

Of the fourteen leather factories visited only one had adequate physical and chemical testing equipment to make a complete and thorough evaluation of the leather manufactured. Three others had some physical property testing equipment. Nine of the fourteen made some chemical tests, usually pH and the boil test for chrome leather. Five of the fourteen showed us no testing equipment.

In spite of the lack of scientific control, the leather made in all but two of these tanneries was of acceptable quality and by subjective inspection, was equal to the average produced in the United States. It is pertinent to add that it is possible to produce acceptable leather without any control more readily than any other material because the inherent properties of hides (strength, flexibility, resistance to flexural fatigue) exceed by far the minimum requirements for shoes. In a highly competitive market where finishes, color, and other properties must be taken into consideration, these conditions, of course, change. Much of the leather produced in South America is exported and the technicans in these tanneries concerned with exports are more cognizant of standards. It is also significant that much of the leather exported to the U.S. is shipped in the semi-finished condition.

The sole leather produced in South America is in general thinner than that produced in the United States. The hides are much thinner to start with because the cattle are grass fed. They are never given a fat producing diet, and the hides are tanned with a single tanning material, quebracho, which does not swell the skins to produce thick leather.

Many of the hides are damaged by insects and by diseases to which the cattle are prone in the hinterlands, producing blemishes on the tanned leather and reducing its value. Much of the leather tanned by the tanneries in South America originates from mataderos or local butchers, who are not careful in removing the skins, and cut holes which also reduce the value of the leather.

The frigorificos or large well-organized slaughter houses do an excellent job of removing and preserving the hides. Frigorifico treated raw hides have no odor, which indicates that they are perfectly preserved, however, the native tanners do not use many of these skins, because the cost is very high. Most of the frigorifico hides are exported and they command the world price.

Uruguay, Argentina, Chile, and Peru have organized standards groups working with COPANT on Methods for Leather. Brazil has technical personnel capable of cooperating with these groups, but are not yet completely organized. A movement to organize them is at the present time underway.

B. RECOMMENDATIONS

The methods of the ALCA-ASTM Committee on leather should be translated into Spanish and Portuguese and distributed to the South American countries. Our standard definitions and nomenclature should first be translated.

A meeting of the Pan American Group interested in Leather Standards should be held within the next year in Buenos Aires, home of the Secretariat.

Assistance should be given to Paraguay through U.S. AID to develop a strong leather industry. We recommend help similar to that recently given to Peru. Paraguay has both hides and tanning materials and with some assistance should develop a profitable leather industry. This would help to improve the Paraguayan economy.

Consideration should be given to top scientific aid of a cooperative nature to Argentina to help initiate research work on collagen and to do research work in leather, in connection with their leather industry.

Technical assistance and guidance should be given to responsible groups and/or agencies for developing and disseminating information on improving hide quality for use by small slaughtering establishments. Also butcher training courses or clinics on proper take-off and care of cattle hides should be established.

Table 1 Statistics pertinent to shoe and hide production in several South American countries

(in thousands)

Country	Population Numbers	Shoe Production	Cattle	
			Numbers	Slaughter
Brazil	76,000	70,000	76,000	7,500
Uruguay	3,000	2,980	8,500	900
Argentina	20,000	40,000	44,000	10,000
Paraguay	1,800	900	6,000	500
Chile	7,000	16,000	3,000	450
Peru	12,000	4,500	4,000	480

TABLE II. Status of Standards on Leather

Under Consideration by COPANT

Country Holding Technical Secretariat	Body	Designation	Comment Closing Date	State	Comments
		Sc. 8:1-001 Cattle-skin leathers. Nomenclature. Marking of finished leathers.	1/6/62	Techn. Sec.	IRAM is considering comments received.
		Sc. 8:1-002 Definitions referring to the extraction and preparation of samples	18/7/63	Sub-committee	
		Sc. 8:1-005 Leathers: Preparation of samples for chemical analysis.	18/7/63	Sub-committee	
Argentina	Sc. 8:1 Leathers	Sc. 8:1-006 Leathers: Conditioning of test tubes and samples for analysis purposes.	18/7/63	Sub-committee	
		Sc. 8:1-102 Leathers: Methods for determining losses by heating.	1/6/62	Techn. Sec.	It was sent for public comment under N°Sc. 8:1 N°2-IRAM is considering comments received.
		Sc. 8:1-103 Leathers: Method for determining the chloroform-soluble matters contents	10/3/63	Techn. Sec.	It was sent for public comment under N°Sc. 8:1 N°3. Twice was sent for public comment and IRAM is considering comments received.

TABLE II. Status of Standards on Leather
Under Consideration by COPANT
(continued)

Country Holding Technical Secretariat	Body	Designation	Comment Closing Date	State	Comments
		Sc. 8:1-004 Leathers: Method for determining the dermic substance content.	10/3/63	Techn. Sec.	It was sent for public comment for the 2nd time under N°Sc. 8:1 N°4. IRAM is at present considering comments received.
		Sc. 8:1-105 Leathers: Method for the pH determination	18/7/63	Sub-committee	
Argentina	Sc. 8:1 Leathers	Sc. 8:1-106 Leathers: Method for determining total ashes.	18/7/63	Sub-committee	
		Sc. 8:1-201 Leathers: Method for determining thickness.	13/9/63	Sub-committee	
		Sc. 8:1-202 Leathers: Method for determining apparent density	13/9/63	Sub-committee	
		Sc. 8:1-204 Leathers: Method for determining resistance to tearing	13/9/63	Sub-committee	
		Sc. 8:1-205 Leathers: Method for determining load and determining load and distension at break of grain and at bursting of light leathers.	13/9/63	Sub-committee	

C. DETAILS OF TRAVEL

1. Rio de Janeiro, Brazil - May 27-29, 1963.

U. S. Embassy

Mr. Edward Bash, Commercial Attaché
Miss Bernice Goldstein, Consul
Mr. E. Hammerman, Asst. Industry Officer
Mrs. Janine Fay, Interpreter

Centro das Industrias de Cortumes do Brasil

Dr. Mauricio Dejanir Hernandorena, Executive Secretary.

S. A. Cortume Carioca

Mr. Hermann C. Kamber, Supt. - Upper Leather
Dr. Arthur Scofield, Supt. - Sole Leather
Dr. Benedito Roquette, Chief Chemist
Mr. Joseph Knoepfler, General Superintendent

Companhia de Calcados DNB

Mr. Joaquim Mello da Cunha, President [also President of the Centro da Industria de Calcados e Comercio de Couros].

Escritorio Tecnico de Agricultura (ETA)

Mr. Albert Reanir, Extension Service
Mr. Fred Barber, Agronomist
Mr. Boyd C. Whittle, Live Stock Specialist
Dr. Neuberg, Coordinator

1.1 U.S. Embassy

On arriving at the embassy, we were met by Mr. Bash to whom we explained our mission. He, of course, had been notified of our visit but did not know the exact day of our arrival.

He called in Miss Bernice Goldstein who was preparing a report on the leather industry in Brazil. She made a number of appointments for us. Mr. Hammerman was asked to make an appointment for us with Dr. Sa or Mr. Pedrosa, Executive Officer and Deputy respectively of Associacao Brasileira de Normas Tecnicas (ABNT) but a mutually convenient time was not found.

1.2 Visit to Centro das Industrias de Cortumes do Brasil

We met with Dr. Mauricio Dejanir Hernandorena, executive secretary. Mrs. Fay of the embassy staff served as interpreter. (Mr. Edsel Monassa Reis, the President of the group could not fit our visit into his schedule.) This group is comparable to the Tanners' Council of America. It was formed to act as advisor to the free trade organization - Associacao Latinoamericana da Industria de Curtumes, (ALAIC). Their first project will be to collect statistics which will form the basis of equitable tariffs when ALAIC starts to function. They publish the Boletin do Centro Das Industrias de Cortumes do Brazil in which they bring world development in hides and leather to their members. As far as we could learn from Mr. H. there was no group in Brazil with responsibility for standards on leather. He did say that an association of chemists and technicians was being formed and the organization meeting was held in Sao Paulo in March, in connection with the Leather Goods Exposition. He told us to contact Dr. Mauricio Borenstein (when we went to Sao Paulo, [see 2.6] who was the initiating spirit. He gave us the following statistics on leather tanned: cattlehide (upper) 5.5 M*; cattlehide (sole) 2.5 M; pigskins 35 M; sheep (wooltype) 3.5 M; and cabretta 2 M.

*M = million

1.3 Visit to S. A. Cortume Carioca

The embassy furnished a car and driver to take us to Cortume Carioca on the morning of May 28.

Mr. Kamber and Dr. Roquette took us on a brief tour of the tannery. It is so large that we had time only for a birds-eye view which we got from the 9th floor of the side leather plant. Their daily production is about 3000 cattlehides and 5 to 6000 skins, including goat and cabretta. They produce all kinds of leathers - side upper, sole, mechanical, garment (goat and cabretta, grain and suede). Shoulders and bellies are processed into side upper. They used to extract native tanning materials imported from the Mato Grosso, but they discontinued this and are getting wattle (spray dried) from Rio Grande do Sul. It proved cheaper than maintaining their own leach house. They also import a little quebracho from Argentina.

They have representatives stationed at operations in the interior who supervise the collection and salting of hides. All hides are sorted and repacked in salt at the tannery and can be kept for at least six months. They were taking up a pack when we were there and the hides looked clean and smelled pure. They unhair in slowly turning drums using a hair burning (high sulfide) beamhouse because the hair on Brazilian cattle is extremely short and not worth saving. They do recover goat hair.

The production of soap was discontinued and the tallow from the fleshings is now being sold. A new use for splits and shavings would be desirable. They became interested in impregnated sole leather and had Trask Co. in Chicago impregnate some soles which they liked very much. The importing of the impregnation compound is, however, too expensive for them and a formula which they could prepare from indigenous products would be more interesting. Many compounds which had to be imported at one time are now produced in the plant; for example, sulfonated oils, chrome tanning compounds, finishes and urethane coatings. Leather soles are still used on 70% of the shoes made in Brazil but the use of rubber is growing. Rubber is still higher priced than leather. These are signs that the composition materials will grow unless the trend is reversed by improving the property of sole leather.

They were highly interested in the aldehyde tannages. Dr. Scofield had obtained DAS (dialdehyde starch) and made some experiments. They are also interested in testing out glutaraldehyde as a retannage for side upper. Mr. Kamber said that only ten tanneries of the 600 in Brazil have a laboratory, and theirs is the best equipped with two highly accurate balances, a pH meter, Kjeldahl and fat extraction equipment, a Bally flexometer, and a tensile machine (German make) similar to a Scott, with a recording chart. He was studying the tensile properties of the leather over the whole hide (parallel and perpendicular to the back bone) so that they will have data to show the shoe manufacturers that they are cutting the leather improperly.

1.4 Visit to DNB Shoe Factory

On May 28 we visited the DNB Shoe Factory. We were accompanied by Miss Bernice Goldstein and Mrs. Janine Fay, from the embassy staff, who acted as interpreter. We talked with Sr. Joaquim Mello da Cunha, president of DNB and with his son. Mr. Mello is also president of Centro da Industria de Calcados e Comercio de Couros. DNB has a factory at Rio and another at Sao Paulo and makes 300,000 pairs of shoes a year (Kamber told us that the Sao Paulo plant is very modern).

Mr. Mello's son visited in Europe and the United States, spoke good English, and is up to date on modern methods of both building and merchandising shoes. They sell through their own outlets in Rio and Sao Paulo. About a year ago they established a self-service outlet which is doing very well. It sells about 600 pairs per day which is 2 to 3 times as many as the same type of store in the U.S., where the son picked up the idea.

Total Brazilian production of shoes is 60,000,000 pairs per year - population of Brazil is about 77,000,000. Seventy percent of the shoes made in Brazil have leather soles but DNB's production is about 50-50. A large percentage of their shoes have leather heels or part leather-part rubber. They use the cement process in one-fourth of their production because it takes fewer operations and less space. They adopted the cemented rib insole, based on thermosetting adhesives, but imported the machine from Germany rather than buy from the United Shoe Machinery Company because it cost only half as much. This plant was under renovation to expand production. From outward appearances the shoes were attractive and, since they use mostly U.S.M.C. equipment, the construction is comparable to shoes made in the U.S.

The shoe factories are not doing any testing; they feel that they are supplied a quality product. They import calf leather from Europe - Freudenberg was mentioned. This was formerly imported from the U.S.A. but now Europe can undersell. Thirty-five percent of the shoes they sell are from their own production, however, they do buy women's shoes from other suppliers. Mr. Mello, Jr. feels that total production in Brazil will be 120 million pairs within the next three to five years. He thinks that there will be enough hides to produce the leather required to meet this demand.

1.5 Visit to Escritorio Tecnico de Agricultura (ETA)

ETA is the Joint Brazilian-AID sponsored program to lift the standards of agriculture. Over the past 8 years they have set up extensive service in 15 states. There are 22 states and several territories in Brazil. Dissemination of information is patterned after the county agent system used in the U.S.

Official figures indicate that there are 76 million cattle in Brazil. According to Garth Thorburn[see 2-Sao Paulo] the accurate figure is probably 62 million. Slaughter is 7 to 8 million which compares favorably with figures on number of hides tanned into leather. It is illegal to slaughter young cows. Average age of steers is 4 - 5 years. The Zebu cow gives about 2-3 liters of milk per day, has her first calf at about 4 years of age, and then possibly only every other year. Calf mortality is high from poor nutrition, parasites, and diseases.

We had lunch with Dr. Neuberg, the coordinator. He was an economist at Ohio State University before taking this assignment. The most serious problem with Brazilian agriculture is lack of protein rich feedstuff. Manioc (Cassava) forms the base stock. It grows luxuriantly in poor soil, so has low protein content. The current estimate is that Brazil only produces 700,000 tons of feedstock with adequate protein content. Corn production has picked up over the last few years, but much of it is exported, so it hasn't benefited livestock production.

2. Sao Paulo, Brazil - May 30 - June 4, 1963

U. S. Consulate

Mr. Herman Jelinek, Commercial Attaché
Mr. Garth Thorburn, Agriculture Officer

Industria de Couros Atlantica, S. A.

Mr. Valdislav Vukojicic, Director
Mr. Bozidar Arambasic, Technical Superintendent
Mr. Milterdus W. Gourtzis, Engineer

Companhia Curtidora Campinerio

Mr. Robert Haelvoet, Superintendent
Mr. J. J. Windfohr, Chemist

Cortume Firmino Costa, S. A.

Mr. Pavloa Katz, Technician
Mr. Manuel Costa, Superintendent
Mr. Adai Focese, Technician

Instituto de Pesquisas Tecnologicas de S. Paulo

Dr. A. D. Ferraz Napoles Neto, Head Civil Eng. Dept.
Mr. Wolfgang Kolbe, Chemist
Mr. Massakazu Outa, Engineer

Industrias Quimica do Brasil S. A.

Mr. Maurice Borenstein, Chemical Engineer

2.1 U.S. Consulate

On arriving at our hotel in Sao Paulo on May 30 there was a note directing us to come to the U.S. Consulate. Since this was a U.S. holiday we delayed calling at the Consulate until the next day.

At the Consulate on May 31 we spent some time discussing our mission with Mr. Herman Jelinek. We also talked with Garth Thorburn. Mr. Jelinek arranged for us to visit "Industria de Couros Atlantica S.A." He also arranged for us to visit "Companhia Curtidora Campineiro" and "Cortume Firmino Costa S.A.", both of which are at Campinas about 100 k. from Sao Paulo, and arranged to have a car take us there.

2.2 Visit to Industria de Couros Atlantica, S.A.

We went first to an address close by the hotel which turned out to be a sales office. We met Vladislav Vukojicic who was unable to speak English, but we conversed in a crosscurrent of Portuguese, French, and Spanish, and with the help of an employee who understood German, he finally understood that we would like to visit the tannery which, we were told in German, was not too distant. Mr. Vukojicic then took us in his automobile to the tannery, which turned out to be far out on the edge of the city, at least 15 km. At the tannery we met Bozidar Arambasic, Superintendent, and Milterdus W. Gourtzis, Engineer. Mr. Gourtzis spoke English and acted as interpreter.

We explained our mission to Mr. Gourtzis, and he relayed it to Mr. Vukojicic, who had difficulty understanding why we should be there and not want anything except his willingness to use his resources to cooperate in the development of test methods. He, of course, agreed that test methods were important and that uniform methods for all countries in the Western Hemisphere would be excellent. He stated that the tanners of Brazil had just started to organize a Society and would have their first meeting in July or August. (This information we had already obtained in Rio.) We left a copy of our GSA methods and the ALCA-ASTM methods with them, with the hope that they would be reviewed by them in the future.

This tannery is well equipped, modern in all respects, and well organized and tans excellent leather equal to that produced by Cortume Carioca in Rio. The art and knowledge of leather making was all brought from Europe (Yugoslavia).

The tannery had a small laboratory which was limited to chemical tests only. No physical tests were being made, but one of the technical employees was in Germany at that time in search of physical testing equipment. The plant is continually being enlarged.

Mr. Vukojicic then graciously brought us back to our hotel. We expressed our thanks in a combination of French, Spanish, and Portuguese and considered the afternoon quite successful.

2.3 Visit to Companhia Curtidora Campineiro

The use of standards in leather manufacture in Brazil was discussed. At the present time little if any control work is undertaken at this tannery. The only controls used in the tannery are pH, and the boil test for chrome leather. Mr. Windfohr was extremely pleased to receive the copies of our methods (ASTM and KK-L-311a). He admitted that they should do more work on test methods, but they did not have the time. He concurred in the desirability of having uniform standards in the Americas.

The tannery processes 600 hides a day, 400 for sole leather and 200 chrome retanned for upper leather. By subjective inspection, the leather appeared to be of good quality. The sole leather was thinner than that produced in the U.S.A., partly because of thinner hides, and partly because only one vegetable tanning material is being used. The tanning material used is obtained from an indigenous tree and is extracted from the bark at the tannery. The shrunken shoulder type of upper leather is produced which appears to be very popular in S. A. The need of standards for leather was demonstrated by the fact that shoulders and bellies are used for sole on shoes. Because of the present demand for shoe leather in Brazil, this is being done without question, but if competition becomes more keen in the future the better cuts from the hides may only be used for soles.

We discussed the use of impregnated soles. The opinion of the tanners was that the cost was too great and that for such a warm climate a permeable sole was desirable. Also, for the same reason the water resistance properties of the impregnated soles were not necessary.

2.4 Visit to Cortume Firmino Costa

Unfortunately, Sr. Mario Costa was traveling in Argentina. (Manuel Costa is a cousin of Mario.) Mario Costa is a member of the ALCA and we had hoped to see him because he speaks several languages, including English. We were about ready to give up when we discovered that Pavlo Katz spoke fluent Polish. It put Naghski's Polish to a test, and with that, plus a mixture of French and German technical terms we were able to conduct our business.

We had a brief tour of the tannery; production figures were not volunteered. They process all Zebu hides. About 30% of their production is supplied from the big packer frigorificos (Armour, Swift, and Wilson). The rest they buy where they can get them. A Zebu hide weighs between 24 to 30 kilos, and yields about 48 sq. ft. They are thinner than American hides and so are quite good for side upper leather. They split in the lime as sides, then chrome tan. They pulp the hair with sulfide and lime in the drum. Lime splitting gives them a thicker pelt which they wet shave to thickness. Their pasting units are heated chambers about 6 inches thick, located in open air, so there is no humidity control, and all drying is from the grain side out. Built locally they are cheaper than imported plate dryers.

A large part of their production was in sole leather. They sold whole sides but also made croupons (bends). They were proud of their new German rolling machine which rolls a complete bend in 5 seconds under controlled pressure. This is much faster than the faster European rolling machines. They were much interested in the impregnation of sole leather for improving resistance to wear and water penetration, but were concerned about the high cost if the product had to be imported.

They had a laboratory which made chemical analyses on their sole leather. There were no facilities for physical tests. They export part of their production. The present recession in Brazil has caused a piling up of inventory, and a reduction of production.

2.5 Visit to Instituto de Pesquisas Tecnologicas de S. Paulo

On June 4 a visit was made to the above institute with Carlos Simoes, son of A. B. Simoes, 2nd Commercial Consular General. At the institute we were received by A. D. Ferraz Napoles Neto, Head of the Civil Engineering Department, who spoke fairly good English. The institute which does testing and research has departments in Civil Engineering, Metallurgy, Geology, and Materials Engineering. They were much interested in standards and had copies in their standards library of ASA, ASTM, and Federal Specifications, including those on leather. The institution is now in the process of being moved from the center of Sao Paulo to new buildings on the outskirts of the city, and the laboratories were in different stages of completion. We visited the Metallurgy Engineering department which appeared to be the strongest department, and also the Geology and Materials Engineering Departments. The Materials Engineering Department is concerned primarily in work on rubber and plastics. Work on paper is also undertaken, and some work was being initiated on leather by Wolfgang Kolbe. The work on rubber was in charge of Massakazu Outa. The institute in its functions and aims is similar to that of the National Bureau of Standards. They are interested in doing work for both Government and private individuals and are definitely interested in test methods and specifications.

2.6 Meeting with Maurice Borenstein, Industrias Quimica do Brasil S.A.

At our visit to the leather factory Cia. Curtidora Campinerio, it was suggested by Robert Hælvoet that we should contact Mr. Maurice Borenstein. We had been told in Rio that Mr. Borenstein was active in the organization of Leather Chemists in Brazil.

Mr. Borenstein received us most graciously and remained after closing hours to talk with us. He is a member of the ALCA and was acquainted with our work. He knew many other U.S.A. leather chemists as he had visited the U.S.A. several times. He is very much in agreement with our ideas on the development of Pan American Standards for leather and gave a number os instances where standards would have been beneficial to Brazilian tanners.

He suggested that the first standardization effort should be the establishment of a uniform set of definitions for various parts and cut pieces from the hides and skins of animals. He also suggested that definitions in three languages, (English, Spanish, and Portuguese) would be an excellent beginning in the establishment of Pan American Standards.

3. Montevideo, Uruguay - June 5 - 9, 1963

U.S. Embassy

Mr. Frederick L. Royt, Commercial Attaché
Mr. Gordon Little, Asst. Commercial Attaché

Instituto Uruguay de Normas Tecnicas, UNIT

Ing. Juan P. Molfino, Director
Stra. Alba Cabrera, Secretary
Sr. Alfred Beria Perez, Tech. Secretary

Curtiembre Suizo-Uruguaya

Mr. Hans Huber, Chemist

Curtiembre Ramponi S.A.

Sr. Roberto Ramponi Villegas, Superintendent

Facultad de Quimica

Prof. Cesar Michelotti
Stra. Ana Maria Rivero, Member of UNIT

Peleteria Le Vision

Mr. Hendler

Frigorifico Nacional

Sr. Jose Hector Baran, Member of UNIT

Mr. Juan R. Mier Odizzio, Representative of Camara Mercanbe de Productis del Pais, Member of UNIT

3.1 U. S. Embassy

At the American Embassy in Montevideo we met Frederick Royt and Gordon Little. They had been informed of our visit and were fairly well posted on our objectives from their previous talks with people from the NBS.

The fur seal industry was discussed in which Uruguay appears to be very much interested. In recent years a firm in Uruguay has been experimenting on the dressing of seal skins with the purpose of taking over the contracts from the Fouke Fur Company if they can do an acceptable job.

Mr. Gordon Little made appointments for us to visit two tanneries; Curtiembre Suizo-Uruguaya and Curtiembre Ramponi, S.A. He also made appointment for us to inspect specimens of Uruguayan dressed fur seal skins, and arranged for us to meet with Ing. Juan P. Molfino, Director of Instituto Uruguay de Normas Tecnicas, UNIT, and Treasurer of COPANT.

3.2 Meeting with Ing. Juan P. Molfino

We talked with Sr. Molfino, Srta. Cabrera acting as interpreter, about our mission to Latin America. We were very cordially received. Mr. Molfino suggested that a meeting of the Leather Group in COPANT be held in Argentina, home of the Secretariat. We also discussed some of the difficulties and misunderstanding which occur in working with COPANT and the possible reason for some of the poor communication.

3.3 Visit to Curtiembre Suizo-Uruguaya

This is a medium sized factory that tans about 300 hides a day. The hides used are from country butcher shops as they cannot afford to buy from the more expensive, but better frigorificos. The tannery was well designed and modern in most respects. Nearly all of their production was exported to Europe or U.S.A. either in the form of patent or semi-finished leather. The production of patent leather requires considerable labor and the cheap labor available in Montevideo gives them an advantage in the export market.

Mr. Huber was very much interested in specifications and test methods. He showed us a well equipped laboratory and several hours were spent discussing test methods. He was especially interested in flex tests for patent leather and in the Mullen test for grain crack. He built his own tensile tester. He works with the Pan American Standards Committee through UNIT in the development of standard test methods for leather and is very much interested in further expansion of the work.

3.4 Visit to Curtiembre Ramponi, S. A.

This company tans 350 - 400 hides per day including both cows and steers. Country hides are used, as frigorificos are too expensive. Eighty percent are chrome tanned and 20% go into sole leather. About 50% of the chrome tanned goes into regular patent, most of which is exported to the U.S.A. The sole leather is sold as sides, although some of the shoe factories are agitating for croupons. (A small number of hides are selected out as croupons - maybe 50 per week.) They split in the lime and pickle the splits most of which are exported to Europe. A small number of splits for insoles are tanned with vegetable tannin. The only control they use is a pH meter. Mr. Ramponi would like to have a control laboratory, but equipment is high priced (imported) and technical assistance is scarce. He was interested in the activities of UNIT in establishing standards and would appreciate receiving any methods we could send him. He is especially interested in the flex resistance of patent leather. He said sole leather is meeting competition from butadiene soles. Sole leather is still used on 70% of shoes, but he thinks wearability should be improved. They tried a Bayer product, but it increased the price of the soles by 50%. They could tolerate an increase of only about 10-15%.

3.5 Evening Session with UNIT

A special meeting was arranged for us by Srta. Cabrera and Mr. Molfino to meet and talk with the members of UNIT interested in the development of standards on leather. These members of UNIT represent all phases of the economy of leather, from the raw hides to the merchandising of shoe. The local university is also represented.

The purpose of our visit was explained to the group and some time was spent in discussing language barriers. It appears that our methods should be translated into Portuguese and Spanish. Mr. Molfino again expressed the importance of holding a meeting of those interested in Pan American Test Methods on leather in Argentina.

Various problems in the preservation and curing of raw skins were discussed. It appears that there are many parasites and bugs which depreciate the value of the raw hides in Uruguay making it difficult to produce top quality leather. Since the Uruguayan economy depends almost entirely on exports, they are of course interested in international standards in all fields, and are already cooperating wholeheartedly with the COPANT Committee.

3.6 Visit to Facultad de Quimica

We were invited by Srta. Rivero to visit the University as they wanted to discuss their phases of research on evaluation of wattle cultivated in Uruguay as a source of tannin. Uruguay is a treeless plain, so considerable thought is being given to the culvitation of trees in order to establish a lumber industry. They are looking at wattle as a possible tannin crop and a source of paper pulp. They realize that it takes 8 - 10 years to grow the trees, but they are going on with their evaluation.

We met Professor Malino from Barcelona, who is doing research on unit operations under the auspices of OAS. He has designed an all-glass unit for wattle extraction, including pumps and heat exchanges. We visited Srta. Rivero's laboratory. She had tanned some sole leather which looked quite good. Their wattle bark contains about 35 - 40% tannin, which compares favorably with that from South Africa and Australia. Another department is planning to investigate the pulping behavior of wattle. Prof. Cesar Michelotti understood English very well so he guided us through the school as our interpreter. He is studing the production of furfural from corn cobs and rice bran. He is also studying the reaction of furfural with phenol to make plastics.

We visited a beginning inorganic chemistry class of 9 students. The chemical school has probably 60 students. The enrollment has dropped in the last few years. We saw an inorganic laboratory and a pharmacy laboratory, both of which were lacking in equipment. We did not have time to investigate whether the drop in enrollment is found throughout all departments of the University. However, since education is free from the first grade through the University it seems as though there should be more than 60 students in the chemical school from a city of 2 1/2 million.

3.7 Mr. Hendler - Le Vision

At the request of Frederick Royt, Commercial Attaché of the American Embassy in Montevideo, a visit was made to a furrier to inspect some seal skins which were dressed by a group sponsored by the Uruguayan Government. The only seal skins which were available were the shorn type (short fur) dyed black. The pelts were quite heavy and rather stiff and did not measure up to those dressed by dyers in the U.S.A.

4. Buenos Aires, Argentina - June 10 - 17, 1963

U. S. Embassy

Mr. John Troy, Commercial Attaché
Dr. F. W. Brown, Scientific Attaché
Mr. Quentin Bates, Agriculture Attaché
Mr. Richard Weldon, Assistant Agriculture Attaché

"Derma" Laboratory

Dr. Ernesto Mezei, Chemical Engineer

La Forestal Argentina, S.A.

Sra. Esther Kries, Chemist
Sr. Raul R. Mariani, Assistant Manager
Mr. Jan Mosiewicz, Chemist on Tanning

COPANT

Sra. Ing. Beatriz Chirelli de Ciaburri, Executive Secretary
Sra. Dr. A. de Hughes, Asst. Secy., IRAM
Mr. S. W. Burton, Interpreter, IRAM

Swift & Co.

Sr. George Gahan, Office Staff
Mr. Alvarez, Superintendent

Laboratorio Ensayo de Materiales de Industrias de Tecnologicas (LEMIT)

Sr. Alberto Favo, Assistant Chief
Sr. Humberto Giovambattista, Engineer
Mr. J. W. Manuele, Metallurgist

"Guante" Fabrica da Calzado

Ing. Hector G. Cabantous, Engineer

Compania Industrial del Cuero, S.A.

Ing. Francisco Grunwald, President ---also President of Asociacion Latinoamerican de la Industria de Curtiduria (ALAIC)

Institute Nacional de Tecnologica Industrial (INTI)

Dr. Salvador Del Carrill, Director

4. continued

Facultad de Ciencias Exactos

Dr. Mario R. E. Jellinek, Chemist

Curtiembres La Federal, S. A.

Mr. Carlos Buhler, Chemical Engineer

La Hispano Argentina

Mr. Juan Stienstra, Engineer
Mr. Carlos Durlach, Chemist

4.1 U. S. Embassy

We called on Mr. John Troy, Commercial Attaché, Dr. F.W. Brown, Scientific Attaché, and Mr. Quentin Bates, Agriculture Attaché, and his assistant, Mr. Richard Weldon.

We made arrangements for calls to set up appointments at IRAM and with INTI (Instituto Nacional Tecnologia de Industrial). We were filled in on the activities and organization of this Research Center by Dr. Brown. They were just starting work on leather and Mr. Wyman of NBS had left word that we should make the contact. The embassy also set up appointments for us to visit LEMIT and Swift Frigorifico, both at La Plata.

We had a luncheon engagement with Dr. Enresto Mezei, a member of ALCA, and twice a visitor to the United States. He was most enthusiastic about our coming. Unfortunately, he had not received our letter which was mailed in Montevideo. This was a reply to his letter of May 21 which arrived in Washington after we left. He very quickly made a list of some dozen places and persons that we should see, and elected to make the appointments for us.

4.2 La Forestal Argentina, S.A.

We talked with Sra. Esther Kries, Chemist, Sr. Raul R. Mariani, Assistant Manager, Jan Mosiewicz, Chemist, on Tanning (technical sales). Mr. Mariani painted a rather gloomy picture for the future of quebracho. The U. S. A. is still the biggest user, but sales have been dropping steadily over the past 15 years. Even the last price war did not cause much increase, and the latest price rise has been followed by a disproportionate drop in shipments. Argentine tanners get

preferential pricing of about $20 below world price. This is done carefully to prevent smuggling and resales. They are counting on the new Du Pont shoe upper material to depress hide prices to the point that sole leather production will pick up. Mr. Mariani said that he could visualize tanners coming to the packing house and hauling the hides away for free. We told him that in the opinion of the packers with whom we talked, hides would be converted to tankage if the price dropped below five cents per lb.

Mr. Mosiewicz was at the British Hospital recuperating from a slipped disc operation. He was thoroughly bored with his hospital stay and seemed to appreciate that we dropped in to see him. He studied at Leeds so has a good back ground in leather chemistry and tanning. He travels with Mr. Mariani as a technical representative and helps tanners with their difficulties. Forestal inaugurated this program about three years ago in order to sell quebracho in the less technically developed countries.

They thought that the idea of the general use of standards was premature. The four or five progressive tanners were already using standard test methods and the others did not have the technical personnel needed to apply them.

4.3 Meeting with Sra. Ing. Beatriz Ghirelli de Ciaburri and Sra. Dr. Hughes, and S. W. Burton, interpreter at IRAM

Senora de Ciaburri stated that she preferred to talk to S. W. Burton as interpreter, but as the conference continued and we began to understand each other, it appeared that little interpretation was necessary. She speaks English much better than we speak Spanish.

The interview started out with each of us explaining what we understood to be the function of the organization and how we were to proceed to work within it. It appeared to Senora de Ciaburri that some from the U.S.A. did not understand or wish to work legitimately within the present organization. We explained the organization as we understood it, and she agreed wholeheartedly with our ideas.

Senora de Ciaburri expressed some of the needs of COPANT and her idea of the proper way committees of this type should operate. Her ideas were not in opposition to our own. We offered her our full cooperation in the development of Pan American Standards. There was some discussion of translation of standards. She stated that they did not have funds to translate standards into English, but that they would be glad to check our English translations to see if the meaning was compatible with the original meaning in Spanish.

The conference was most friendly and cordial and it seems certain that we can work effectively with the Argentinean Secretariat in the development of Pan American Standards for leather.

4.4 Visit to Frigorifico Swift and Armour at La Plata

We were met at the hotel by Mr. Richard Weldon (Assistant Agriculture Attache) and Sr. George Gahan (office staff of Swift, B.A.) and driven to La Plata a distance of 70 kilometers. La Plata is a modern city of 500,000 people. It was a planned city, and the streets are laid out along the pattern of a wheel with spokes radiating from the center.

Mr. Alvarez (Swift plant) took us through the hide cellar. Hides are dropped down a chute from the killing floor into a stream of water. They are spread hair up under a sprinkler and scrubbed with broom brushes by a man on each side, then folded over with the tails pointing east. The hide is then seized by two men and thrown on a table (4x5') flesh up and attacked by four men. One man trims the tail and shanks (dewclaws) on one leg then makes a quick swipe over his quarter of the hide to remove excess flesh. With deft, swift motions this takes about 20 seconds to trim and flesh a hide. While two men are getting another hide, the other two men pass it up on a conveyor belt that takes it to a brine pit. The hides are brined for 24 hours in brine about 90% salt saturation. Then they are pulled out and drained on horses and built into packs with fresh salt. A liberal amount of salt is used and the excess remaining after the hides are taken up is used for strengthening the brine. Hides coming out of the pack (after a minimum of 21 days) were soft, pliable, sweet smelling, and had no evidence of red heat. The cellar was cooled to about 50° F the year around, with adequate ventilation. The cellar was large and roomy and could hold 90,000 hides. Cured hides are trucked to Buenos Aires for shipping.

4.5 Visit to LEMIT (Laboratorio Ensayo de Materiales de Industrias de Tecnologicas)

This laboratory was visited in La Plata. It is composed of a number of divisions of technology of different industries including leather, cement, building materials, textiles, and metallurgy, similar in some respects to NBS. They cooperate with IRAM in the development of standards.

Their leather laboratory contains all the equipment necessary to test and do research on the properties of leather. They have a NBS abrasive machine for leather, a Maeser water resistance tester, a Bauman sole leather water resistance tester, and most other standard testing machines for leather. It is undoubtedly one of the best equipped laboratories for testing materials in South America.

The pilot plant for practical research on leather is also operated in connection with the laboratory. This is designated as CITEX (LEMIT-INTI) Centro Investigaciones Tecnologicas Experimentales del Cueros. It is run under the cooperative administration of LEMIT and INTI. LEMIT furnishes the laboratory equipment and personnel, and INTI furnishes the money.

The experimental laboratory contained good equipment and a control laboratory. Work was being done on rapid tannages for sole leather with the use of formaldehyde and quebracho extract.

4.6 Guante-Fabrica de Calzado

We talked with Ing. Hector G. Cabantous. Although his training was in civil engineering, he apparently is a capable organizer. He was avidly interested in testing procedures for leather. His problem is that too much of the leather cracks during lasting, and the shoes have to be sold as rejects. This increases his costs. Without test methods he cannot convince the tanners the meaning of quality. He is cooperating with IRAM in the development of methods. This was prompted by his efforts to develop an export market for his shoes to France and Germany. He was highly in favor of the idea to establish Pan American Standards and said that it should be done with the greatest speed.

We had a quick tour through the shoe factory. Their equipment is old and inefficient by today's standards. They use Goodyear welt and cement type construction. They have another factory which he said was quite modern. He personally likes leather, but costs are forcing him to use increasing amounts of substitutes.

4.7 Visit to CIDEC - Compania Industrial del Cuero, S.A.

At CIDEC we had a conference with Ing. Francisco Grunwald, the President. Mr. Grunwald is also President of the Asociacion Latinamerican de la Industria de Curtiduria (ALAIC).

Pan American Standards and also the purpose of our visit to South America were discussed at this meeting. Mr. Grunwald agreed with the importance of this work and suggested that we cooperate with the work underway at IRAM. His greatest interest was in the formation of the South American free market, which is being worked out in ALAIC, but he was cognizant of the fact that the success of this effort would depend very much on the development of common standards for all the countries. He invited us to attend the ALAIC conference in Rio, which was being held the week of June 17th. We, of course, had other obligations and declined the invitation with our appreciation.

He then conducted us on a short and brief tour of his plant, which is one of the best equipped and most efficiently operated in South America. The laboratory made chemical tests, but no equipment for physical tests was demonstrated.

Grunwald, Mezei, Durlach, and a representative of LEMIT meet two nights a month with the people of IRAM to work on test methods for leather.

4.8 Dr. Mezei's Laboratory "Derma"

On Thursday evening June 13 at 7:30 we were invited to visit Dr. Mezei's Laboratory "Derma". Dr. Mezei has a plant which supplies about 80 chemicals to the leather industry. He operates the plant and also does research in a laboratory of his own. He develops various oils for treating leather and is interested in a buffer tannage which is a rapid tannage. He informed us that he had obtained an American patent for the process. Mezei is of Hungarian extraction and is a graduate of Lyon and Darmstadt, where he worked with Dr. Stiasny who is considered to be one of the top research men in leather.

Dr. Mezei also was interested in and was carrying on research on a method of removing wool from sheep skins which involved the use of buffers and a small amount of Na_2S. This process, if perfected would be a great improvement over the present methods of removing wool. Another of his projects was the study of volume relations during tanning. The leather is suspended in a liquid and the weight change recorded as the tanning proceeds. He reported that he would soon have a paper on this work to submit for publication in the JALCA.

4.9 Facultad de Ciencias Exactos

Dr. Jellinek, on learning from Dr. Mezei that we were in B. A., called us and asked for an appointment. He explained that he was doing some work on collagen and would like to talk to us. We therefore arranged to go to his office for a conference.

Dr. Jellinek is interested in collagen because his family was at one time in the leather industry, and he had studied under Dr. Grassmann at the Max Planck Institute, Munich. He is now Professor Physical Chemistry at the Facultad de Ciencias Exactos. The Facultad is at the present time located in an old building once used as a convent, while new quarters are being erected elsewhere. The Facultad has fairly good facilities for research, and a number of dedicated chemists were at work. They had obtained a grant from the Ford Foundation for equipment.

Dr. Jellinek described some of his difficulties in obtaining release of funds for some of his projects, and asked if any help could be obtained from the U.S.A. He has a student who is coming to the U.S.A. to study, either at Cornell or Duke. Dr. Naghski said there was a possibility that some PL 480 funds from the Department of Agriculture might be available. Other possibilities are that money might be made available through the Guggenheim or National Science Foundation to send a man to work with him in B. A.

4.10 Salvador Del Carrill, Director of INTI

An appointment was made with Dr. Del Carrill because he is responsible for the activities of LEMIT, which does considerable work on leather and other industrial materials. He was encouraging about the development of test methods in cooperation with the Pan American Standards Committee.

He was very much interested in increasing the effectiveness and progress of the work in leather at LEMIT. This laboratory has little contact with the industry and he was advocating greater cooperation to increase its services to the industry.

It was suggested that the laboratory should have a technical man who had experience in the tanning industry to establish the confidence of the tanners in their work. He proposed cooperative work with a laboratory in the U.S.A. in which ideas would be exchanged by mutual visits from each country. The matter was left open for our consideration. We believe that this would an opportunity for AID funds to assist the leather industry in Argentina.

4.11 Lectures at IRAM

Before we reached Buenos Aires a letter from Dr. Mezei was forwarded to us from the U.S.A. He requested that during our stay in Argentina we give lectures before the Leather Chemists Association in B. A. These lectures were scheduled for 6 p.m. Friday, June 14, in the lecture hall at IRAM headquarters.

Dr. Naghski gave a talk on Aldehyde Tanning, and Dr. Kanagy spoke on Impregnation of Sole Leather. About 25 people were in attendance at the lectures, and we were well received. Although the talks were presented in English, it was obvious that we were fairly well understood from the types of questions which were asked.

Both of these subjects are new to the leather chemists of B. A., but there was considerable interest. Sole leather in Argentina is used on about 80% of the shoes, but it is obvious that if they do not improve the quality they will lose much of the market. It was pointed out that they should do some work now while they still retain a large share of this market.

Following the lectures there were refreshments and the need for standards and specifications were discussed. We then continued our discussions at dinner with a small group of people from the Association.

4.12 Visit to La Hispano Argentina

This factory produces both sole and upper leather from Matadero hides (small slaughter houses). These hides sell for less money, but are not as well preserved as frigorificos. A short liming process is used with the addition of high amounts of sodium sulfide. They have been liming in drums, but expect to change to paddle liming because this process produces tanned hides with greater area. The plant is well mechanized with labor-saving equipment in handling hides. Sole leather is tanned in pits with quebracho tannin only.

Much of the leather is exported to the U.S.A. unfinished. Parts of the sole leather is sold in the form of whole sides and part as bends. They would prefer to sell bends but have no market for the shoulders and bellies. The company is building a plant for the production of leather board from offal (bellies, shanks, and necks). There is a good market for leather board, and this operation should permit them to utilize their low quality materials.

They reported and showed examples of hide damage similar to the pulpy butt, which is prevalent in U.S.A. hides. This is believed by some experts to be a natural condition of the skin, and the loss of strength may be caused by poor curing. This condition is also generally accompanied by deep valleys caused by blood veins. The valleys are apparently caused by putrefaction which is accelerated by the presence of blood which is not properly drained from the veins.

This company also possessed one of the latest and best models in measuring machines. An electronic device which has just recently been developed by a firm in Milwaukee, Wisconsin, was bought through the Export-Import Bank and may be used by the company for three years before payments need to be made.

They do some chemical testing and have not felt the need for much physical testing. However, Mr. Durlach spot checks the production for qualitative tear strength and grain crack by making manual tests.

5. Asuncion, Paraguay - June 18 - 22, 1963

U. S. Embassy

Mr. Benjamin R. Moser, Commercial Attache

Ford Motor Co.

Sr. Egon Clar

Daumas Family - Interests in Tannery and Shoe Sales

Sr. Raul Daumas, Jr.
Sr. Pablo Daumas
Sr. Raul Daumas, Sr.

Agency for International Development

Dr. Robert Young, Public Admistration

National University

Dr. Pastor Gomez, Dean
Ing. Jose A. Bozzano, Professor and expert in steel

Ministerio Industria y Comercio, Paraguayan Government

Dr. Julio Sanabria, Under Secretary

La Cueril, S. A.

Mr. Rudolph Groebl, Superintendent

Casado, Ltd.

Mr. Roberto McClean, Technician
Sr. Vielva, Technician

Dragotta, S. A.

Srta. Dragotta, Chemist

International Products Co. San Antonio

Mr. Robert Willis, Assistant Manager

5.1 U. S. Embassy

We discussed our mission to South America with Mr. Benjamin R. Moser, Commercial Attache. He had already been notified of our visit by a copy of a letter that had been sent by Dr. McPherson to Mr. Gay. Mr. Moser talked about some of the problems in Paraguay. He knew of no work on standards for leather or of any leather or shoe factories in the country, but gave us the name of a Daumas family which was interested in leather and prepared handmade leather items for sale.

He suggested that we talk to Bob Young, head of U.S. AID, and made an appointment for us. An appointment was also made to visit the frigorifico plant of International Products Co. at San Antonio, a short distance from Asuncion. He also attempted to obtain an appointment with Pastor Gomez, Dean at the National University, a contact which had been given us by Dean Steinberg. This appointment was confirmed by telephone the next day. We were unable to obtain an appointment with Sr. Zoila Rodas Ortiz, Chairman, Comite Parag. de Normas Tecnicas, because he was in Buenos Aires.

5.2 Sr. Egon Clar (Ford Motor Sales)

Mr. Clar is an old acquaintance of Dr. W. Windus, (Eastern Utilization Research and Development Division, Hides and Leather Laboratory Staff). He speaks English fluently. As a personal favor to Dr. Windus, he placed himself and his car at our disposal. At one time he worked for Carlos Casado, Ltd., quebracho extract producers, until the company was reorganized, so he has a first-hand knowledge of the leather industry. He was expecting us and had made numerous telephone calls to locate us. (Our flight from B. A. had been delayed 7 hours by a hurricane.) One of his calls was to the Paraguayan Ministry of Commerce. The Under Secretary told him that they were looking for two technicians from FAO (not us), but insisted on making an appointment, as they were anxious to see us also. [See report of our visit with Dr. Julio Sanabria.] Mr. Clar finally made contact with us Tuesday afternoon and immediately took us in tow and our first call was to Casado, Ltd. They are the biggest producers of quebracho extract in Paraguay. We talked with Mr. Robert McClean and Sr. Vielva. They bemoaned the decreasing markets for quebracho. The market in Paraguay they thought was only 150 tons at most, and that probably 50% of it was smuggled to Brazil. They did not think that standards were needed in Paraguay since they cost money to develop, and they had found that standards as set up by Argentina for tanning materials were quite satisfactory.

Mr. Clar also took us to Dragotta tannery, but we arrived at closing time. (We managed to see it at a later date, with Mr. Raul Daumas.) Friday morning he took us to Netto Tannery and to the Ministry of Commerce. He acted as interpreter at both places.

5.3 U.S. AID

We talked with Dr. Robert Young, Public Administration Advisor and discussed the purpose of our mission. We inquired whether there were other groups that we should see and he agreed that we had the best available under consideration. He regretted that Dr. Rojas was out of town, as he thought we could have obtained additional information from him. He told us that the country is probably one of the most under developed in South America. The standards of education are very lax, partly because students are excused from classes at the slightest pretext and as a result their training is highly deficient in depth. Also the faculty is underpaid and must depend on second jobs to earn a living. The salary of the average worker is about 300 Gs per day ($2.50 U.S.) and the average yearly income is ($109 U.S.). Thus, there is a lack of purchasing power within the nation so every effort is directed to create markets by expanding exports. Industry has a hard time because of confiscating taxes and lack of skilled and trained workers, willing to work with their hands. Machine maintenance is a serious problem because every mechanic wants to be a supervisor. Lack of roads and adequate transportation are a serious handicap. Being landlocked they are at the mercy of their neighbors. He thought that translations of even rudimentary standards into Spanish could do much to raise the quality consciousness of what industry there is.

5.4 The Daumas's at Asuncion

The Daumas's interest in leather was first suggested to us by Mr. Moser. He suggested that we get in touch with them. A telephone call was made to a Daumas at the address given by Mr. Moser, but due to the language barrier little information was obtained. It was obvious that we did not reach the right Daumas.

In the meantime contact was made with Egon Clair, who knew about a tannery "Dragotta" which he thought had Daumas interests. At the tannery we were informed that Mr. Daumas was at his shoe store, located near our hotel. We were given only a quick look at the tannery at this time, because it was already closing time.

A few minutes after we returned to the hotel we were informed by telephone that Mr. Daumas was in the hotel lobby waiting to see us. We met Raul Daumas (who we later learned was Jr.) and talked to him for about an hour and a half about standards in the leather field. He was very enthusiastic and asked us to meet with a chemist and a technician at the tannery. He said he would call us the next day and set an appointment. He also gave us the name of another tannery La Cueril, S. A. operated by Oscar S. Netto and suggested that we pay them a visit.

The next morning we had an appointment at the frigorifico at San Antonio and did not return to the hotel until the afternoon. We received no message from Daumas. In the meantime Mr. Moser had made an appointment with Dean Pastor Gomez of the University, who was to meet us at the hotel at 5:00 p.m. Dr. Gomez could not speak English and it was necessary to use an interpreter. He gave us the names of Sr. Pablo Daumas, who was a leather man, and Ing. Jose A. Bozzano who was interested primarily in steel, but certainly should know about Standards in Asuncion.

A short time later we again had a call that a Daumas was waiting to see us in the lobby. We assumed it was Raul Daumas to whom we had spoken previously; but it turned out to be Sr. Pablo Daumas, an uncle of Raul Daumas. (Gomez had asked Pablo Daumas to get in touch with us at the hotel.) We talked to him about our mission and he suggested our seeing his nephew Raul and also Ing. Bozzano. He then made a telephone call and in 10 minutes Ing. Bozzano arrived for an interview. He also suggested Daumas for leather and it was obvious to us now that our request for information on leather in Asuncion led only to the Daumas's.

The next day we visited the shoe store in which Daumas had an interest. The store was about to close for siesta and we were about to leave when Raul Daumas, Jr., who had already been in his car to go home, met us on the street. He said he left a message at the hotel for us, which apparently had not been delivered. He asked us to come back that evening at 5:00 p.m. and talk to his father who was also Raul Daumas (apparently Senior). At the meeting with Raul Daumas Sr. an appointment was made to again visit the tannery "Dragotta" and talk to the chemist and technician. Our difficulty in contacting Raul Daumas was caused by the shortage of telephone in Asuncion, he has been trying for years to get one installed.

5.5 Pastor Gomez

Pastor Gomez is Dean of the Engineering Department at the National University of Paraguay. His name was given to us by Dean Steinberg, who spent several years in Paraguay at the National University.

Dr. Gomez arrived at the hotel at 5 p.m. June 19. Since we were unable to speak Spanish an employee in a Tourismo office acted as interpreter. This was not a very satisfactory arrangement since she knew nothing about the technical nature of our work.

Dr. Gomez gave us the names of Pablo Daumas and Jose A. Bozzano who he said could give us information on standards. He stated that he had little information on the subject.

5.6 Ing. Jose A. Bozzano

Ing. Jose A. Bozzano graduated from M.I.T. He is a native Paraguayan and spoke English quite well. He said little work was being done on standards in Paraguay. He teaches Thermodynamics at the National University and is an expert in steel. Because of the low salaries paid to University teachers he must complement his living by holding another job, which he does by building tanks (storage containers) and other steel structures. He discussed the situation in Paraguay and was obviously distressed that most of the technicians in the National University left Paraguay for Argentina. He stated that the need for technicians was extremely critical but the small wages did not encourage them to remain in the country. The University graduates about 17 engineers a year. He confirmed the fact that the people to see in leather in Paraguay were the Daumas's.

5.7 International Products Company, San Antonio

The plant was built in 1915 to produce chilled beef (frozen) but the first shipment was a failure. The 1000 mile river trip made shipping chilled beef uneconomical and therefore the plant was converted to can corned beef. They can 136,000 12 oz. cans per day and this controls the number of cattle slaughtered.

Cattle in Paraguay are more expensive than in Argentina so there is small margin for competition. They maintain very rigid control all the way from can making through the meat preparation. The hashed meat is cooked in a through feed belt steamer. It is then mixed, batch wise, with salt, $NaNo_3$, tendon (grizzle), fat, etc. and goes to the packing machines. Weight is checked precisely for the 12 oz. can. The juice from the steam cooker is concentrated to make beef extract which goes to Holland. Most of their shipping is in Dutch ships.

The hides are given excellent care. They are washed thoroughly by 2 men with scrapers, then they are fleshed and trimmed by 4 men, one on each corner. They are brine cured for at least 21 days and taken up when the boat comes in. There were some 53,000 hides in cure when we were there. Hide selections into lots of cows, bulls, and steers are made right after trimming.

5.8 Visit to La Cueril, S. A., Oscar S. Netto, Owner

On June 21 we went to visit La Cuerill S. A. with Egon Clar as our interpreter. At the plant we were met and conducted through by Rudolph Gröebl. This is the second best tannery in Asuncion and from an inspection it is obvious that it is about to go out of business. No hides were being processed. Finishing operations were going on on some hides, which had been tanned previously. The leather was low quality, partly because of the condition of the raw hides and partly because of the method of tanning. Some of the production could be sold as suede. Sole leather was hard, discolored, and definitely not of good grade.

Mr. Gröebl stated that they were unable to purchase good frigorifico hides because of the high price. He also stated that quebracho tannin cost twice as much in Paraguay as in Argentina. (This statement, however, was denied by Dr. Sanabria who said that quebracho assumed a world price.)

5.9 Conference with Dr. Julio Sanabria

This appointment was made for us by Mr. Egon Clar. We were mistaken for two people from FAO whom Dr. Sanabria was expecting. He, however, showed no obvious disappointment that we were not the people he expected, but received us with considerable kindness and graciousness. He talked about future plans to improve the economy of Paraguay, by advocating tax cuts and other changes which would encourage foreign investments. He was much interested in improving the leather and shoe industry in Paraguay. He said Paraguay would receive preferential treatment in the Common Market, and he also mentioned the new standards laboratory for Paraguay which was being sponsored by the United Nations. (This is the only information on this that we were able to obtain on our visit, even though we asked several people about it. Dr. MPherson had a report of this laboratory about a year ago.) The laboratory is to have sections on wood, vegetable oils, food, and hides and leather. It will be several years before these plans can be put into operation.

5.10 Dragotta Tannery

Raul Daumas, Jr. took us for a second and more detailed visit to the Dragotta Tannery with his chemist, Srta. Dragotta and one of his technicians. The tannery has some fairly good equipment and a brand new pasting machine was demonstrated. The hides used are of a very inferior grade being obtained from country slaughterhouses which do not properly cure their hides. Also some Flint dried hides were being tried. They are unable to buy the well cured frigorifico hides on account of the high cost.

It is obvious even to the less experienced leather technologist that the leather made in this tannery is not of top quality. The hides had been subjected to attacks by bugs and insects of all types which made scars and marks on the skin. The finished leather is pipey. Some suggestions were given as to how quality might be improved by using a vegetable retan and slightly more oil. They were very much interested in obtaining help to improve their product. We suggested they should attempt to obtain a leather technician through U.S. AID.

We also gave them a copy of ASTM and Federal Test Methods and suggested they get in contact with IRAM in Buenos Aires to cooperate in development of Pan American Standards. They were very much interested and asked for the address of IRAM and indicated they would cooperate with them.

6. Santiago, Chile - June 23 - 26, 1963

U. S. Embassy

Mr. Herbert D. Swett, Second Secretary
Mr. Jerome M. Kuhl, Agriculture Attache
Mr. E. Clifford Byrne, Commercial Attache

United Shoe Machinery Corp. of Chile

Mr. Ladislav Gratz, Chemist

Manufacturas Del Cuero, S. A.
[Camara del Cuero]

Sr. Francisco Llull, Superintendent

Sr. Antonio Ferrer Brunet, Sr. Arnaldo Pagola, Sr. Miguel Etchepare D., Sr. Orlando Mingo E.: All Members of Camara del Cuero.

Aycaguer & Cia., Ltd.

Sr. Pedro Harticalde R., Director

B. Illharrebarde, Hijo & Cia.

Sr. Miguel Pagola, Director
Sr. Juan Pagola, Technician

Instituto Nacional de Investigaciones Tecnologicos y Normalzacion INDETECNOR

Ing. Carlos Krumm, Technical Staff

Instituto de Investigaciones Y Ensayos de Materiales de la Universidad de Chile IDIEM

Sr. Ernesto Gomez

6.1 U. S. Embassy

On arriving at the embassy, we were directed to the office of Mr. Swett, second secretary, who had the announcement of our arrival. To this were attached two notes from Mr. Wyman, one that Dr. Hoerning was ill and that we should arrange to see Ing. Krumm; and the other that a young man was interested in studying leather in the USA.

Mr. Swett immediately made appointments for us to see Mr. Gratz, Ing. Krumm and to meet with representatives of the Camara del Cuero, which is an association for manufacturing of shoes and for the tanning of leather. He also arranged for us to visit three tanneries and two shoe factories. E. Clifford Byrne of the Commercial Section was designated to accompany us on these visits, and was most helpful as an interpreter.

A short conference was held with Jerome M. Kuhl, Agricultural Attache. The total cattle population of Chile is about 3,000,000 head, of which 450,000 are slaughtered each year, and in addition about 150,000 per year are imported from Argentina for slaughtering. The number of sheep is about 7,000,000. In addition to livestock Chile is important for grain and fruit production.

Chile has about 189 shoe factories and 70 tanneries, which employ about 3000 workmen and produce leather worth $15,000,000. They manufacture 16,000,000 pairs of shoes a year. About 9,000,000 pairs of these are of leather.

6.2 Ladislav Gratz

Mr. Gratz is in charge of the Chemical Division of United Shoe Machinery Corp. of Chile. This department manufactures chemicals such as adhesives and finishes for the shoe trade.

Mr. Gratz is a member of the American Leather Chemists Association, the British Society, and the German Society. He was very much interested in test methods and had studied our ALCA methods and the methods of the International Union. He is one of a group of four who are working under sponsorship of INDETECNOR, council in developing test methods for leather. This group has been in touch and are working with the group in IRAM in the development of Pan American Standards. Mr. Gratz was most enthusiastic about receiving copies of both our Federal Specification Methods and Joint ALCA-ASTM Methods, and is much interested in the further expansion of the work on Pan American Standards.

6.3 Camara del Cuero de Fabrica de Calzadas y del Curtiembre

This is an association for both the shoe and leather industries of Chile and corresponds to the Shoe Manufacturers' Association and the Tanners' Council in the USA. They collect data and also are a clearing house for information on the trades. In addition they encourage and promote seminars.

We explained our mission to the group and it was received with a great deal of enthusiasm. They would be most appreciative of any help which we would be able to give them. Chile is interested in exporting shoes to the United States and , of course, know that they must maintain very high standards of quality.

6.4 Visit to Manufactura Del Cuero, S. A.

We arrived a few minutes early and were met by Sr. Francisco Llull. We were accompanied by E. Clifford Byrne who acted as interpreter. Sr. Antonio Ferrer Brunet, and Orlando Mingo E. came in as we finished our introduction. Mingo operates with his two brothers "Manufactura Calzado Orlando". They have at least 11 outlet stores and also export to Fifth Avenue. We were shown through the tannery by their technician, Mr. Eugenio Meszaros. They were very crowded but are adding new space that will about double their facility. The new power plant is already installed. The new facility will permit better arrangement of processing operations and also more modern machinery.

They tan both sole leather and side leather. They sort the hides in the hide house and resalt in packs. The hides from the local butchers are in poor state, yet command a price equal to Argentina's frigorificos. They import 25-30% of hides needed. The quality of the leather seemed good, but there is a serious problem with surface defects.

6.5 Visit to Aycaguer & Cia. Ltd.

We were taken on a tour of the tannery (which handles 200 cattle-hides plus some horse and kid). We also had a quick look at the shoe factory (they make 1500 pairs of shoes per day with a high percentage for the military and police). The tannery was built in 1880 and they are thinking of remodeling. This would be very expensive and probably would be inadequate to handle new equipment for "through put" processing. They do not have a laboratory for

quality control and didn't think they would have one in the near future. Cost and lack of technical personnel were the main reasons.

They tan both sole and shoe upper leather. They use local and Argentine hides (about 30%), and sort closely after unhairing. The poorer hides go into sole leather.

6.6 B. Illharreborde, Hijo & Cia. Ltda.

We were taken through the tannery by Mr. Miguel Pagola Idiart (technician) and later met his father who took us through the shoe factory. The tannery has been remodeled extensively and expanded in order to place the various departments in line. They have also put in a wool pulling and processing area and a tanning section for sheepskins. They were experimenting on splitting sides in the blue. Each tannery splits in the lime in order to save on chrome, but Mr. Idiart thought the quality of the leather was better if the hides were chrome tanned before splitting. All of the tanneries use the short time-high sulfide-hair destroying process for unhairing. This tanner was the only one that had a rocker system for their sole leather.

They were installing a laboratory. They have a pH meter and determine residual chrome in the spent liquors. They hope to do physical tests and he asked for copies of our methods.

6.7 Ing. Carlos Krumm, Technical Staff, INDETECNOR

We went to see Ing. Krumm with Mr. Byrne, but an interpreter ws not necessary since Mr. Krumm spoke very good English.

Mr. Krumm told us that they already had a group of persons working on leather standards and were cooperating with the Secretariat of COPANT in B.A. (This we had already learned from Mr. Gratz.) He made an appointment for us to see the laboratory used by the staff of INDETECNOR at the University of Chile.

6.8 Sr. Ernesto Gomez, Instituto de Investigaciones Y Ensayos de Materiales de la Universidad de Chile, IDIEM

This appointment was made for us by Ing. Krumm so that we might see some of the equipment available in their materials laboratories. Sr. Gomez showed us a large variety of testing machines for steel and concrete mostly of the heavy pendulum type, and most of them were German or Swiss made.

They did not do any leather testing.

They also had equipment for the testing of steel rails and excellent x-ray testing equipment which was used primarily to detect cracks or flaws in large scale steel structures.

7.0 Lima, Peru - June 27 - 28, 1963

U. S. Embassy

Mr. Fishburne, Economic Attache
Mr. Frank A. Mau, Second Secretary

Instituto Nacional de Normas Tecnicas Industriales

Prof. Juan Vincente Cabrerizo, Director
Sra. Susana de Carrillo, Chemist

Centro Nacional de Productividad CENIP

Dr. Luis A. Macchiavello, Manager
Ing. Roberto Romero M., Staff

Curtiembre El "Aguila" S. A.

Mr. Juan Figuerola Chmyzowski, Technician

Curtiembre Ibanez, S. A. - Arequipa, Peru

Mr. Edwin Ibanez, Chemist

Curtiduria Verme, S. A.

Mr. Carlos Verme K.

7.1 U.S. Embassy

We reviewed the purpose of our mission with Mr. Fishburne who suggested that we work with Mr. Frank A. Mau because he just spent about 3 months with Mr. Kenneth Bell of the U.S. AID Mission giving assistance to the tanning industry of Peru.

Mr. Mau made appointments for us and accompanied us on the visits to INANTIC and CENIP.

7.2 Visit to INANTIC

We talked with Prof. Juan Vincente Cabrerizo, Director, and Sra. Susana de Carrillo, Chemist. They have a nine man committee that meets every Tuesday to work on methods, three of whom each represent producers, consumers, and technical areas. They supplied us with the names. Prof. Cabrerizo said that any information we could send would be welcome and useful. We promised a set of ALCA-ASTM Methods and Federal Method KK-L-311a.

7.3 Visit to CENIP

We met with Dr. Luis A. Macchiavello, Director, and Ing. Roberto Romero M. Dr. Macchiavello has an accurate and well defined idea of the philosophy of standards development as practiced in the U.S.A. He and his staff are trying hard to convey this idea to the Peruvian industry. INANTIC was established at the University in order to have a source of technical manpower to direct and work on standards development, and secondly to strengthen the University by creating a reasonable excuse for obtaining testing equipment and establishing research projects. They have to have some connection with government in order to get funds since industry is not sufficiently enlightened to contribute funds for standards development. We were given a summary of Mr. Bell's report which was developed jointly with Mr. Romero. Dr. Macchiavello had Mr. Romero make an appointment for us to see a tannery As we left he reiterated his appeal for all possible assistance that we could give in the development of standards.

7.4 Visit to Curtiembre El "Aguila" S. A.

We were accompanied by Ing. Roberto Romero from CENIP and met Juan Figuerola Chmyzowski, the technician; Carlos Verme K., and Edwin Ibanez, from Curtiembre Ibanez, Arequipa. We were given a tour of the tannery. They use both Argentine and National hides, and Mr. Chmyzowski told us that the best local hides are not equal to the poorest from Argentina regarding take off. This is an important area for education in quality improvement.

They tan both sole and shoe upper leather and use 250 to 300 hides per day. They have predominantly German machinery because it was cheaper to buy, but the few American machines have twice the productivity to their counterparts.

They have a laboratory but so far use it only for pH control. Both Chmyzowski and Ibanez are members of ALCA and read English publications. Mr. Chmyzowski was to address the Tanners Club this evening on unhairing hides. Evidently the system of seminars instituted by Mr. Kenneth Bell (AID Consultant) has caught on and is being continued.

The idea was expressed that a tannery should own a shoe factory so that they would have a market for their own low quality leather.

Appendix to NBS Report No. 8074

Centro Nacional de Productividad (CENIP)

and

Agency For International Development (AID)

Leather Industry in Peru

(May 1963)

By: Kenneth E. Bell,
Consultant AID.
Roberto Romero, Acting
as Counterpart Project
Manager CENIP

Contract No. AID-27-109T
PIO/T No. 727-AC-27-AB-5-3-30012

Lima, Peru

SUMMARY

Report on CENIP Project for the Leather Industry of Peru.

This report summarized the findings, results and recommendations on the program conducted by CENIP, with the assistance of the US AID Mission for the Peruvian Leather Industry. The help of many people was involved and your Consultant gratefully acknowledges the full cooperation of the staff of CENIP and the US AID Mission: and the enthusiastic support of the tanners. But, full responsibility for statistics; recommendations and findings is assumed by the Consultant.

Flow Sheets.-

Before studying the program and recommendations, reference to Appendix I, and economic flow sheet of the whole industry is suggested, as frequent reference to it will be made in subsequent portions of the report. Briefly, this shows there are

30	160	000	domestic animals, plus unknown numbers of wild animals in Peru
5	430	000	hides and skins are taken annually from both categories of animals killed in Peru
	113	000	cattle hides are imported
1	590	000	wild and domestic animal skins are exported
31	600	000	square feet of upper leathers, worth
$ 200	900	000	are produced, plus
3	570	000	kilograms of sole leather worth
$ 112	000	000	are tanned from the net balance of hides and skins

Program.

Since only three months were available for this project, it was imperative to survey the industry rapidly and formulate a program as soon as possible. This is shown graphically in Appendix II, to which reference should be made while reading the following description.

After a meeting with the tanners of Lima, tannery visits were started immediately, with the purpose of becoming acquainted with the tannery personnel; quality of leathers produced; the adequacy of equipment; the problems facing the industry, and the future of the industry. At the same time contacts were initiated with the educational institutions in the Lima area; the suppliers of materials and equipment for tanneries, and Government Bureaus which could render assistance. The selection of a very competent Counterpart Sr. Ing. Roberto Romero M., has been a great help from the very start.

It became apparent in a very few days that the tanners of Peru were better educated; more mature and eager to improve than in most countries your Consultant has visited; later, their ability to take prompt and appropriate action became evident. It was decided to develop a Discussion Group presentation of eight sessions, especially prepared for Peruvian needs, and a month of your Consultant's time was devoted to the subject matter, and charts and other visual aids. All material was translated into Spanish and reproduced for distribution so note taking was not necessary. This gamble of time was justified by the results, and the material was later utilized in Arequipa and Cuzco to advantage.

Appendix II shows the whole program; the interrelations and results. The items composing the program are:

Development of the Flow Sheet (Appendix I)
New Industries for Peru
Standards and Specifications
Contacts with organizations capable of aiding the program
Consultation on tannery problems
Tannery Visits

(continued)

Training of Counterpart
Demonstration of Improved Techniques
Accumulation of literature on leather for CENIP library
Contacts with Unites Stated tanners, etc., on costs, methods, etc.
Preparation of Reports to CENIP, AID Mission, the Tanning Industry.

These items will be discussed in detail in the body of this report. Results will be summarized under that heading.

Such results as have been obtained are in large part due to the active cooperation of friends in CENIP; the Mission; the various agencies in Peru; and the United States. Please note their names and connections as shown in Appendix II.

Results.

A total of twenty-nine tanneries has been visited, fourteen in the Lima district; one in Huancayo, ten in Arequipa; four in Cuzco. In addition, advice has been given on new processes; problems, etc. to two other tanneries; while in almost every case, a tannery visit resulted in question on operating problems, new processes, equipment, etc. More important, problems of common interest have been discussed in the Discussion Group; the principles involved have been explained, and solution offered.

The Discussion Groups have become the nucleus of the program. Sixteen men attended the eight sessions in Lima, twenty nine the six consecutive daily meetings in Arequipa and twelve the single meeting in Cuzco. In all cases, the two and a half hour programs were at the end of a full day's work. A total of seventy pages of material in Spanish text was given each participant, and it is expected this will be studied and applied in the weeks to come.

As a direct outcome of the Group meetings, the tanners in Lima and Arequipa petitioned the US AID Mission to establish a project to develop hide and meat grading, which should result in better quality hides of National origin.

An even more important development is the acceptance by the Lima group of the offer of the Dean of the Chemical Faculty of San Marcos, Dean Iza, to utilize the facilities and personnel of the University in Chemical; Physical and Microscopic work on leather. A pilot scale tannery may be erected in the new Chemical Engineering Laboratory, also. It is hoped that a similar arrangement will be effected with the Junta de Rehabilitacion of Arequipa; if not, the arrangements with San Marcos will be extended to the tanners of Arequipa.

With better acquaintance, the Lima Group decided to form a Tanner's Club, with technical and social objectives, and an impressive slate of officers has been elected. It is felt this group of younger, technical and operating men will have a great part in carrying through the projects recommended in the next section of this report.

As already mentioned, the Flow Sheet of the Industry has been completed and included in this report.

The tannery visits, plus the trips to Huancayo, Arequipa, Puno and Cuzco have indicated the possibility of several new industries and cooperatives for the benefit of the industry in Peru.

While shortage of special equipment prevented as many demonstrations as planned, the suggested methods have been explained in detail and it is hoped benefits will result. A portable pH meter, delivered late in the project, will be valuable aid to Sr. Ing. Romero in his continuation work.

A Bibliography is appended to this report, and CENIP plans to acquire many of the titles suggested.

Individuals in the United States, especially those in the A. C. Lawrence Company have given generously of their time, cost data and airmail postage to send specifications etc. to your Consultant.

Recommendations.

The following recommendations are as much economic as technical. Because of the caliber of the personnel in the leather industry in Peru, your Consultant is confident they are all possible of attainment here.

1. Improvement in hide and skin quality -

The excellent programs of SIPA to improve the quality of domestic animals, reduce diseases and educate growers to minimize branding and disfiguration of livestock will eventually result in much better quality hides and skins.

a. The project for meat and hide grading should improve hides from the coastal slaughterhouses by 10%:
0.10 x 56,000 (hides) x 24 (kg) x $8.15 kg. $1'100,000/yr.
plus eventually influencing takeoff in other areas.

b. The project for salting Sierra and Selva hides and skins (Appendix III) can improve quality 50% on 20% of the hides from these areas, plus definite improvement in skin quality of llamas, alpacas, sheep and goat skins. On hides only:
0.20(20%)x 425,000(hides) x 25 (kg) x $4.10
(50% of good hide value) $8'700,000/yr.

This program could start immediately and show results in six months, with very slight cost and great benefit to the areas concerned.

Total potential of hide skin program: $9'800,000/yr.

2. Increased business and profits thru economics, new leathers.

a. The tanners in the various discussion groups have been given a goal of 10% reduction in costs, and/or increase in yields in quality, in one year, at virtually no expense. Definite means of attaining the results have been suggested:
0.10 x $331'600,000(present sales volume) $33,200,000

b. The next objective of the tanners should be to capture 70% of the imported leather business, now amounting to $ 22,800,000. With the technical aides of chemical and physical testing at their command, and improvement in hide quality in prospect, work should be started immediately:
0.70(70%) x $22,900.000 $ 18,900.000 gross

2. (b) continued.

increased profits of 0.10x$18,900.000	$ 1,890.000
increased employment of:18.9/331.6 (ratio new to present) x 1200	68 men.

c. Most of the wild animal skins collected in the Selva are exported untanned thru Iquitos: 20% Mollendo. If tanned in Peru, these should be a high-profit item of great appeal to tourists. Since they leave the country by long established trade channels, Government assistance or protection may be necessary to ensure their availabity in Peruvian tanners. If 80% of this business can be captured, and a profit margin of at least 20% maintained, this can mean:

Fur Skins: 238,000 skins at a selling price of	$ 20,820.000*
including 20% profit of	3,470.000
Alligators: 48,000 skins at a selling price of	7,200.000
profit (at present rate)	2,270.000
Total profits $ 3,470.000 +$2,270.000	5,740.000/yr.
Increased employment of	78 men

d. At present, 300,000 sheepskins and 1,000 000 goatskins are exported untanned. If 80% of these markets can also be captured, the results would be:

Sheepskins 0.8 x 300,000 = 240,000 skins	
Sales volume	$ 8,650.000*
Additional profit	865.000
Goatskins 0.8 x 1,000.000 = 800,000 skins	
Sales volume	40,500.000
Additional profit	7,300.000
Total potential profits, sheep & goatskins	8,165.000
Additional employment:	157 men

* Detailed calculations in Appendix IV

It should be possible to develop the wild animal and alligator business, if the skins can be obtained, as tourists are avid for such souvenirs from a foreign country.

In the case of the sheepskins and goatskins promotional work (suggested below) may be necessary. Attractive leather articles, emboding Peruvian designs should prove attrative to tourists. Further, with the growth of population, and an increasing per capita income for the middle class, much of the increase leather production can be absorbed in Peru.

3. Improvement and Quality Control of Llama and Alpaca Leathers.

The llama and alpaca (furred) articles offered in Peru are a tremendous asset as a tourist attraction, which should be encouraged. But, improvement and control of quality of leathers and items made from them is highly desirable. Steps suggested are:

a. Proper skins curing. (Appendix III) should ensure better, softer leathers.

b. A study of tanning methods to further improve these leathers, which should be fully tanned and soft to give long service. This work, including causes of yellowing of tara tanned skins should have CENIP-AID Mission support, as this industry is vital in the Sierra. It will assist in successful exportation of these products.

c. Supervision of quality of llama, alpaca products, is desirable, since adulteration with hair calfskins is already practiced. A cooperative, or organizacion, similar to the Native Handicraft stores in India and Pakistan can control quality and insure fair returns to the producers.

4. Reconditioning Tannery Machinery: Sales of Guaranteed Used, Equipment.

a. Your Consultant's observation is that at least 10% of tannery machinery and equipment in Peru (and other Latin countries) is out of service, due to lack of replacement parts, or skilled adjustment. A business, perhaps a cooperative, operated by a skilled mechanic, retired from some U.S. leather machinery company, should be able to keep at least half of the unused equipment in first class operating condition. Further, his stock of replacement parts would total far less than those now in various tanneries. If successful in Lima, a branch in Arequipa would be justified. The results:

1/2 x 0.10 (10%) x $59,000.000
(value equipment) $ 2,950.000
Machinery restored to use.

b. Leather machinery in Peruvian tanneries cost new twice as much as in the United States, yet is used for fewer hours per year. Guaranteed, thoroughly reconditioned U.S. tannery machinery should be much more economical than new in Peru. Reliable U.S. suppliers can be recommended by the Consultant, and if they would post adequate performance bonds to cover guarantee, security for bank purchase loans would be assured. (This suggestion could be incorporated with 4 (a)) (Mr. Robert Ross, Commercial Attaché suggested the use of reconditioned machinery independently)

5. Further Emphasis on Merchandizing.-

Discussion Group meetings on this subject disclosed great interest, and questionnaires a real need for help. The following are suggested:

a. Additional discussion group meetings, with AID Mission personnel participating(Note: This need is not confined to Leather)
b. Financing of leather operations at lower cost.

c. Promotional efforts, to develop and push Peruvian leather items for tourist, export, and national sales (a study of "Leather Industries of America" is suggested)
d. Interchange of tannery cost data, thru CENIP (similar to Tanners Council of America)
e. Development of Grades and Standards for leather, to help leather sales on quality, rather than price alone.

6. Sponsorship of the course in "Leather Chemistry for Foremen" (in Spanish) under the aegis of CENIP and the Tanner's Club.

7. Training of Counterpart, Sr. Ing. Roberto Romero M., in the United States, for three months, under supervision of the Consultant.

8. A five weeks trip to United States tanneries, educational institutions with leather facilities, supplier's laboratories, etc., for a group of Peruvian tanners in the fall of 1963.

9. Establishment of a glue and gelatine plant in Lima, utilizing fleshing, trimmings from tanneries in the area. This will not only eliminate a nuisance, but show substantial profits (7% of net sales in the U.S.A.)

Based on 1/2 of net sales on cattlehide, plus sheepskin leathers, 1/2 x $270,000.000 x .07 $ 9,400.000

(Note: Several tanneries in Peru recover glue and gelatine)

10. A systematic study of utilization of wood from tannin bearing trees in Peru, to make concentrated tannins, for export, and use of Peruvian tanneries.

The Future of the Tanning Industry of Peru.

Besides additional business and profits detailed under "Recommendations" the Peruvian tanning industry should have available a 7-9% increase in its cattlehide supply, as well as additional sheepskins, goatskins, llama and alpaca skins under the excellent program of SIPA, for increasing herds, and improving grazing lands. This program includes improvement in hide quality thru education. The project for hide grading will result in improved "takeoff" in packing houses, and this, eventually will force better take off in the Sierra and Selva areas.

These additional leather produced can be absorbed in part by normal population growth, but mainly thru purchases of shoes and leather clothing, etc. by better paid industrial workers. United State experience in the past twenty years proves this clearly. In Peru, labor represents only 7% of tannery costs; in the United States it is 20%. Export of finished leather items should be encouraged.

Large additional purchases of machinery and equipment in anticipation of new business is not justified. Present equipment can handle much greater volume, with proper planning. Further, the recommendation for reconditioning existing idle machinery will increase the tanning capacity of the country.

With better knowledge of tannery costs, and with physical and chemical controls on processes, it should be possible for the industry to obtain better terms on loans. The present high rate of 14% (plus 3.6% tax) tends to throttle growth.

[Permission to attach this Appendix to this NBS Report was granted by AID Mission in Peru].

Copies of the AID report may be obtained from: Mr. G. R. Lindahl, Agency for International Development
US AID Mission to Peru
c/o American Embassy
Lima, Peru

USCOMM-NBS-DC

U. S. DEPARTMENT OF COMMERCE
Luther H. Hodges, *Secretary*

NATIONAL BUREAU OF STANDARDS
A. V. Astin, *Director*

THE NATIONAL BUREAU OF STANDARDS

The scope of activities of the National Bureau of Standards at its major laboratories in Washington, D.C., and Boulder, Colorado, is suggested in the following listing of the divisions and sections engaged in technical work. In general, each section carries out specialized research, development, and engineering in the field indicated by its title. A brief description of the activities, and of the resultant publications, appears on the inside of the front cover.

WASHINGTON, D. C.

Electricity. Resistance and Reactance. Electrochemistry. Electrical Instruments. Magnetic Measurements. Dielectrics. High Voltage. Absolute Electrical Measurements.

Metrology. Photometry and Colorimetry. Refractometry. Photographic Research. Length. Engineering Metrology. Mass and Volume.

Heat. Temperature Physics. Heat Measurements. Cryogenic Physics. Equation of State. Statistical Physics.

Radiation Physics. X-ray. Radioactivity. Radiation Theory. High Energy Radiation. Radiological Equipment. Nucleonic Instrumentation. Neutron Physics.

Analytical and Inorganic Chemistry. Pure Substances. Spectrochemistry. Solution Chemistry. Standard Reference Materials. Applied Analytical Research. Crystal Chemistry.

Mechanics. Sound. Pressure and Vacuum. Fluid Mechanics. Engineering Mechanics. Rheology. Combustion Controls.

Polymers. Macromolecules: Synthesis and Structure. Polymer Chemistry. Polymer Physics. Polymer Characterization. Polymer Evaluation and Testing. Applied Polymer Standards and Research. Dental Research.

Metallurgy. Engineering Metallurgy. Metal Reactions. Metal Physics. Electrolysis and Metal Deposition.

Inorganic Solids. Engineering Ceramics. Glass. Solid State Chemistry. Crystal Growth. Physical Properties. Crystallography.

Building Research. Structural Engineering. Fire Research. Mechanical Systems. Organic Building Materials. Codes and Safety Standards. Heat Transfer. Inorganic Building Materials. Metallic Building Materials.

Applied Mathematics. Numerical Analysis. Computation. Statistical Engineering. Mathematical Physics. Operations Research.

Data Processing Systems. Components and Techniques. Computer Technology. Measurements Automation. Engineering Applications. Systems Analysis.

Atomic Physics. Spectroscopy. Infrared Spectroscopy. Far Ultraviolet Physics. Solid State Physics. Electron Physics. Atomic Physics. Plasma Spectroscopy.

Instrumentation. Engineering Electronics. Electron Devices. Electronic Instrumentation. Mechanical Instruments. Basic Instrumentation.

Physical Chemistry. Thermochemistry. Surface Chemistry. Organic Chemistry. Molecular Spectroscopy. Elementary Processes. Mass Spectrometry. Photochemistry and Radiation Chemistry.

Office of Weights and Measures.

BOULDER, COLO.

CRYOGENIC ENGINEERING LABORATORY

Cryogenic Processes. Cryogenic Properties of Solids. Cryogenic Technical Services. Properties of Cryogenic Fluids.

CENTRAL RADIO PROPAGATION LABORATORY

Ionosphere Research and Propagation. Low Frequency and Very Low Frequency Research. Ionosphere Research. Prediction Services. Sun-Earth Relationships. Field Engineering. Radio Warning Services. Vertical Soundings Research.

Tropospheric and Space Telecommunications. Data Reduction Instrumentation. Radio Noise. Tropospheric Measurements. Tropospheric Analysis. Spectrum Utilization Research. Radio-Meteorology. Lower Atmosphere Physics.

Radio Systems. Applied Electromagnetic Theory. High Frequency and Very High Frequency Research. Frequency Utilization. Modulation Research. Antenna Research. Radiodetermination.

Upper Atmosphere and Space Physics. Upper Atmosphere and Plasma Physics. High Latitude Ionosphere Physics. Ionosphere and Exosphere Scatter. Airglow and Aurora. Ionospheric Radio Astronomy.

RADIO STANDARDS LABORATORY

Radio Standards Physics. Frequency and Time Disseminations. Radio and Microwave Materials. Atomic Frequency and Time-Interval Standards. Radio Plasma. Microwave Physics.

Radio Standards Engineering. High Frequency Electrical Standards. High Frequency Calibration Services. High Frequency Impedance Standards. Microwave Calibration Services. Microwave Circuit Standards. Low Frequency Calibration Services.

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