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PROSPECTS FOR INTEGRATION IN THE WOODWORKING  
INDUSTRY OF THE CARIBBEAN COMMUNITY

UC/CAR/86/201

Technical report: Review of the Woodworking Unit  
of Things Jamaican Ltd.\*

Prepared for the CARICOM Secretariat  
by the United Nations Industrial Development Organization

Based on the work of Pietro Borretti, woodworking consultant

Backstopping officer: A. V. Bassili  
Industrial Management and Rehabilitation Branch

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## 1. Introduction

### 1.1 Title and number of the project under which this country report has been prepared:

Development of integrated industry programme for the woodworking and furniture industry sector in CARICOM - UC/CAR/86/201

### 1.2 Cooperating Agency:

Caribbean Community Secretariat, Georgetown, Guyana

### 1.3 Institutional contacts in Jamaica:

(a) Furniture and Wooden Products Sub-sector, Jamaican Industrial Development Corporation (JIDC)

(b) Things Jamaican Ltd.

### 1.7 Period of mission in Jamaica:

3 to 7 July 1987

### 1.8 Specific Terms of Reference:

As a result of the Survey of the Jamaican furniture industry carried out under the project, for which a technical report was issued (reference number IO/R.59), the Jamaican authorities requested that a specific request that the consultant return to review the status of the woodworking unit of Things Jamaican Ltd. and make recommendations on the utilization of its facilities. This report covers exclusively his recommendations concerning this additional assignment.

## 2. Summary

The Things Jamaican Ltd. (TJL) Complex was established in 1985 with the objective of spearheading the development of various crafts in Jamaica through the provision of product development, pilot production activities, training and consultancy services.

Since its inception TJL had operated, within its large handicraft complex, a woodworking complex for the production of furniture and wooden ware. In spite of TJL's overall handicraft promotion purpose, the Woodworking Unit soon shifted to an industrial scope and was equipped with a number of industrial-type machinery. In so doing TJL overlooked the technical and managerial complexity of operating a furniture manufacturing plant on a profitable basis.

As the Woodworking Unit could not develop into a viable commercial operation, it was closed down in 1987. This report reviews the status of the Unit and analyzes various alternatives with respect to the utilization of its facilities.

The recommended alternative is for TJL to limit its woodworking activities to providing carving services to Jamaica's export-oriented furniture plants. The implementation of this alternative would involve taking the following steps:

- (a) selling of TJL's existing woodworking equipment to the private industry;
- (b) Purchasing by TJL of two copying and carving machines in two phases:
  - (i) purchasing of a copying machine (see Annex III A) for rough shaping of furniture components, such as cabriole legs, prior to hand carving;
  - (ii) Purchasing of a multi-spindle carving machine (see Annex III B) for rough carving of flat and full round furniture components prior to hand carving.

### 3. Background

Things Jamaican Ltd. (TJL) was established in the mid-1960s by the Government and developed into a large handicraft complex manufacturing and marketing a variety of products such as ceramics, garments, needlework, wooden furniture, etc. By the late 1960s Things Jamaican employed as many as 960 production workers.

Originally, TJL's main objectives centered on promoting employment through product development, demonstration production and marketing of handicrafts. Later its scope was expanded to extension services, technical information services and training.

In 1985, the commercial operations of Things Jamaican included the marketing department (including retail outlets) which was viable and eight production units, none of which were operating on a commercially viable basis. Among these was the furniture manufacturing unit. It is not clear on what basis the TJL wood processing unit had been allowed to shift from its original handicraft scope to the much more complex industrial one involving the purchase of 27 machines. In any case, such a decision overlooked the complexity of combining production activities with product development, training, extension services and information services in an industrial field such as furniture manufacturing. The constraints normally associated with the undertaking of commercial manufacturing activities by the public sector in developing countries were also underestimated.

At the time of the consultant's visit, the TJL woodworking facilities had already been closed down and all workers dismissed.

### 4. Findings and recommendations

#### 4.1 Woodworking equipment

The building of the TJL woodworking unit includes a ground floor measuring 12 x 176 ft (41 x 53.6 m) and half that area on the first floor. The remaining space of the first floor being utilized by the TJL Weaving Unit.

The woodworking unit is equipped with 27 woodworking machines to cover most operations involved in the production of solid wood furniture (see machine list in Annex II). The following gaps were identified by the consultant with respect to the availability of equipment:

- (a) The absence of a spindle moulder which is a basic woodworking machine, except for a hobby-type spindle moulder equipped with 1 HP motor.
- (b) Absence of clamp carriers required for the rapid and efficient edge-gluing of boards into panels utilized in applications such as table tops and casegood components.
- (c) Absence of a round-end tenoning machine to produce tenons matching round-end mortises produced on the existing pneumatic slot-mortising machine.
- (d) Absence of a multi-spindle boring machine so as to allow rational jointing of panels using dowels in case-good construction.

As for tool maintenance, no suitable sharpening equipment could be seen at the TJI woodworking plant - an odd situation for an enterprise which had been expected to fulfill a development role in the wood processing sector.

Only about half the existing machinery is in normal operating condition. Some of the remaining can be utilized at a low level of performance while a few require the replacement of critical parts in order to be brought back to working condition. However, only very few of the existing machines have been subjected to heavy wear in view of the fact that since TJI's inception, the equipment has been utilized only at a fraction of its installed capacity.

A local engineering firm, Messrs. Derick A. Gibson Ltd., was hired by TJI in 1985 to survey the machinery and identify spare parts requirements. A list of needed spare parts for 13 machines found in need of repair was prepared in this respect by the Company. The total cost of spares can be estimated to be between US\$ 16,000 and 17,000. This amount, however, does not include the cost of equipping the machines with a reasonable range of cutting tools.

#### 4.2 Standard of product engineering

The standard of engineering and finish of the few pieces of furniture seen at the furniture plant at the time of the visit was considerably below the acceptable standard. In particular, the furniture seemed to be designed for artisanal rather than industrial production.

4.2 Possible alternatives regarding the TJL woodworking facilities as discussed by the consultant with its management.

From the review made in the course of the mission of the past performance of the TJL Woodworking Unit, the standard of the furniture produced and the status of the equipment, the consultant concluded that over the years TJL could not develop a managerial or technical know-how basis for operating a furniture plant profitably, let alone providing industrial development services to the furniture manufacturing sector.

The main alternatives discussed in the course of the mission with respect to the future of the TJL Woodworking Unit are listed hereunder:

- (a) Establishment of a joint venture with a furniture manufacturing company in the private sector;
- (b) Renting of the TJL Woodworking premises and equipment to a furniture manufacturing company in the private sector;
- (c) Development by TJL of furniture prototypes based on items displayed at the Devon House, as a service to export-oriented Jamaican furniture manufacturers;
- (d) Utilization of TJL's woodworking machines for providing training courses for machine operators;
- (e) Providing wood-carving manufacturing services to the furniture industry on a sub-contracting basis.

4.4 Evaluation of the alternatives

- (a) Joint venture with the private sector  
Outcome of the evaluation: negative

Some members of the Jamaica Furniture Guild had been sounded in the past on this possibility and the consultant himself had the opportunity to discuss the matter with the management of the Fairway Furniture Co. The response of the industry was consistently negative on account of the deep-rooted skepticism on the part of the private sector in the viability of undertaking joint industrial activities in association with a semi-government enterprise such as Things Jamaican Ltd.

- (b) Renting of the TJL woodworking facilities to a furniture manufacturing company  
Outcome of the evaluation: negative

Major difficulties were anticipated by potential tenants on having to depend on the use of the entrance of the TJL compound for access to the woodworking plant. Skepticism was also voiced on the feasibility of sharing building facilities with TJL.

- (3) Development by TJL of furniture prototypes for the industry.  
Outcome of the evaluation: negative

Attempts by most export-oriented CARICOM furniture manufacturers to develop their own designs with respect to overseas markets have generally failed so far. On the other hand, the only CARICOM furniture manufacturer to succeed in establishing a regular export flow to the USA, Messrs. Kingston Heirlooms Co. Ltd., produces period furniture whose design and process specifications are provided by the overseas buyer.

It would seem, therefore, that the undertaking of a furniture prototype programme on the part of TJL would not bring about significant export promotion benefits. On the other hand, some of the period furniture displayed at Devon House (such as those shown in Annex IV) might be suitable for reproduction by Jamaican manufacturers and for export to the USA. Catalogues of such furniture could be prepared by TJL to investigate the interest of USA buyers in this respect.

- (4) Utilization of TJL's facilities to provide wood-machining training.  
Outcome of the evaluation: negative

For TJL to carry out wood-machining training of the formal type it would mean to duplicate the existing woodworking curricula of vocational and technical institutions. On the other hand, TJL could not provide wood machining training under actual production conditions in that so far it has not been able to carry out commercial furniture manufacturing activities on a profitable basis.

- (5) Establishment by TJL of a wood-carving manufacturing centre as a service to export-oriented furniture plants.  
(Recommended alternative)

This particular option was proposed by the consultant as offering immediate and practical benefits to the furniture industry taking into account the constraints and capabilities of a public enterprise such as Things Jamaica Ltd. The proposed manufacturing service would link with the TJL's current hand-carving training programme which was undertaken on the recommendation of UNIDO's staff member (Antoine V. Bassili).

The implementation of the proposed wood-carving Manufacturing Programme would involve the following:

- (i) Selling by TJL of all its woodworking machines, except four pieces of equipment <sup>1/</sup>, to the private furniture manufacturing sector. The equipment would be rehabilitated as required by the buyer(s) on the basis of the parts replacement list prepared by Messrs. Gibson Co. Ltd. for TJL:

- 1/ (a) Thicknessing planer, MULTICO type TH/1, Serial 2162
  - (b) Surface planer, DELTA type 37-315, Serial No. 1391614
  - (c) Bench Saw, DELTA type 34-395, Serial No. 1743993
  - (d) Automatic turning lathe, CENTAURO type T2 BC 100, Serial 000206
- The first three items would be utilized for general maintenance work for the TJL complex, whereas item (d) would be utilized for turning work prior to hand-carving.



(ii) Purchasing by TJJ of the following equipment <sup>1/</sup>:

Phase I

One copying machine for processing to rough shape furniture components such as cabriole legs prior to hand-carving (see Annex IIIB);  
One sharpening machine for cup cutters of above machine.

Phase II

One multi-spindle carving machine (8 spindles) for rough carving of both flat and full round furniture components prior to finish carving by hand (see Annex IIIC)

One sharpening machine for sharpening carving cutters of above machine.

- (iii) Supply by interested furniture manufacturers of ready-dried timber blanks to TJJ;
- (iv) Preliminary shaping and/or carving by machine of timber blanks by TJJ.
- (v) Final hand-carving of pre-machined parts by TJJ;
- (vi) Supply of carved components to the furniture manufacturers for further processing and or assembly.

The proposed wood-carving manufacturing services by TJJ would offer the following main advantages:

- (i) It would enable TJJ to pool the wood carving requirements of the various export-oriented furniture plants, thus providing wood carvers with a more continuous employment opportunity than would otherwise be possible were they to be employed by individual furniture plants;
- (ii) It would minimize managerial skills requirements and overhead costs on the part of TJJ because of the single-process operation of the proposed services as against the complexity of operating a normal multi-process furniture factory;
- (iii) It would relieve individual furniture manufactures with irregular needs for wood carved components from the burden of (i) investing in expensive carving and copying machines, and (ii) maintaining a number of wood carvers on full-time employment regardless of the volume of work on hand.

1.5 Utilization of TJJ drying kiln

The facilities were established on the assumption that they could cater to the needs of a number of furniture factories too small to install their own kilns. In practice, this arrangement has not proved feasible in view of the fact that the kiln consists of a very large chamber with a capacity of 18,000 DM (15.5 m<sup>3</sup>) which would imply mixing timber of various thicknesses thus resulting in poor (or slow) drying.

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<sup>1/</sup> See illustrations and estimated cost in Annex III.

An additional difficulty in combining timber drying needs of many end users is that the moisture content requirements of timber used in furniture for export differs from those of furniture sold on the local market.

It seems that the only apparent solution to the problem of utilizing the kiln facilities is to sell the kiln equipment either to a sawmill or to a lumber importer who would stock dried lumber according to standard sizes for the local market, as is the case, for instance, with the lumber importers Wherry Wharft who operate a kiln with a 30,000 BM (70.8 m<sup>3</sup>) capacity. Once the kiln equipment is disposed of, TJI could utilize the kiln chamber as a warehouse.

ANNEX I

Persons met in Jamaica\*

Mr. S. dello Strologo	UNIDO Senior Industrial Development Field Adviser, UNDP, Kingston
Mr. A. Krufft	UNIDO Expert, c/o Things Jamaican Ltd.
Mr. A. Seaga	Chairman, Things Jamaican Ltd., 68, Spanish Town Road, Kingston
Mr. D. Shields	Manager, Administration and Finance, Things Jamaican Ltd.
Mr. W. Ridgard	Programme Director, Furniture and Wooden Products Sub-Sector, Jamaica Industrial Development Corporation (JIDC), 76 Marcus Garvey Drive, P.O.Box 505, Kingston
Ms. Scotts	Project Officer, JIDC
Mr. T. Smith	President, Kingston Heirlooms Ltd. Furniture Manufacturers, 38 1/2 Red Hills Road, Kingston 10
Mr. J. Reynolds	Managing Director, Caribbean Woodcraft Manufacturing Co. Ltd. (doors and furniture manufacturers), P. O. Box 38, Kingston
Ms. C. Williams	Production and Sales Manager, Caribbean Woodcraft Manufacturing Co. Ltd.
Mr. C. Raebel	Managing Director, Fairway Furniture Factory Ltd., Weymouth Close, JIDC - Complex, Kingston 20
Mr. C. Cunningham	Managing Director, Kreative House (furniture manufacturers), 67 Waltham Park Road, Kingston 11
Mr. D. H. Lea	Managing Director, Ledon Manufacturing Ltd. (furniture manufacturers) 35 Deanery Road, Kingston 3
Mr. F. P. Wilmot	Managing Director, Modern Furnishing Co. Ltd. (furniture manufacturers), 29-35 Slipe Road, Kingston

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\* Including factories visited in previous mission (May 1987)

Ms. M. L. Watt                      Managing Director, MW Furniture Ltd., 30  
Brentford Road, Kingston 5

Mr. O. T. Williams                    Managing Director, Williamsburg Ltd.,  
Furniture Restorers & Manufacturers, 21  
Shortwood Road, Kingston 8

Mr. K. Fearon                         Factory Manager, Morgans Industries Ltd.  
(Furniture Manufacturers), 68 Lady Musgrave  
Road, Kingston 10

Mr. D. G. Lubeck                     Product Development and Marketing  
Consultant, JIDC

Mr. J. Suris                          Technical Consultant, JIDC

ANNEX II  
List of Woodworking Equipment in the Woodworking Unit  
of the Things Jamaican Co. Ltd.

Item No.	M/C No.	Machine description and capacity	Brand, Model No. and Serial No.	Condition
1	12	Thicknesser planer 25" (640 mm)	SCM Mod. S-63	-in working condition -SPL page V 1
2	11	Radial Saw 22" (710 mm) crosscut cap. 10" dia. blade	Wadkin/Bursgreen	in working condition
3		Radial saw 18" (460 mm) crosscut capacity	Rockwell/Delta	-switch out of order -missing blade guard
4		Thicknesser planer 12" (300 mm)	Multico TH/1 Serial no.2462	-rattling cutterblock possibly damaged bearings
5	14	Surface planer 8" (200 mm)	DELTA 37-315, serial no. 1394614	-in working condition -in working condition -missing support of cutterblock guard
6		Dimension saw	SCM S1-15 WF	-in working condition -damaged fence adjustment
7		Multi blade Gang Rip Saw	SCM M3 Serial no. A23299	-out of order -SPL page IV 1/
8	16	Bandsaw Pulley 20" dia.	Rockwell/Delta 28-350 Serial no. 1375834	-in working condition -SPL page V 1 -linings of top and bottom pulleys to be replaced
9	20	Fret saw	Rockwell/Delta 40 440 Serial no. DG 2329	-out of order -possible problem with motor or switch
10		Bandsaw Pulley 14" dia.	Rockwell/Delta Serial no. CV 1481	-in working condition -SPL page II 1/
11		Bench saw	Rockwell/Delta 34-395 Serial no. 1713993	-out of order -problem with switch or motor
12	19	Router (with pneumatic raise and fall of cutting spindle)	SCM RB	-in working condition

1/ Reference to spare parts list prepared in 1985 by Gibson Ltd., Jamaica.

Item No.	M/C No.	Machine description and capacity	Brand, Model No. and Serial No.	Condition
13	3	Oscillating slot mortiser (pneumatic feed and clamping)	Parveau (Alternox) 81 Serial no. 100	-in working condition -SPL page VII <sup>1/</sup>
14	24	Double-spindle boring machine (pneumatic feed and clamping)	Newton (USA) B-100	-pneumatic system out of order
15		Hobby-type spindle moulder (IHP)	Rockwell/Delta 3-120, Serial no. JX 5019	-in working condition
16	6	Wide belt sander	RAMCO, 31 serial no. 1158	-out of order -SPL page III <sup>1/</sup>
17	7	Edge belt sander	Fumagalli 103	-out of order -SPL page III <sup>1/</sup>
18		Combined belt and sander (6" wide belt)	Rockwell/Delta 71-710 Ser.No. KY 6279	-in working condition
19	22	Chain mortiser	Powermatic 15 Ser.No. 662682	-in working condition -SPL page VI <sup>1/</sup>
20	4	Single end tenoner	Powermatic 2A	-in working condition
21	19	Square chisel	Rockwell/Delta 15-017 Ser.No. 1402018	-in working condition
22	15	Drill press	Rockwell/Delta 17-600 ser.no. 1407071	-in working condition -SPL page II <sup>1/</sup>
23	8	Turning lathe (automatic) 44" (1,120 mm)	Centaurus T2BC-100 Ser.No. 000206	-automatic operation out of order -SPL page I <sup>1/</sup>
24	21	Turning lathe 36" (900 mm)	Powermatic 15	-out of order -SPL page III <sup>1/</sup>
25		Surface planer 6" (150 mm) planing width	Rockwell/Delta 27 220 ser.no. 1744992	-in working condition
26		Turning lathe 30" (760 mm)	Rockwell/Delta 16-525 ser.no. 1365270	-out of order -missing tail stock and head stock entries

<sup>1/</sup> Reference to spare parts list prepared in 1985 by Gibson Ltd., Jamaica.

Item No.	M/C No.	Machine Description and Capacity	Brand, Model No. and Serial No.	Condition
27		Turning lathe 30" (760 mm)	Rockwell/Delta 46-201, Ser. No. 1803501	-out of order, -SPL page III

1/ Reference to spare parts list prepared in 1985 by Gibson Ltd., Jamaica.

Note: This machinery list does not include the tool maintenance equipment.

ANNEX III A

Cost Estimate of New Machines Required for the Establishment  
of the Proposed Wood-carving Manufacturing Centre by TJI.

<u>1. Equipment required for Phase I</u>	<u>Estimate cost US\$</u>
1.1 One copying machine $\frac{1}{2}$ ' with 3 or 4 cutterblocks FOB (see illustration in Annex III B) Typical equipment: BACCI Mod. T2M-0 COSMA Mod. SKS 7 111 VALERI Mod. 4M/65x1000 mm	12,200
1.2 One sharpening Machine for cup cutters of above machine, FOB Typical equipment: VALERI	2,000
- Tropical insulated motors and overload switches FOB	300
- Spare parts and cutting tools for two year operation FOB	1,400
Total FOB cost	16,900
Total CIF cost	<u>20,200</u>
<u>2. Equipment required for phase II (optional)</u>	<u>Estimate cost US\$</u>
2.1 One multi-spindle carving machine $\frac{2}{2}$ ' (8 cutting spindles), see Annex III C Typical equipment Nuova Scolpitrice, Mod. 201 Osco, Mod. RSKB Reichenbacher, Mod. S1	36,000
2.2 One sharpening machine for carving cutters of above machine Typical equipment Interwood, Mod. MK 6	2,300
- Tropical insulated motors and overload switches	1,600
- Spare parts and cutting tools for two year operation	2,000
- Total FOB cost	41,600
- Total CIF cost	<u>49,900</u>

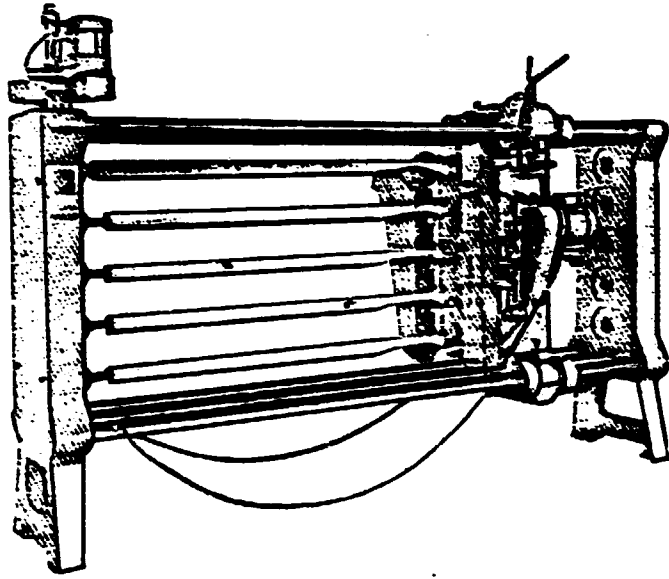
$\frac{1}{2}$ ' Maximum length of workpiece: 1000 mm (39")  
Minimum acceptable distance between centres of cutting spindles is  
300 mm. (12").



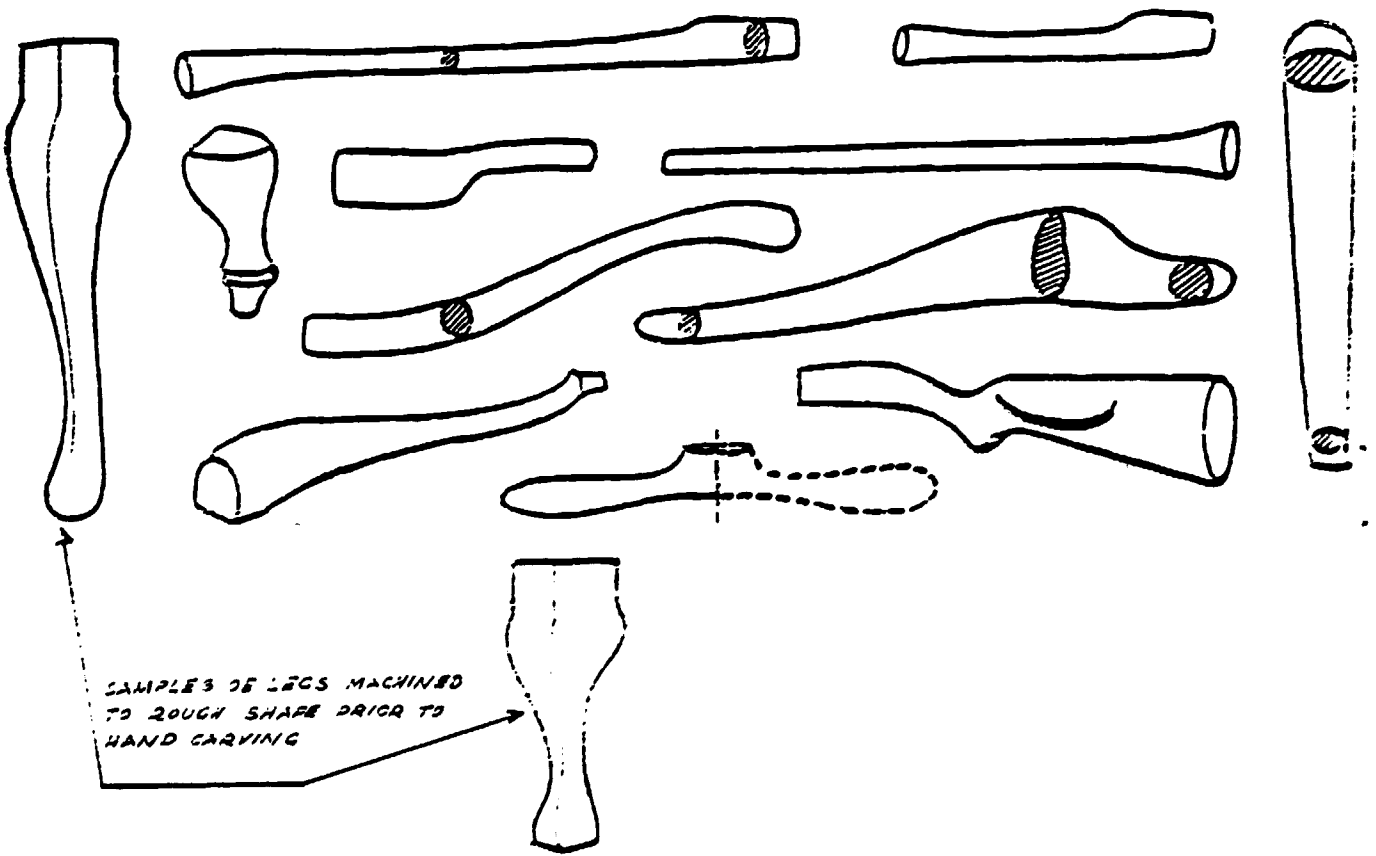
ANNEX III 5

Copying Machine

FOR MACHINING TO ROUGH SHAPE FURNITURE  
COMPONENTS PRIOR TO HAND CARVING



production-samples

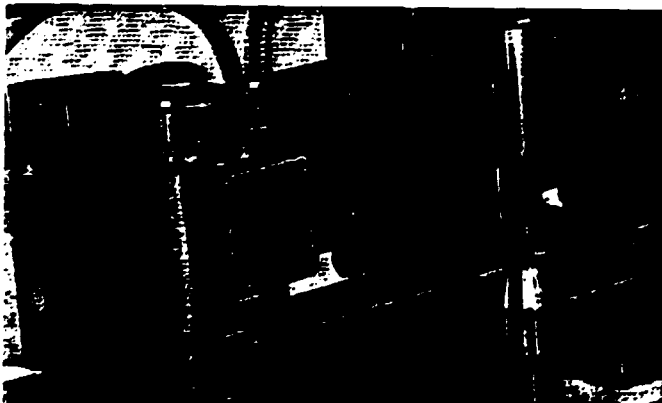
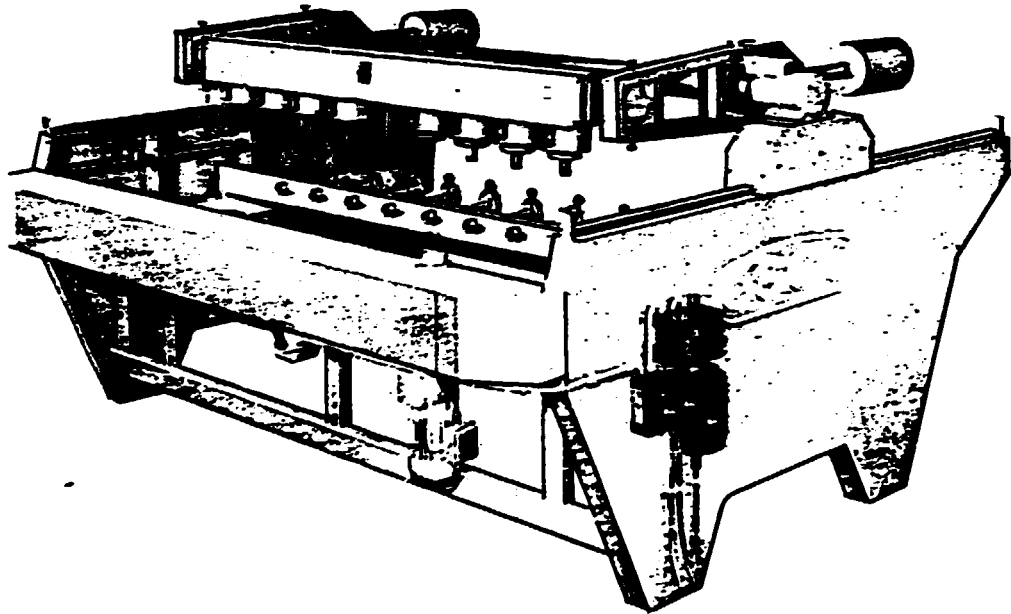


SAMPLES OF LEGS MACHINED  
TO ROUGH SHAPE PRIOR TO  
HAND CARVING

ANNEX III C

Multi-spindle Carving Machine

*FOR ROUGH CARVING FLAT AND FULL-ROUND FURNITURE  
COMPONENTS PRIOR TO HAND-CARVING*



ANNEX IV

Illustration of Selected Furniture Items Displayed  
at the Boring House

