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UNITED
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REGIONAL AFRICA

HIDES & SKINS, LEATHER AND LEATHER PRODUCTS IMPROVEMENT SCHEME

US/RAF/88/100/11-06B

TECHNICAL REPORT (*)

on a mission to ZAMBIA

25 May-03 June 1992

Based on the work of

Augusto Zink, Tannery Machinery Maintenance Expert

Backstopping officers: Juhani Berg, Aurelia Calabrò
Agro-Based Industries Branch

7/57

Explanatory notes

1 US\$ 129 Zambian Kwacha (UNDP rate)
1 US\$ 200 Zambian kwacha (official rate at the hotels)

Abbreviations

TBM1 Technical report 1st. mission
BK Bata Kafue (Tannery)
BL Bata Lusaka (shoe factory and main office)
KE Kembe Estates

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ABSTRACT

Working under the Regional Project US/RAF/88/100 with the goal pointing towards Hides and Skins, Leather and Leather Products Improvement Scheme, as Zambia is included in this project the Machinery Maintenance Expert was fielded to continue the work at the mentioned tanneries.

The assignment given to the expert on this mission was to assemble the Pajusco drum at Bata Kafue, assist the technician sent by Incoma to commit the vacuum dryer and to demonstrate in real terms to Bata Kafue maintenance staff how to repair a drum for which the spare parts were locally prepared for this assignment.

The wood for this drum was prepared at the "Kafue Technical School San Ambrosio" wrongly named "Don Bosco" on first reports. Besides BK, also Kembe Estate was visited in order to assemble a toggle dryer and to repair a Mercier setting out machine. In this case the goal of the mission was not attained as spare parts were not available for one of the machines and instructions, technical drawings and parts as well were missing from the toggle dryer. Some work was partially done and the time was used to explain the functioning and regulations of the splitting machine.

The assignment was for 14 days. As there was too much to do, the timing was too short but as the project continues, there will be more chances of visiting Zambia again. Four days were spent at Kembe Estates and the rest at Bata Kafue including week-ends.

Main Conclusions

There is still a lot of work to do in Zambia. the function of an expert is not to do all the job but to show how it should be done. This is not difficult as there are skilled people working in the tanneries.

Recommendations

The tanneries in Zambia should buy enough spare parts for the machines and a list of chemicals should be ready before the arrival of the expert. Not much is needed and as they are further facing problems with foreign currency, may be UNIDO could assist with some important spare parts to be paid back through the revolving fund. This aid should be given to all assisted tanneries in proportion to their needs.

Bata Kafue

The first thing to be done was to repair the filling hole (door) of an 18 year old Vallero drum. The wood was in excellent condition and after this repair there was a drum to be used for 10 more years. On a previous mission, the wood was given to the "Kafue Technical School San Ambrosio". This school in Kafue has carpentry machines and they teach wood working and the proper use of machines to their scholars besides other activities. During an earlier mission, a mould with the radial angle of the diameter of the drum was prepared and the necessary number of wooden planks given to the KTS to be seasoned. Shortly before the arrival of the expert, these wooden planks were worked according to instructions and carried to BK (diameter of the drum 3.50 mts). The work was finished by the carpenter of Bata Kafue and the expert (see Annex 2).

Mr. Steve Merlini, the Incoma technician arrived during this period and he was able to commit the Incoma vacuum dryer as he spoke English fluently. His presence was very positive to the Bata Kafue staff and the UNIDO expert as he could explain some problems on the Incoma roller coater and this machine could finally be adjusted in the proper way.

Other activities included giving advise on the installation of the dedusting machine, finishing the electric saw for the carpentry of Bata Kafue and preparing some wood for the next assignment in order to repair, this time, the sides of the drum.

Kembe Kstates

In this company, two things had to be done:

1. assemble the toggle dryer
2. repair a Mercier setting out machine

The toggle dryer was a used one from the first model made in England. The frames were not turnable (fixed), the air ducts, huge and bulky to be fitted on the roof, 40 frames and no technical detail on how to assemble it. Some of its parts were also missing hence the impossibility of assembling during the period of the assignment.

The setting-out Mercier

Debris was found in the oil-container of this machine and on the oil circuits. They had already damaged the O-rings of the hydraulic pistons controlling the open and close device of the machine. These pistons received the working orders from a "two ways" solenoid controlled hydraulic valve. The solenoids are activated through an electric circuit activated by two micro-switches which are commanded by the crankshaft of the machine. This crankshaft has three ex-center disks. They activate the microswitches when the crankshaft turns and they are fastened to the shaft by means of a nut with fine thread.

The thread is damaged, the ex-center disks are not holding more than one movement of the shaft in the same position. The "two-ways" solenoid valve seems to be damaged inside through the debris.

The O-rings were damaged but were replaced by new ones. The machine can be repaired once the spare parts arrive.

The only thing to do after trying to repair the setting-out or assembling the toggle dryer was to explain to the maintenance staff of Kembe Estate how to use and regulate the splitting machine. It was not difficult to do this as this is a Turner 35V model and many tanneries within the project have this machine. Kembe Estate will soon receive two new drums and instructions were given on how to assemble them.

Asaria Tannery

Mr. Mehta from Asaria Tannery tried a couple of times to take the expert to his tannery as he was facing problems with a hydraulic press. Since there was very little time, this was not possible as problems can sometimes be evaluated to take a short time only to end up taking several days.

Conclusions

1. There is a lot of work to be done by experts in Zambia. Once every tannery begins working on finished leather, Zambia will develop a very competitive market and the technical features of the tanneries are somehow similar so that it will develop a fair competition in the long run. For wet blue they are all well equipped. Apart from Bata Kafue, the rest urgently need the know-how up to crust and finished leathers.

Recommendations

To UNIDO

Assist at least the three mentioned tanneries in this report with enough spare parts in order to create on each a complete working unit. Once these spares have arrived, elaborate workplans:

1. for maintenance seminar for all tanneries
2. to field someone to instal spare parts and bring the machine to working order
3. to field an expert on finish leather up to crust once point 1 and 2 are due and then another for finishing

To Bata Kafue

1. To prepare the wood to repair the sides of a second drum as well as the bolts and nuts.
2. Send the shafts of the ironwork to be repaired so that once work has started it will not stop.
3. To acquire the drums doors.
4. To purchase the spares for the painting booth including new pump, pistols etc. as indicated in previous reports.

To Kenbe Estate

1. To divide the toggle dryer in three and rebuild it in three modular sections of 16-16-8.
2. Change the frames to turnable ones and instal new fans with heating at each modui. This work could be done using the factory's previous designs. One of the 16 frames modular dryer could be changed to work as a pasting. The finished drying can then be made on the toggle dryer. If this is not possible, then a two table vacuum dryer has to be bought. (Attention to the heating system).

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

24 July 1991

JOB DESCRIPTION
US/RAF/88/100/11-06B/J13104

Post Title: Leather Machinery Maintenance Expert

Duration: 12 months

Date Required: September 1991

Duty Station: Nairobi, Kenya with travel within Ethiopia, Kenya, Malawi, Somalia, Sudan, Tanzania, Zambia and Zimbabwe as may be required.

Purpose of the Project:

The project is designed to establish a regional pilot scheme and to demonstrate, in practical terms, the process of hides and skins improvement from butchering and flaying to conservation, grading and collection and to act as catalyst to national authorities to introduce incentives for improved performance. To rehabilitate existing infrastructures and selected leather tanning and processing plants by increasing their efficiency and capacity utilization, upgrading technical standards, operational methods and skills, product quality and marketing performance, as well as knowledge of those attached to these industries at various levels, starting from primary producers.

Duties:

The expert will be attached to the UNIDO project team of the Regional Hides and Skins, Leather and Leather Products Improvement Scheme with headquarters in Nairobi. Under the technical supervision of the UNIDO IO/T/AGRO Leather Unit in Vienna and the UNIDO Chief Technical Adviser in Nairobi and in co-operation with the national project authorities the expert is, according to the established work plan, expected to:

1. Assist selected tanneries in the countries participating in the Scheme in repairing and/or adjusting their machines and in preparing lists of spare parts to be requisitioned as required; supervise the installation of machines delivered during project life; and give special attention to safety at work;
2. Provide technical inputs for guidelines and maintenance manuals etc., to be translated into local languages for use as teaching aids in seminars and/or reference manuals in the daily work of tanneries;

3. Participate in the rehabilitation studies to be prepared for selected tanneries and provide the technical inputs on the machinery, equipment and maintenance aspects for these studies;
4. Participate in the rehabilitation programme of the selected tanneries and assist and advise in the implementation of the recommendations provided by the rehabilitation studies concerning machinery installation and maintenance aspects. Specifically assist in the installation at the Sagana Tanneries of the tannery machinery and equipment supplied under the Regional Tannery Rehabilitation project US/RAF/88/102;

The expert will also be expected to prepare a technical report setting out his findings and recommendations to the Governments on further action which might be taken.

Qualifications:

A leather machinery maintenance specialist with suitable academic background, i.e. university level education in engineering and/or technical college training from a recognized leather technology institute. Several years of experience in machinery installation and maintenance. The expert should be capable of carrying out ad hoc repairs of various types of tannery machinery and also be able to prepare plans for preventive maintenance and organize spare parts procurement systems. Some experience with shoe industry machinery and previous work with international organizations are an asset.

Language:

English.

**Background
Information:**

The Third Consultation on the Leather and Leather Products Industry (Innsbruck, Austria, April 1984) recommended, that an integrated programme approach at the national level, with appropriate variations to meet the specific needs of individual developing countries, could provide a relevant framework for international co-operation for the development of the full potential of the raw hides and skins and the leather products industry.

It was also recommended that "Given the objectives of the Industrial Development Decade for Africa and the situation of the leather and leather products industry in that region, the Industrial Development Board should consider the convening of a regional consultation in Africa preceded by the meeting of a group of experts that would identify areas of international co-operation".

Consequently UNIDO started the project Integrated Development Programme of the Leather and Leather Products Industry in Africa

(XA/RAF/85/610) and the terminal report of this project (IPCT.5 of 20/10/1986) formed the main background paper for the Regional Meeting on the Leather and Leather Products Industry in Africa, Alexandria, Egypt, January 1987.

The Alexandria meeting focussed on the constraints and shortcomings experienced in the African leather industry as a whole and emphasized the need, as a first priority measure, to upgrade the quality of raw hides and skins and to improve the collection systems. As a follow-up the proposed scheme was presented to the First Session of the FAO Intergovernmental Sub-Group on Hides and Skins, convened in Rome, 21-23 January 1987, and was as such welcomed and accepted. For the implementation of the integrated sectoral improvement scheme UNIDO was entrusted to seek the required funds. After receiving the approval and support of many African countries, it was agreed that eight East-African countries should be grouped under the envisaged improvement scheme programme.

This grouping was decided on the grounds that there are many similarities and close ties between the countries of the group. The livestock population is very similar and the type and inherent quality of the hides and skins are nearly identical. The hides and skins improvement schemes established during the colonial times have the same type of structure.

The sectoral development level of the countries within the region differs widely. However, in spite of the different economic systems employed, one could possibly group Ethiopia, Kenya and Zimbabwe together, representing the more developed countries with Zimbabwe taking the lead. Sudan, Somalia, Tanzania have established leather industries although their tanning and leather products production capacities are underutilized for many reasons. The third group of countries representing Malawi and Zambia, featuring a similar economic system, are actually latecomers to this field of industry and new plants are being established.

The purpose of the regional umbrella project is to obtain maximum benefits from and utilize in the most economic way possible the international inputs for the participating countries, while catering to their specific needs in individual national projects. This particular structure is justified on the grounds that:

- the national projects to be implemented need a number of common international inputs;
- there should be a maximum of flexibility in responding to individual national needs, and inputs should be on call on both a timely and appropriate basis;
- inputs should be provided in a complementary way between countries, and national institutions should not seek to duplicate each other in their entirety;

- maximum utilization should be made of various national facilities to serve regional needs.

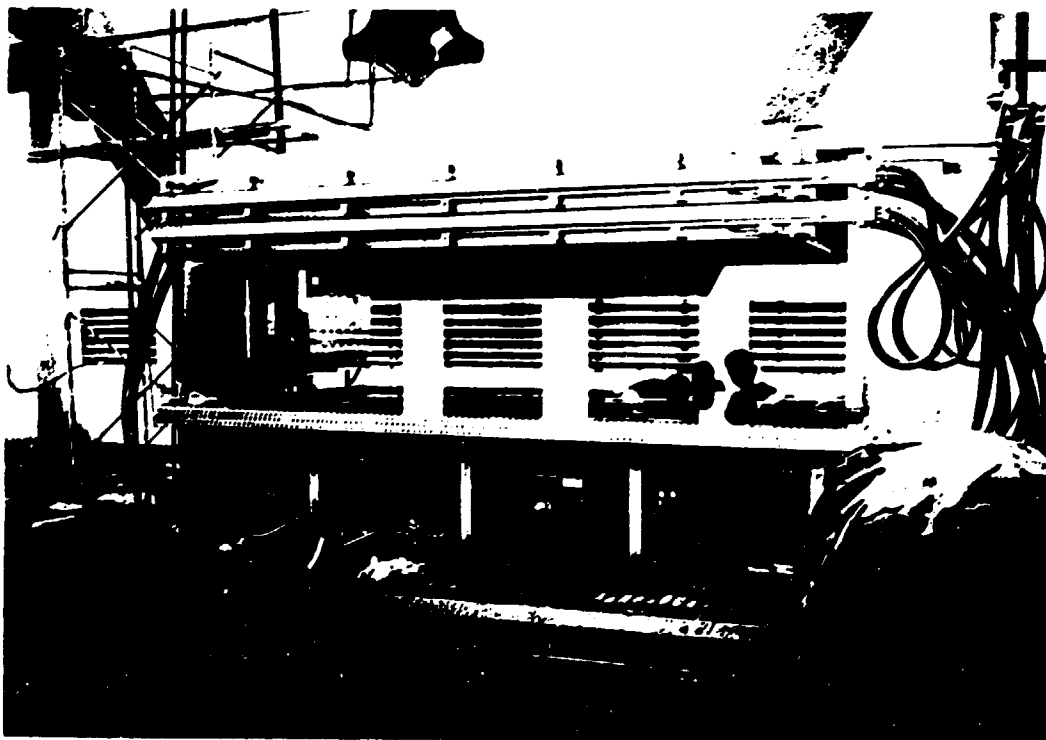
The overall administration of the scheme and co-ordination of inputs will be done by a project officer, associate expert, at UNIDO headquarters in Vienna. The CTA and his team will be located at the Kenya Industrial Research and Development Institute (KIRDI) Leather Quality Control Laboratory and Pilot Plant in Nairobi, which will serve as regional project headquarters. From these regional headquarters the CTA will supervise the activities of the international experts and sub-contractors, as well as those of the national expert appointed in each country of the region covered by this scheme. Through seminars and workshops at various national institutes information on the technological aspects and issues of the improvement scheme will be disseminated on a regional and country level. It is with the potential economy of utilizing inputs that a core of inputs would be maintained to serve the African region.

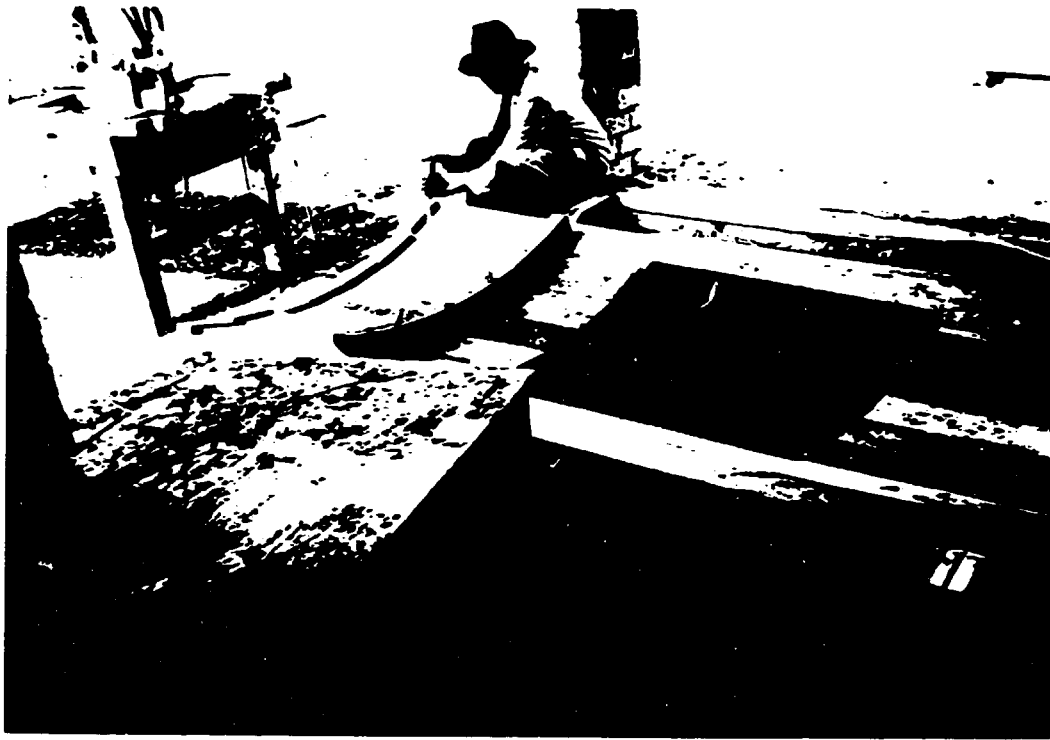
The country projects, on the other hand, are concentrating on direct assistance through expert and sub-contract services. This direct assistance will, firstly, be put into effect in the hides and skins improvement sector and, secondly, in the rehabilitation of selected tanneries and leather product industries. Such rehabilitation objects will be subject to a careful rehabilitation study which will establish the base line data and clear rehabilitation outputs. The rehabilitation of suitable objects will also be carried out under the parallel project US/RAF/88/102, Regional Tannery Rehabilitation Scheme.

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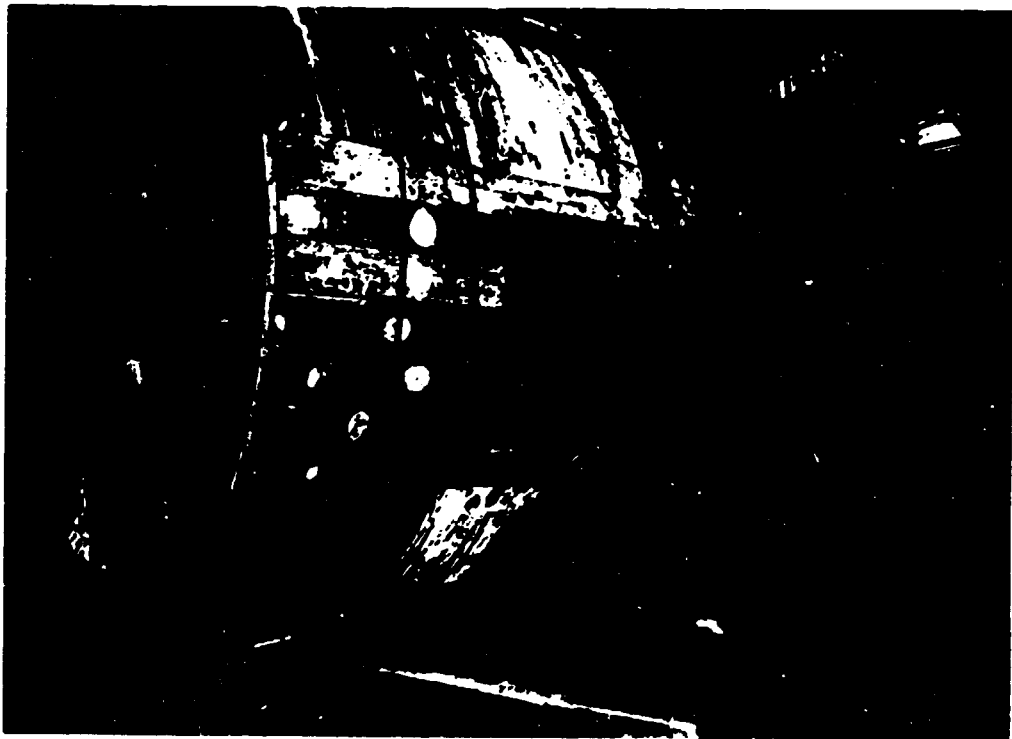


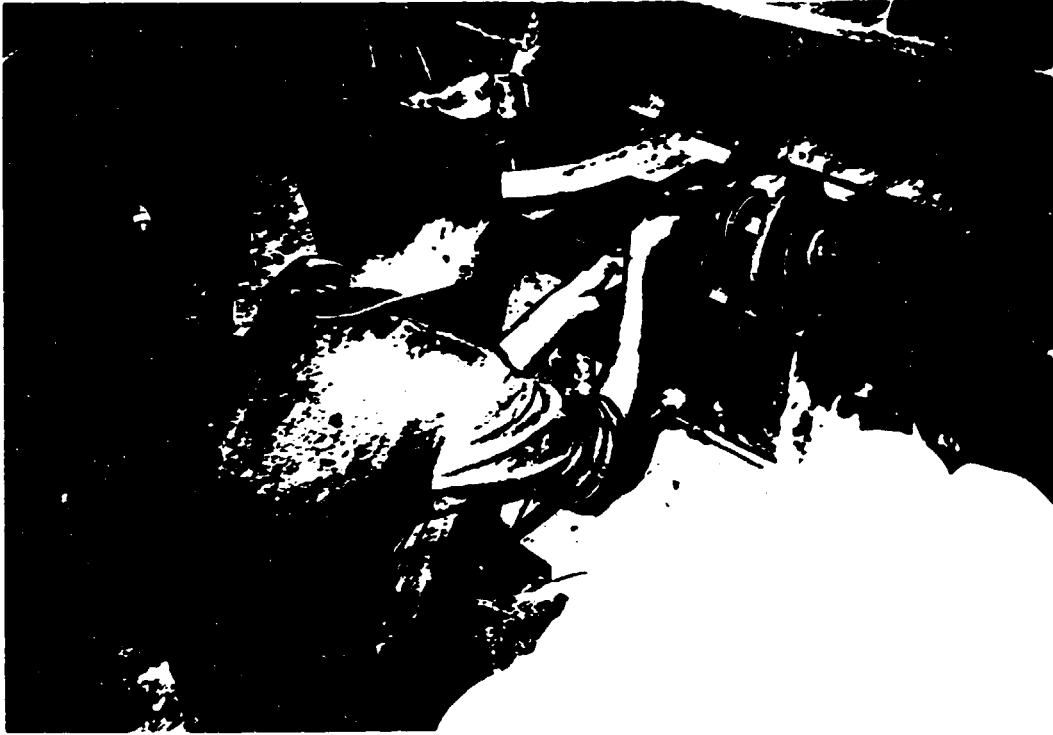
Two men in workshop - May 1948





Drum repairs Bota Kafue - Zambia May 1992

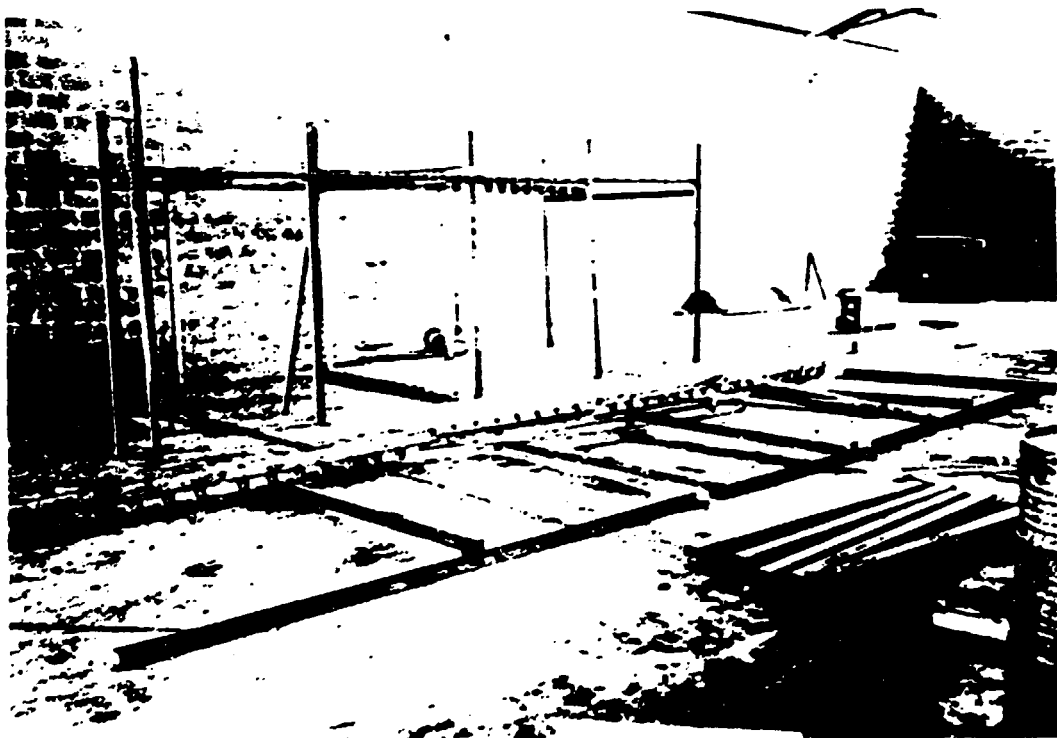




Erasmus - spinning machine - May 1992 - spinning machine



Part of toggle dryer - Kemble Estates



May 1992