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(R) GAMBIA: SURVEY OF, AND TECHNICAL ASSISTANCE TO THE  
FURNITURE INDUSTRY

XP/GAM/86/040/11-51

GAMBIA

Terminal Report \*

Prepared for the Government of the Republic of the Gambia  
by the United Nations Industrial Development Organization

Based on the work of Desmond<sup>P.</sup> Cody  
Consultant in furniture and wood industry

Backstopping Officer: S. Çinar, Agro-based Industries Branch

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V.86-61451

(ii)

Notes

Reference to dollars is to United States dollars unless otherwise stated.

The monetary unit in the Gambia is the Dalasi (Di). During the period covered by this report the value of the Gambian Dalasi to the United States dollar was \$1 = Di 8

The following abbreviations and symbols are used in this report:

CICES	Centre International pour le Commerce Exterieur
GTTI	Gambia Technical Training Institute
IBAS	Indigenous Business Advisory Service
KD	Knock Down
PNUD	United Nations Development Programme
SONEPI	Societe National d'Etudes et de Promotion Industrielle
UNIDO	United Nations Industrial Development Organisation
MEPID	Ministry of Economic Planning and Industrial Development

(iii)

Abstract

This report contains a detailed description of the Gambian furniture and woodworking industry together with an assessment of its potential. It also sets out the criteria by which it should be developed in the future. Further international technical assistance is recommended with the help of UNDP/UNIDO.

Problem areas and shortcomings are identified and recommendations are made regarding their solution. They refer in particular to product design, raw materials procurement, production technology, quality standards, workshop management and productivity.

Reference is also made to the need for industrial, technical and management training.

The recommendations arrived at in respect of the foregoing are incorporated in the text and are also summarised in the chapter dealing with conclusions and recommendations.

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## INTRODUCTION

The Republic of the Gambia is one of the smallest countries in West Africa with a total surface area of about 11,000 square kilometers of which no more than 3% is covered by forests. This contains about 150 species of woody plants but less than 20 could be considered suitable for timber-based production.

Annual extraction is under 500 m<sup>3</sup> and as a consequence, domestic demand has to be met almost entirely from imports. This is consumed mainly by the building and general woodworking industries (carpentry, joinery and furniture making) of which there are about 147 production units ranging in employment from 5 to 20 persons per unit. An exception to this was the recently closed down woodworking workshop of the Public Works Department which employed 90 persons. It is intended that this should re-open in the near future under private sector management.

As part of a strategy to assist in the development of the economy, the Gambian Ministry of Economic Planning and Industrial Development has identified the woodworking sector as one with the potential for growth in relation to domestic demand as well as exports especially to the neighbouring Republic of Senegal, the source for most of its raw materials.

The mission of the consultant was to assess the current state of development of the furniture and general woodworking sector and to provide short and long term recommendations for its future development. The project lasted 25 days from 15 August to 8 September of which 5 days were spent in Dakar, the Republic of Senegal, examining the potential for future exports of furniture and other wood products. The remaining time was spent in the Gambia during which a survey of the industry was carried out, some ad hoc consultancy was provided at individual workshop level and discussions were held with relevant government and other organisations. In addition, the consultant was requested to devote particular attention to the carpentry and joinery workshop of the Public Works Department and to advise on how best to re-organise it on a commercially viable basis and to affect its smooth transfer to the private sector. Recommendations regarding this are included in Annex 4. The consultant's job description is given in Annex 1.

The Indigenous Business Advisory Service (IBAS) under the Ministry of Economic Planning and Industrial Development was assigned to be the counterpart agency to the Consultant and one of its field advisers Mr J.D. Thomas, arranged visits to workshops and other organisations and accompanied the consultant on each such visit.

The workshops and organisations that co-operated with the consultant in his field of work or participated in the project are listed in Annex 2.

Before his departure from the Gambia, the consultant presented his findings and recommendations at a meeting of all participating workshop owners. This meeting was held in the office of IBAS in Banjul on 4th September 1986.

## FINDINGS

### A. General observations

Because of the limited time available and the difficulties encountered in respect of transport, the consultant confined his activities to those workshops and enterprises in and surrounding Banjul, capital of the Gambia. This included the towns of Serrakunda and Bakau.

In almost all cases, infrastructural facilities, especially electrical power supply, telephone communication, and access roads, were found not to be good. One workshop owner had his own diesel-powered generator. All the firms were aged between 2 and 10 years and without exception were privately-owned by individuals who had previously been employed as woodworkers (machinists, carpenters and furniture-makers) by the woodworking workshops of the Public Works Department.

All the products of the workshops are sold locally with the government of the Gambia being itself the largest single customer and accounting for well over 50% of total annual sales. These are estimated at about Dalasis 3 millions with an import component of approximately Dalasis 1 million. There are currently no exports of wood products from the Gambia with the exception of low-priced and poorly executed wood carvings (figures and masks) which are sold to visiting tourists.

There are no more than two retail outlets in the Gambia and most furniture items are sold directly to the public. Prices tend to be high mainly because virtually all raw materials have to be imported and duties are payable on all such imports. Delivery in most instances may take anything from six weeks to four months, depending on the availability of raw materials and a reasonably uninterrupted supply of electrical power.

The woodworking sector, since it is no more than a collection of tiny workshops, could not justifiably be described as an industry. It is badly housed and poorly equipped, levels of technology are low and the end product lacks the essential basics of design and quality. None of the workshops are financially strong and tend to live a "hand to mouth" existence with each item to be manufactured being financed out of advance deposits made by prospective customers.

Factors which have contributed to this generally unsatisfactory situation include the tiny size of the market available to producers and its consequent effect on investment, unawareness of technical developments in woodworking particularly in design and quality standards, untrained and inexperienced personnel, grave difficulties in obtaining raw materials, low productivity and no understanding of the marketing of wood products.

These and other factors concerned with development are dealt with in ensuing chapters.

## B. Product characteristics

The products manufactured by the various workshops may be classified as follows:

- (a) Solid wood items e.g. chairs and table frames;
- (b) Case goods e.g. storage units for bedroom, livingroom, diningroom and kitchen, bed-ends and table tops;
- (c) Semi-upholstered and fully-upholstered seating;
- (d) Office, school and other institutional-type furniture;
- (e) Windows, doors and other joinery items.

Most designs and specifications especially for government contracts emanate from the Department of Technical Services, Architectural Section and have been used repeatedly and without alteration for many decades. The size of such contracts varies between 6 and 200 items with school furniture accounting for the largest volume. Furniture for domestic use generally follows the design pattern of that for government contracts unless otherwise specified and there is very little to distinguish between the two.

Designs themselves are basic and unimaginative and reflect the total absence of creativity and design expertise. This comment refers not only to the aesthetic aspect of design but also to its functional requirements especially in relation to dimensional accuracy and appropriate use of various materials. This is of particular importance in the context of the Gambia where possible design solutions must be sought in circumstances of acknowledged limitations in materials, production skills, manufacturing facilities and market potential.

Accordingly, any technical assistance programme envisaged for the immediate future must, as a first step, tackle the problem of design especially in relation to government contracts. New ranges intended for a variety of purposes should be introduced to replace the existing ones and should incorporate the aspects already referred to as well as the following:

1. Standardised components and elements e.g. drawers, doors, shelving;
2. Reduced dependence on imported hardware, adhesives, lacquers and upholstery materials;
3. Appropriate technology for frame, carcass, door and drawer construction;
4. Considerably improved quality standards,
5. More competitive pricing.



### C. Raw materials

All materials for use in woodworking including solid wood, plywood, fittings, hardware, ironmongery (except nails) adhesives, surface coatings, glass, mirrors and upholstery materials have to be imported, mainly from neighbouring Senegal, Liberia, Guinea Bissau and Ghana. Their purchase from importers and agents on a cash-on-delivery basis is both expensive and in the case of timber, wasteful, since standard sizes are not often available. The goods are dutiable but duties are not high. There is usually a long delivery time and often second and third rate materials have to be accepted since there are no alternatives.

The dependence by the sector on imported materials of all kinds will continue for the foreseeable future. It is therefore essential that a more rationalised approach to the purchase of such materials, preferably on a co-operative basis, should be undertaken, especially by these half dozen or so workshops, including that of the Public Works Department, which share in the production of government contract work. Moves towards this end were put in train before the consultant left the Gambia and these should receive the encouragement and full support especially of MEPID and the Government Purchasing Department.

### D. Production

All the workshops, with the exception of the PWD, are operated either manually with the use of simple hand tools or in a semi-mechanized manner using mainly a universal woodworking machine. The PWD workshop, by comparison, is well equipped although most of the machines are under-utilized because of shortages of spares and accessories. It is usually possible for the latter to provide additional machining capacity for the other workshop owners and as a result a good working relationship has developed which augers well for a closer association in the future. In addition to the difficulties associated with the procurement of raw materials already referred to, the workshops have also to contend with poor housing, bad flooring (some are working on the bare earth) inadequate work benches, periodic power failures and wet and unworkable timber, particularly in the rainy season.

There are no timber drying facilities in the Gambia and while effective air-drying is possible during the dry season, (mid-October to mid-April) it is out of the question during the rainy season when the atmosphere reaches almost saturation point. In any event, most workshops cannot afford to carry stocks on the question of seasoning hardly arises.

Maintenance of machinery and equipment is carried out usually when breakdowns occur and machine accuracy is checked by visual inspection. The Public Works Workshop is the only one with can provide sharpening and cutter-grinding equipment and expertise and this service is availed of by the other workshop owners whenever possible. This is a further valuable aspect of co-operation which should be encouraged and developed by all concerned.

Not surprisingly the above constraints and inadequacies are reflected in the quality and marketability of the end products. This is further

exacerbated by the evident un-awareness of the personnel involved, owners and workers alike, as to what constitutes reasonably acceptable standards for furniture production. This is something they have yet to learn and it can only be achieved through an integrated approach to the problem which embraces not only product design and its associated technology but also includes such important aspects as workshop organization, work planning, supervision, costing and estimating and at least some appreciation of marketing and selling.

Training, therefore, in all these aspects of workshop management and operation should also feature prominently in any future technical assistance programme. Meanwhile, attention is drawn to Annex 3, Figures 1-10, which provide information on simple quality control measuring gauges, moulds for accurate plywood bending and basic frame and carcass construction.

#### E. Personnel

As already indicated, the workshops visited had an employment range of between 5 and 20 employees, the exception being the workshop of the PWD which employed 90 persons. Generally speaking education standards for owners and workers alike were found not to be high and most had learned their trade informally. The exceptions were two owners who had worked for a period in the furniture industry in the United Kingdom. It should be added that more recent entrants to the trade now have the benefit of relevant training at the Gambia Technical Training Institute (G.T.T.I). One person attended the UNIDO-sponsored training course in Lahti, Finland, in 1977.

The wage rate in the Gambia ranges between Dalasis 10 and 15 per day, depending on the levels of skill and experience attained. This is the equivalent of U.S.\$7 and \$11 per 5-day week of roughly 40 hours. These rates should give the Gambia workshops quite an edge cost-wise, over their counterparts in neighbouring Senegal if and when they succeed in exporting to that country. However, in the meantime, productivity will need to improve quite considerably. At present, it barely covers basic production costs and its current low level is mainly attributable to poor product design and insufficient manufacturing expertise and production equipment.

As has already been emphasised these factors have obliged workshops to collaborate in endeavouring to make the best possible use of very limited resources. This tendency should be given every encouragement and its development should form an integral part of any future technical assistance programme. All the workshops share common problems in respect of raw materials procurement, very limited production facilities, the need to upgrade production and management skills. They already benefit marginally from a share-out of government contracts and if the latter can be based on a design programme which has regard to all of these factors and yet enables them to produce an attractive and saleable product then a major step forward will have been achieved in its progression to viability and profitability.

## F. Marketing

The market for furniture and other wood products in the Gambia is unlikely to increase substantially in the immediate future from its current level of approximately Dalasis 3 millions. However, as already indicated, this contains an import figure of about Dalasis 1 million to which may be added a further Dalasis 1 million or so, for mattresses. An immediate aim should therefore be to increase the market share for local workshops by endeavouring to substitute acceptable products for those currently being imported. In addition, there are promising marketing possibilities in neighbouring Senegal. For example, in 1984, the latest year for which figures are available from the Direction de la Statistique in Dakar, Senegal imported over US\$1 million in solid wood-based furniture alone, not to mention equally substantial volumes of other types of wood products and mattresses.

An examination of the furniture on offer in some of the major retail outlets in Dakar indicated that much of the merchandise could be well within the competence of the Gambian workshops provided they are assisted in developing along the lines already suggested. A further note of encouragement may be sounded in respect of pricing, where undoubtedly much lower operating costs in the Gambia, especially in respect of labour, would enable the supply of very competitive goods to the Senegal market despite a 60%, or higher, import tax.

It would be important, however, for the Gambia to carefully select the sector of this market best suited to its developing expertise so that the available resources, however limited they may be, are used to the best advantage. This means that it will be confined almost exclusively to furniture and other products made substantially, if not entirely, from solid wood, the exception being table tops and panels which can be made from veneered and edge-treated plywood.

The furniture should be well designed, be capable of being produced in the various workshops on the basis of low-cost mechanization combined with a careful balance of hand-crafting and should be in accordance with the following:

1. The use mainly of African mahogany (*Khaya Senegalensis*), imported from West Africa, as well as limited supplies of some timber species indigenous to the Gambia namely African Rosewood, Wollo (*Terminalia Albida*) and Santango (*Damalia Oliveri*).
2. Range of utility-type contract furniture suitable for government offices, institutions, hotels, hospitals and schools. The range should also be capable of being adapted for the local domestic market.
3. Range of solid wood-based and veneered plywood-based domestic furniture incorporating where appropriate simple self-assembly or knock down techniques and capable of being exported in a pack-flat form. Particularly suitable would be a range of occasional furniture to include nest of tables, wine/lamp tables, stereo/record unit, T.V. table, telephone table etc. A feature of this range should be the use of purpose-designed fittings and accessories (wood and metal) which would be made in the Gambia.

4. Range of wood/metal outdoor furniture suitable for hotels.
5. Finish to be brush or spray applied acid-catalysed lacquer or shellac (french polish) used in conjunction with a sanding sealer.

In all of the above cases a quality must be achieved which is a considerable improvement on that practised at present. This is particularly so in respect of exports and the importer will expect both quality and price to be competitive with locally produced furniture.

#### G. Follow-up action

The Consultant recommends immediate follow-up action in the shape of further international assistance for the woodworking sector based on the recommendations in this report. This should take the form of an integrated product design/development and technological programme with the objective of raising the overall standards of design, quality and productivity for the Gambia and Senegalese markets. It should be confined to the workshops named in this report and should be implemented on the basis of a collaborative group project.

Details of the proposed consultancy programme may be summarised as follows:

(1) Product design and development

Introduction of new designs and adaptation of existing ones in line with market requirements and limitations in materials and equipment. Design development to production stage including prototyping, preparation of working drawings and production aids.

(2) Production technology and quality control

Appropriated drying, glueing and finishing of wood. Constructional details for solid wood furniture and joinery. Techniques related to machining, low-cost mechanisation, sanding, assembly and finishing. Use of knock-down techniques. Establishment of quality standards related to tolerance determination, performance and attention to detail.

(3) Production planning and control

Development of simple procedures for work planning, costing and estimating, materials and labour control, workshop accounts and inventory control. Workshop layout and use of simple materials handling and storage devices.

(4) Workshop management

Work allocation and scheduling. Target setting. Supervision. Cost and quality control. Workshop production documentation. Exporting procedures. Co-operative design, raw materials purchasing, production and marketing activities.

(5) Trade exhibition

Towards the end of the consultancy an exhibition and trade fair for the new ranges should be mounted in Banjul or its environs to which selected importers from Dakar should be invited. This fair would provide both an incentive and objective for the participating workshops and would concentrate their minds and energies towards this end.

(6) Counterpart agency

This should be the Indigenous Business Advisory Service of the Ministry of Economic Planning and Industrial Development of the Gambia, (IBAS) whose personnel and work ethos would benefit considerably from participation in a result-oriented project of this nature.

(7) Consultants

(a) Furniture designer with experience of designing wide range of furniture and accessories for contract and domestic markets in the control of very limited raw materials procurement and production expertise. He should be familiar with production carried at workshop level.

Period: 1 month

(b) Production technician with considerable experience in all aspect of workshop planning, production management, costing, quality control, machine set-up and maintenance, low-cost mechanisation, timber drying and finishing.

Period: 3 months

(8) Required government inputs

(a) Air-conditioned office and draughting facilities for both consultants.

(b) Full-time transport, driver and sufficient fuel to enable consultants to carry out all their field work efficiently.

(c) Full time secretarial service.

## CONCLUSIONS AND RECOMMENDATIONS

### A. Conclusions

1. The furniture and woodworking industry in the Gambia is confined to a small number of workshops located in and around Banjul, the capital.
2. The market for furniture is accounted for mainly by government purchases and to a lesser extent by domestic purchases. Some furniture is imported from Europe.
3. There is a dearth of purpose-designed products which reflect consumer demand and workshop capability.
4. Manufacturing facilities i.e. buildings, machinery and other production equipment are generally unsatisfactory and reflect low levels of investment in all three.
5. Production technology, quality standards and workshop management need to be upgraded considerably in all the workshops.
6. Practically all raw materials required for production must be imported, are expensive and are often in short supply.
7. There are no exports of wood-based products from the Gambia but the possibilities of so doing are there.
8. None of the workshops is financially strong and there is a severe shortage of working capital.
9. Personnel seem to be largely unaware of and isolated from the technical and other developments which have taken place in woodworking industry elsewhere.
10. Training facilities for existing personnel in the industry need to be upgraded and made more relevant to the industry's immediate needs especially in production technology, product development and workshop management.
11. There is some co-operative activity among workshop owners especially in respect of machining and machine maintenance requirements.
12. None of the workshop owners appear to fully understand the financial and marketing implications of their businesses.
13. Support services from other state agencies especially in respect of management (financial and technical) marketing and industrial training require to be made more effective.
14. Similar observations apply in respect of power supply, telephone and workshop access.
15. The immediate future of the industry lies in the production of ranges of well-designed furniture which have regard to existing constraints in respect of limited raw materials procurement, limited production

facilities and limited market potential. The possibilities for some exports do exist and need to be included in any development strategy.

16. The industry urgently needs assistance towards this end.

## B. Recommendations

### 1. General

The Gambia woodworking industry, the Indigenous Business Advisory Service of the Ministry of Economic Planning and Industrial Development and the National Investment Bank should collaborate closely in a programme of development along the lines recommended in this report. Among the matters to which they should give immediate attention are:

- (a) Improvement in design standards;
- (b) The need for a rationalised and co-operative production for all the workshops involved;
- (c) The need for joint effort particularly in ensuring the supply, purchase, handling and preparation of timber and other materials, processing equipment and essential spares and accessories;
- (d) The low level of production efficiency and quality standards;
- (e) The need to raise the standard of labour productivity;
- (f) The urgent need for management and technical training;
- (g) The need to develop some export activities especially to neighbouring Senegal
- (h) The need to re-organise the Public Works Workshop under new management.

### 2. Design

- (a) The agencies referred to in 1 above should seek the assistance of UNIDO in raising the general standards of design in the industry.
- (b) This can best be achieved by commissioning a short-term consultancy programme on design and product development to be carried out at individual workshop level.
- (c) The various government purchasing departments should co-operate by ensuring that their furniture purchases conform to the new design programme.
- (d) In order to develop native design expertise, architects and others with an interest in and flair for design should be encouraged to develop this essential activity.

### 3. Manufacturing facilities

- (a) Attention should be given to the general improvement and layout of workshops, use of space and general working conditions.
- (b) Better use should be made of all existing processing machinery and equipment through better set up and maintenance, use of purpose

designed jigs and formers, low-cost mechanization, machine adaptation and sub-contracting of scarce equipment on the basis of production collaboration.

- (c) The industry urgently needs better machine maintenance and set up facilities and timber drying facilities. These could be centrally located for use by all in the re-organised Public Works workshop along with other scarce processing equipment.

#### 4. Raw materials

- (a) Since practically all raw materials used by the industry have to be imported, the workshops should endeavour to purchase them as far as possible on a co-operative basis or in collaboration with an importer who would procure them on the best possible terms and in accordance with the appropriate specifications.
- (b) The speedy development of export items would greatly facilitate the generation of hard currency for this purpose.
- (c) Counter-trading should also be considered as a possibility.
- (d) The industry should also follow up the possibility of obtaining some supplies of local timber especially from the sawmill of the Gambia-German Forestry Project which is currently extracting and marketing some commercially interesting species.

#### 5. Production

- (a) The introduction of purpose designed and more rationalised furniture ranges should lead to improved quality standards, higher productivity and lower costs.
- (b) The industry's technological base should be strengthened by greater awareness of established production techniques particularly in relation to solid wood processing.
- (c) This can best be achieved by the design and technical consultancy referred to.
- (d) Quality standards require to be rigidly applied especially in the key areas of machining sanding and finishing.
- (e) Prototyping and product development especially for government purchased furniture should be carried out at the newly developed central workshop.

#### 6. Industrial training

- (a) Industrial training for all levels of personnel in the industry is urgently needed. It should include in-workshop training as well as training in a technical institute.



- (b) Training programmes should be based on the industry's needs many of which have been identified in this report.

7. Exports

- (a) Given the right products there are distinct and positive possibilities of developing furniture exports of a particular kind to Senegal. This, therefore, should be included as an important objective in the proposed technical assistance programme.
- (b) A special training course in export marketing for participating workshops should also be included, once the level of furniture produced has improved.
- (c) Distribution arrangements should be left to an experienced and knowledgeable importer agent who would also be prepared to assist in obtaining essential materials and equipment not available in the Gambia.

PROJECT OF THE GOVERNMENT OF GAMBIA  
Survey of and Technical Assistance to the Furniture Industry

**JOB DESCRIPTION**  
**XP/GAM/86/040/11-51/JI 3101**

<b>Post title</b>	<b>Consultant in Furniture Production</b>
<b>Duration</b>	<b>One month</b>
<b>Date required</b>	<b>As soon as possible</b>
<b>Duty station</b>	<b>Banjul and Dakar</b>
<b>Purpose of project</b>	<b>To provide the Gambian Government with the basic data to formulate programmes to establish labour intensive production technologies for the serial production of furniture and joinery items for local and export markets, to improve managerial, technical and marketing skills of the Gambian nationals through industrial training, to increase the production capacity and productivity of the existing manufacturing facilities and to identify the specific areas of the furniture industry that need further technical assistance.</b>
<b>Duties</b>	<b>The consultant will be assigned to the Ministry of Economic Planning and Industrial Development and will cooperate fully with the counterpart staff. The consultant will, in cooperation with the counterpart staff, agencies, institutions and other bodies, be specifically expected to:</b>  <b>1. Prepare a questionnaire for the survey of the national furniture and joinery industry.</b> <b>2. Visit the furniture and joinery production and other wood processing establishments and with the assistance of the counterpart staff conduct the survey and compile the data collected in Gambia.</b> <b>3. Study and analyse the country's short and long-term national programmes in the field of wood processing industries.</b> <b>4. Conduct a product survey in workshops and showrooms of the locally manufactured and imported furniture.</b>

5. Analyse the results of the survey in terms of existing manufacturing facilities, raw material resources and supplies, market structure, design trends, manpower, capital and training requirements, technology and equipment used, etc.
6. To the extent possible, give trouble shooting advice to the main woodworking facilities in Gambia on product design, production methods, low-cost automation, finishing and other specialized fields to improve the efficiency and capacity utilization.
7. During the 4th week of his mission, visit Dakar, Senegal and conduct a market survey for the possible export of the Gambian furniture to this country.

The consultant will also be expected to prepare a final report, setting out the findings of his mission and his recommendations to the Government on further action which might be taken.

**Qualifications**

University degree or equivalent qualification in wood technology or engineering with considerable experience in all kinds of furniture and joinery production both for home and export markets. Familiarity with conditions in developing countries an asset.

**Language:**

English

**Background Information:**

The forestry resources of Gambia are not very rich especially when compared with those of the other coastal West African countries. The total forest area of the country is less than 3% of the whole land area.

Annual log extraction from the country's forests is under 500 m3. Domestic demand for timber is met with imports.

The woodworking industries are not well developed to supply the high quality doors, windows, built in and knocked down (KD) furniture demanded by the hotel and tourism industry as well as the house owners.

Modern collapsible house furniture is very popular among Gambian house owners. The needs for such products are met with imports using hard foreign currency which the country badly needs for more urgent needs.

There are only a few functioning woodworking complexes. The Utilization Unit of the Forestry Division of the Ministry of Agriculture owns a mechanized sawmill and woodworking plant at Brikma, adjacent to the Nyambai forest reserve, about 18 miles from Bathurst along the main road. Their manufacturing programme includes sawn timber, fences and crates, etc. The other woodworking complex is the joinery workshop of the Public Works Department at its site in Bathurst. The activities of this workshop include the manufacturing of joinery furniture for governmental offices and houses. One or two privately owned woodworking facilities may also exist but available data is not sufficient to make any further elaboration.

If the Gambian furniture industry is brought up into a position of self-sufficiency to manufacture high quality items, it can make a considerable contribution to ease the foreign currency requirements of the country by firstly replacing imported furniture and secondly by exporting to the neighbouring countries, especially to Senegal.

Annex 2

Firms and organisations that co-operated  
with the consultant in his field of work

1. Cham & Secka Industries Ltd.,  
Furniture Manufacturers,  
P.O. Box 726,  
Banjul,  
The Gambia.
2. Habib Jeng,  
Carpentry and Joinery Works,  
Letrikunda,  
Kombo St. Mary Division,  
The Gambia.
3. Yala Yana Co. Ltd.,  
Carpentry & Joinery Workshop,  
At Kanizing South,  
The Gambia.
4. Classic Furniture Co. Ltd.,  
Off Pipeline Road,  
Near Westfield Junction,  
Serrekunda,  
The Gambia.
5. S.O.S. Training and Production Centre,  
BAKOTGH,  
The Gambia.
6. Carpentry & Joinery Workshop,  
Public Works Department,  
Banjul,  
The Gambia.
7. Gambia Furniture & Carpentry Co.,  
P.O. Box 927,  
Banjul,  
The Gambia.
8. Secken Enterprises & Co. Ltd.,  
Furniture Manufacturers,  
P.O. Box S-K 2585,  
Mosque Road,  
Serrekunda K.S.M.D.,  
The Gambia.
9. Shipton Salvage Ltd.,  
Exporters,  
122 Pipeline Road,  
Banjul,  
The Gambia.

10. Gambian-German Forestry Project,  
P.O. Box 504,  
Banjul,  
The Gambia.
11. Ministry of Economic Planning & Ind. Dev.,  
Banjul,  
The Gambia.
12. Indigenous Business Advisory Service (I.B.A.S),  
22 Anglesea St.,  
Banjul,  
The Gambia.
13. Forestry Department,  
Banjul,  
The Gambia.
14. Department of Technical Services,  
Ministry of Works and Communications,  
Banjul,  
The Gambia.
15. Central Statistics Department,  
Banjul.
16. Gambia Artisans & Marketing Co-operative,  
P.O. Box 2502,  
Bakau,  
The Gambia.
17. Société Nationale d'Etudes et de Promotion Industrielle (SONEDI),  
Avenue Bourguiba,  
Dakar  
Senegal.
18. Division Production Industrielle,  
Direction de l'Industrie,  
Ministère du Développement Industriel  
et de l'Artisanat,  
Dakar,  
Senegal.
19. Chambre de Commerce et de l'Industrie de la Région de Dakar,  
Dakar,  
Senegal.
20. Direction de la Statistique  
Importation/Exportation,  
Dakar,  
Senegal.

21. S.A.I.B.,  
Bureau et Usine Bois,  
Rte. de Colohane,  
Dakar,  
Senegal.
22. SAIB Magasin d'Exposition,  
Pl. de l'Indépendance,  
Dakar,  
Senegal.
23. Ag. Import - Export Kebe et Diagne,  
Allée R. Delmos,  
Dakar,  
Senegal.
24. Programme des Nations Unies pour le Développement (PNUD),  
Dakar,  
République du Senegal.
25. Centre International pour le Commerce Extérieur (CICES),  
Dakar,  
Senegal.

### Annex 3

#### Basic furniture constructional and quality control details

- Figure 1.           Drawer construction
- Figure 2.           Methods of fitting drawers
- Figure 3.           Dowel dimensions
- Figure 4.           Dowel joints
- Figure 5.           Chair leg/rail construction
- Figure 6.           Measuring gauges
- Figure 7.           Locating jigs
- Figure 8.           Jig mould for shaped ply seats
- Figure 9.           Jig mould for complex shaped ply seats
- Figure 10.          Male and female jig moulds for ply seats

FIGURE 1: DRAWER CONSTRUCTION

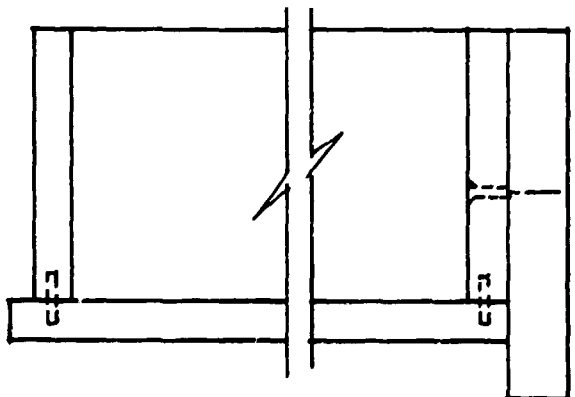
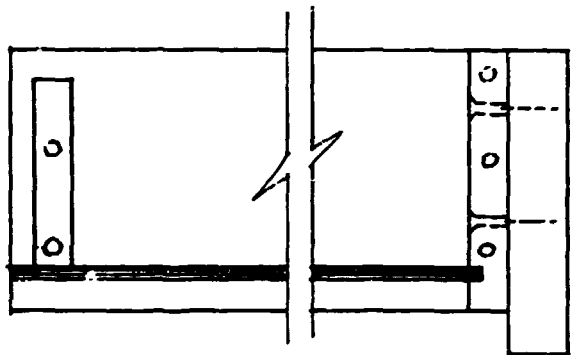
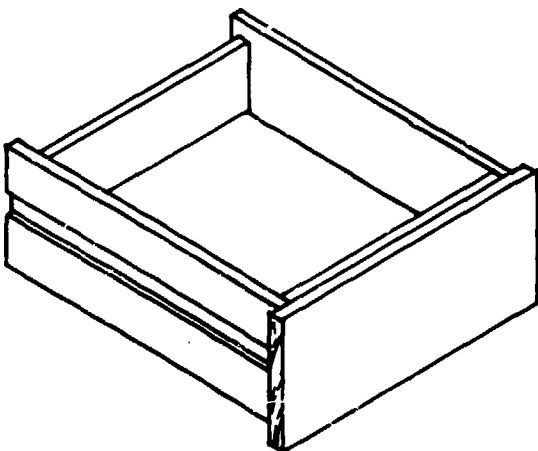
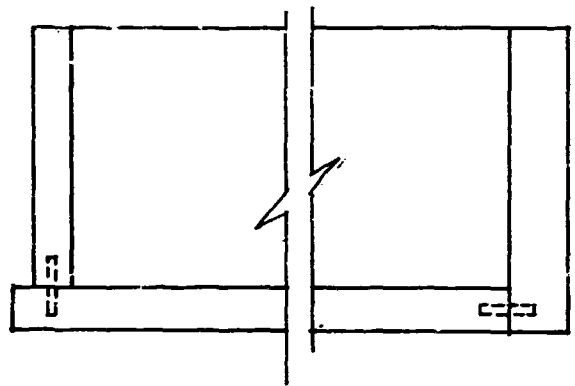
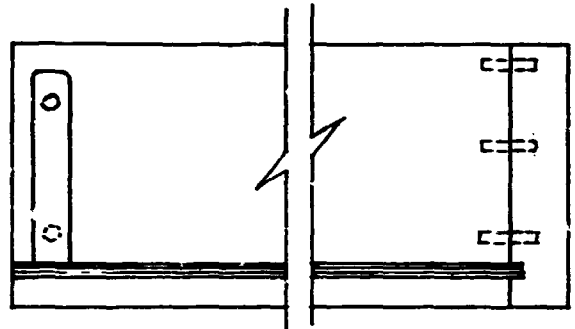
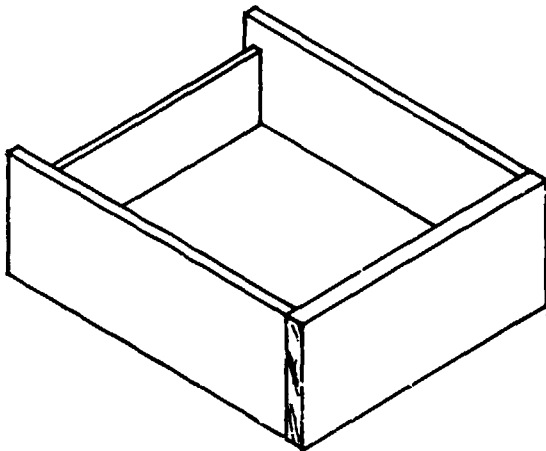
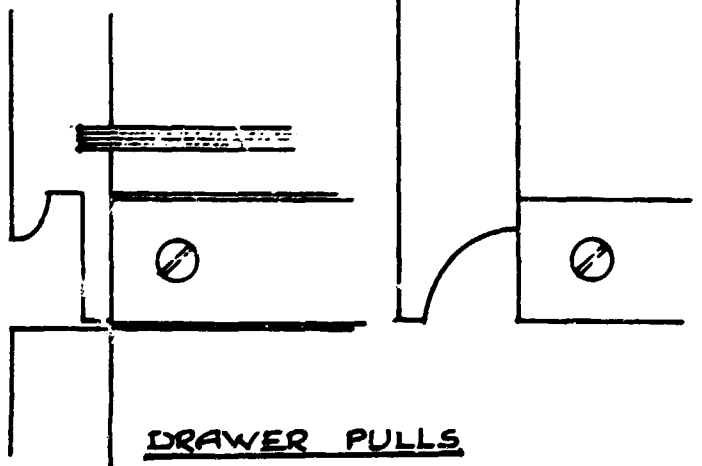
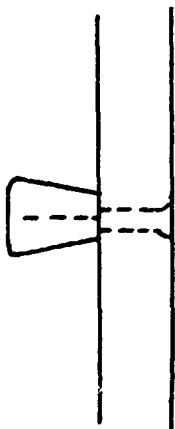
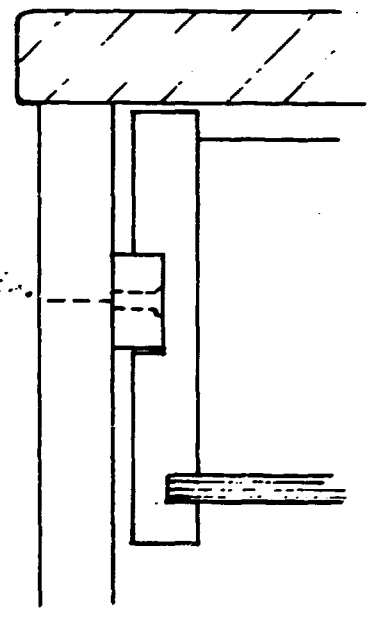
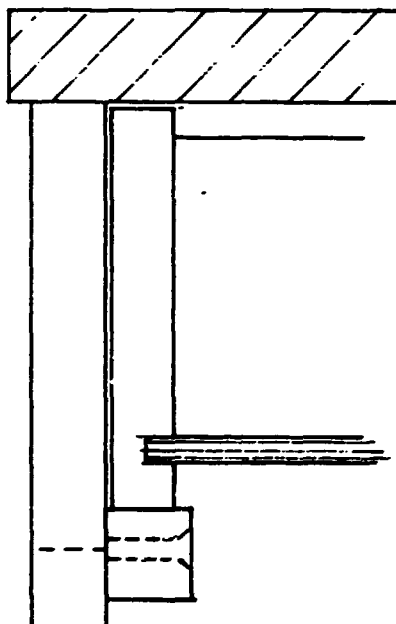
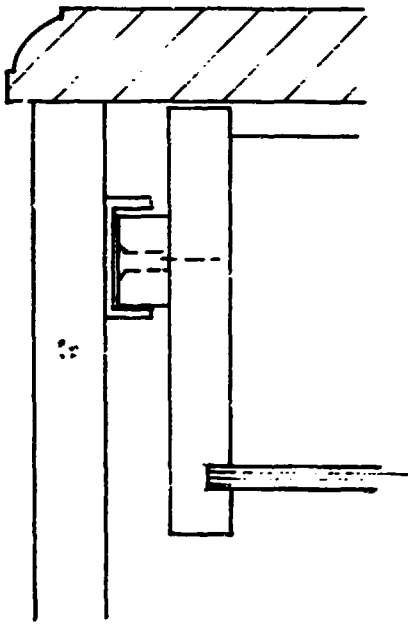
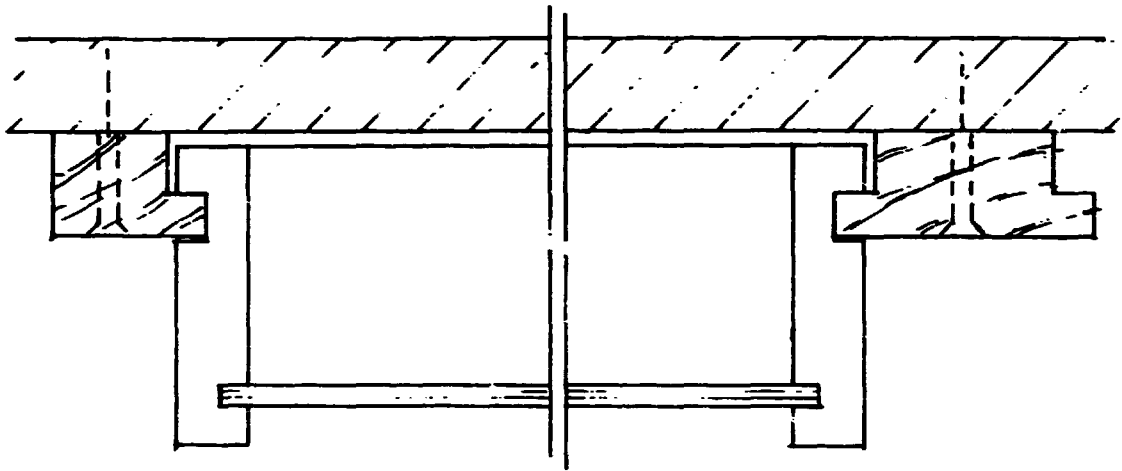


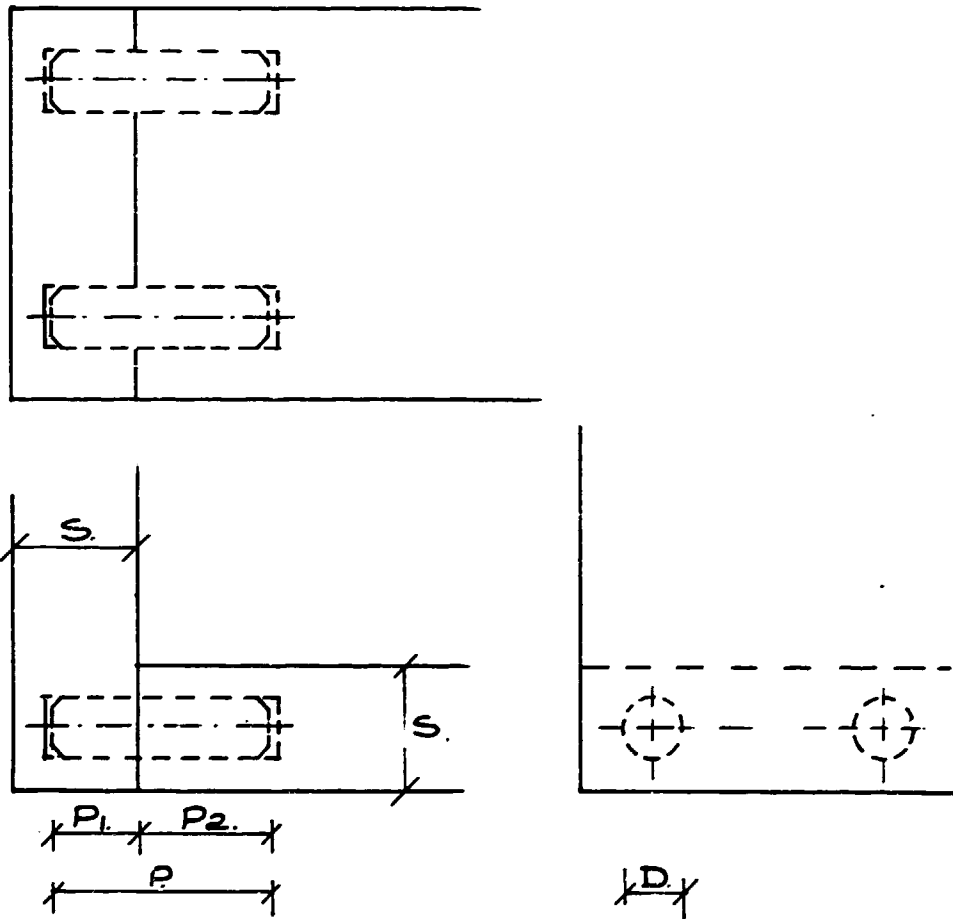


FIGURE 2: METHODS OF FITTING DRAWERS



DRAWER PULLS

FIGURE 3: DOWEL DIMENSIONS



Millimetres.				
$s$	$D$	$P$	$P_1$	$P_2$
11	6	20	8	12
14	6	25	10	15
17	8	30	12	18
20	10	40	15	25
26	13	50	20	30
32	16	60	25	35
38	19	70	30	40
44	19	80	35	45
50	22	90	40	50

FIGURE 4: DOWEL JOINTS

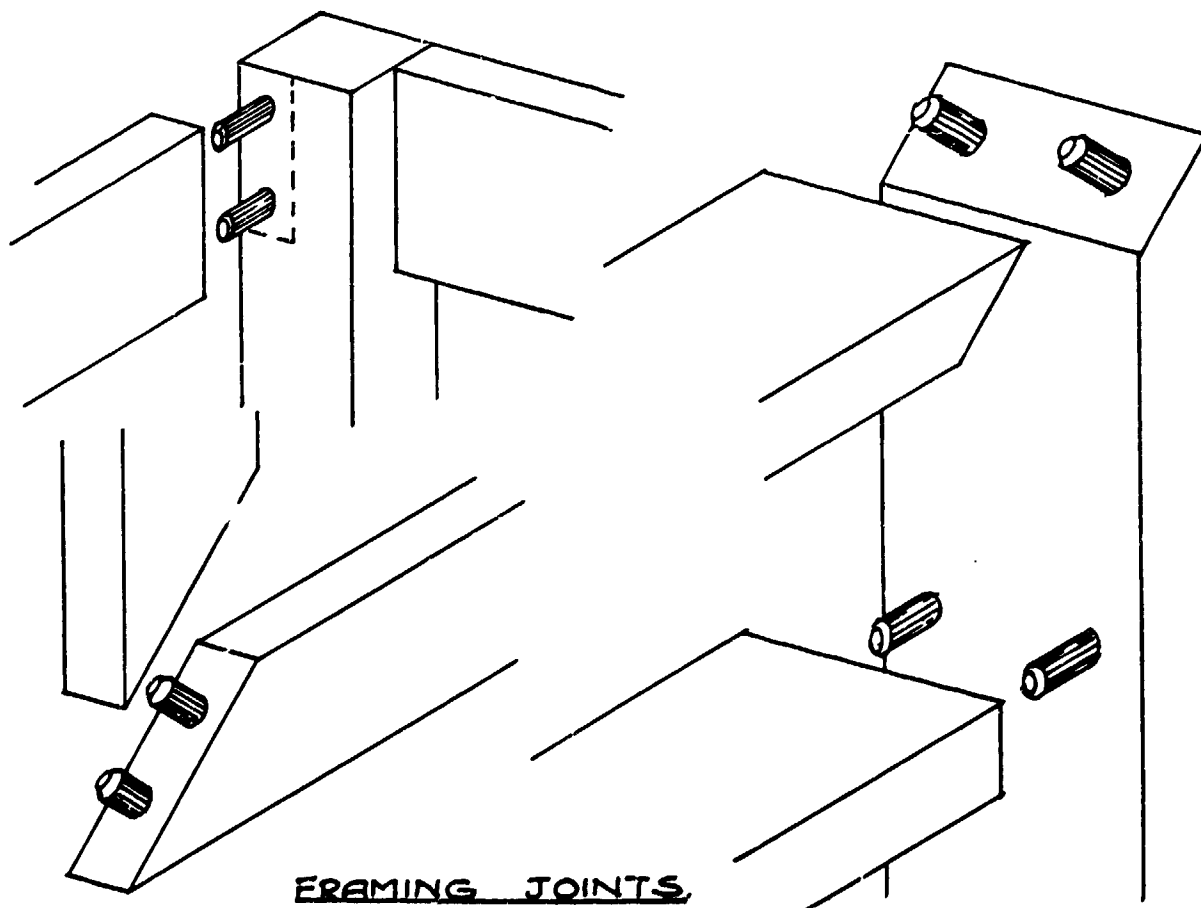
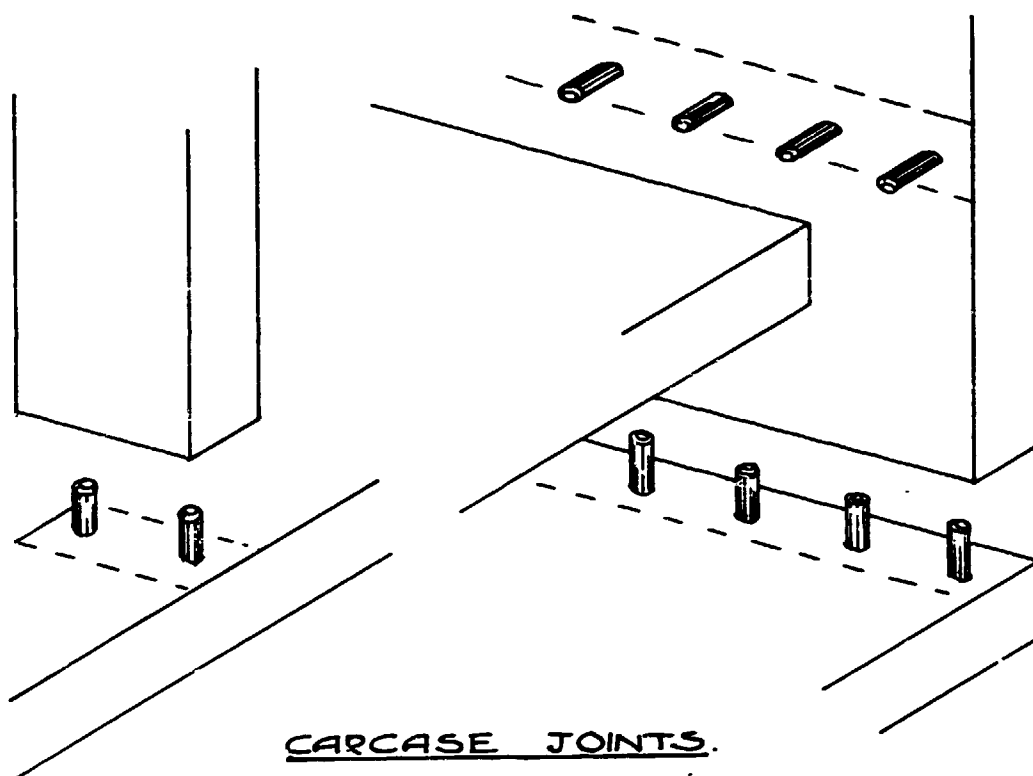
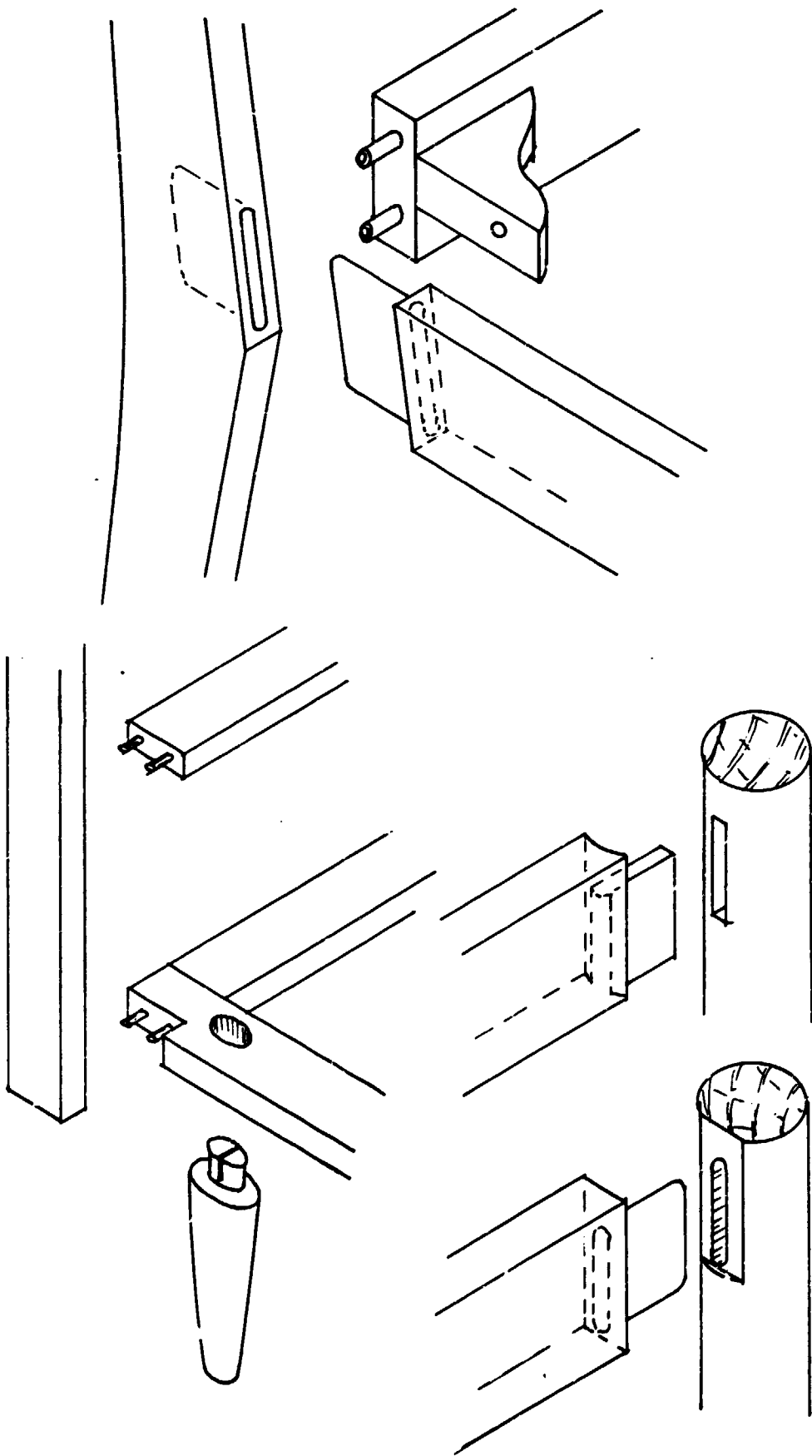
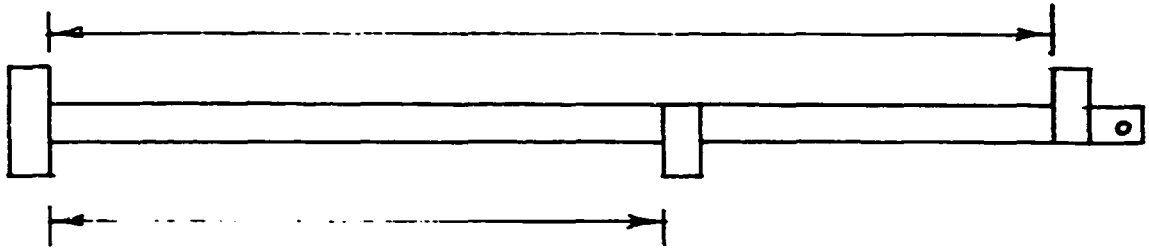


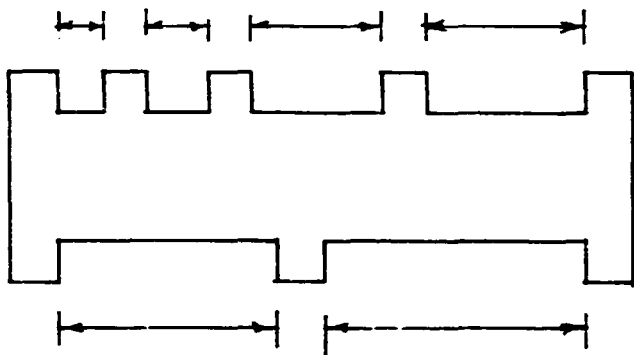
FIGURE 5: CHAIR LEG/RAIL CONSTRUCTION



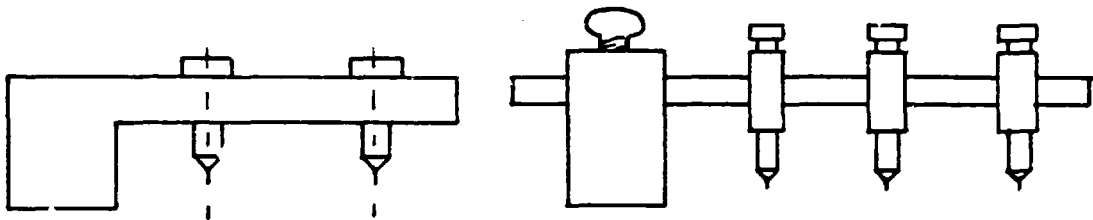
**FIGURE 6: MEASURING GAUGES**



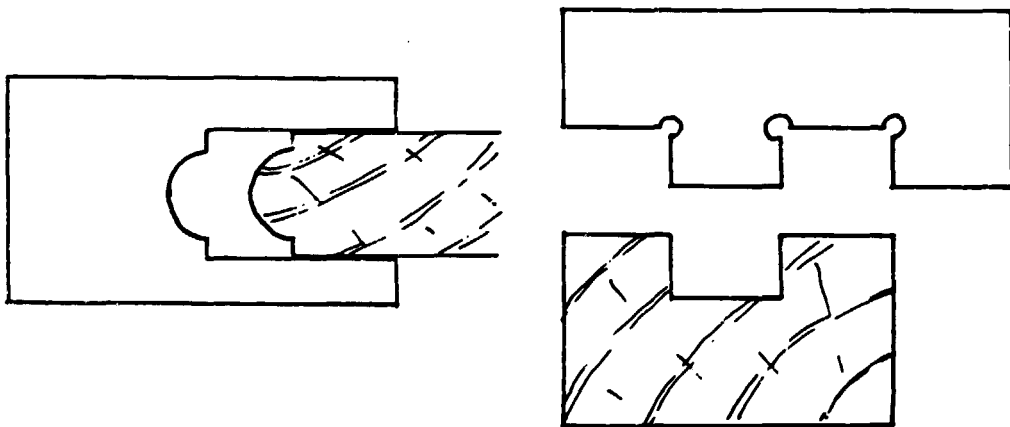
Panel Gauge



Solid Wood Sizing Gauge.

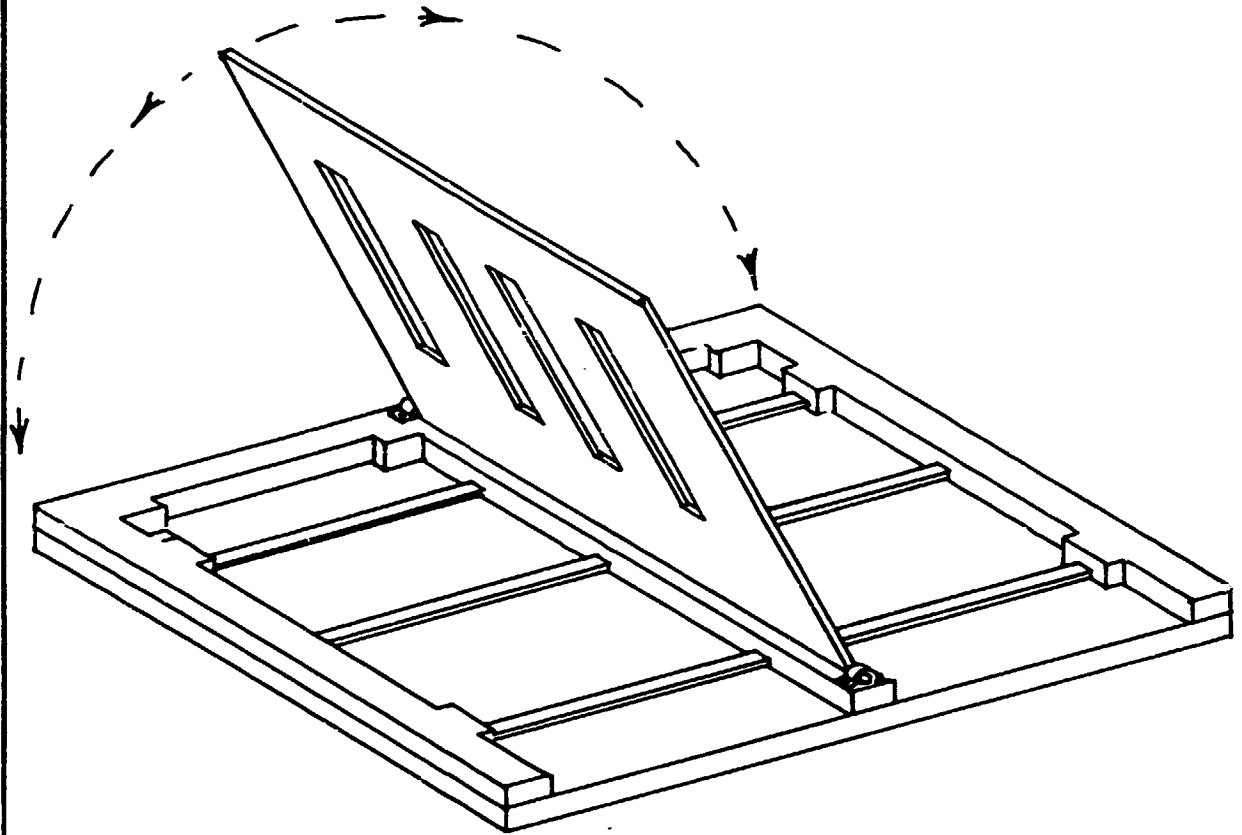


Dowel Locators.

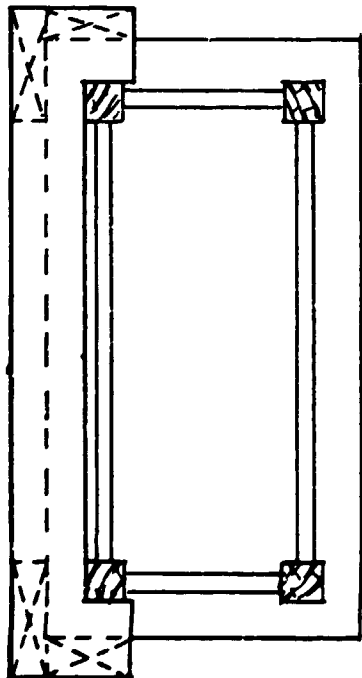


Moulding Check Gauge..

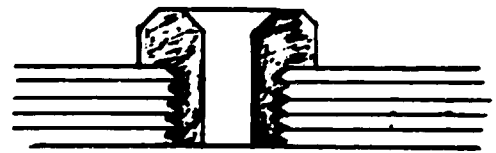
**FIGURE 7: LOCATING JIGS**



Drawer Runner Locating Jig.



Cabinet Base Location Jig.



Pre Drilled Guiding Bolt.

FIGURE 8: JIG MOULD FOR SHAPED PLY SEATS

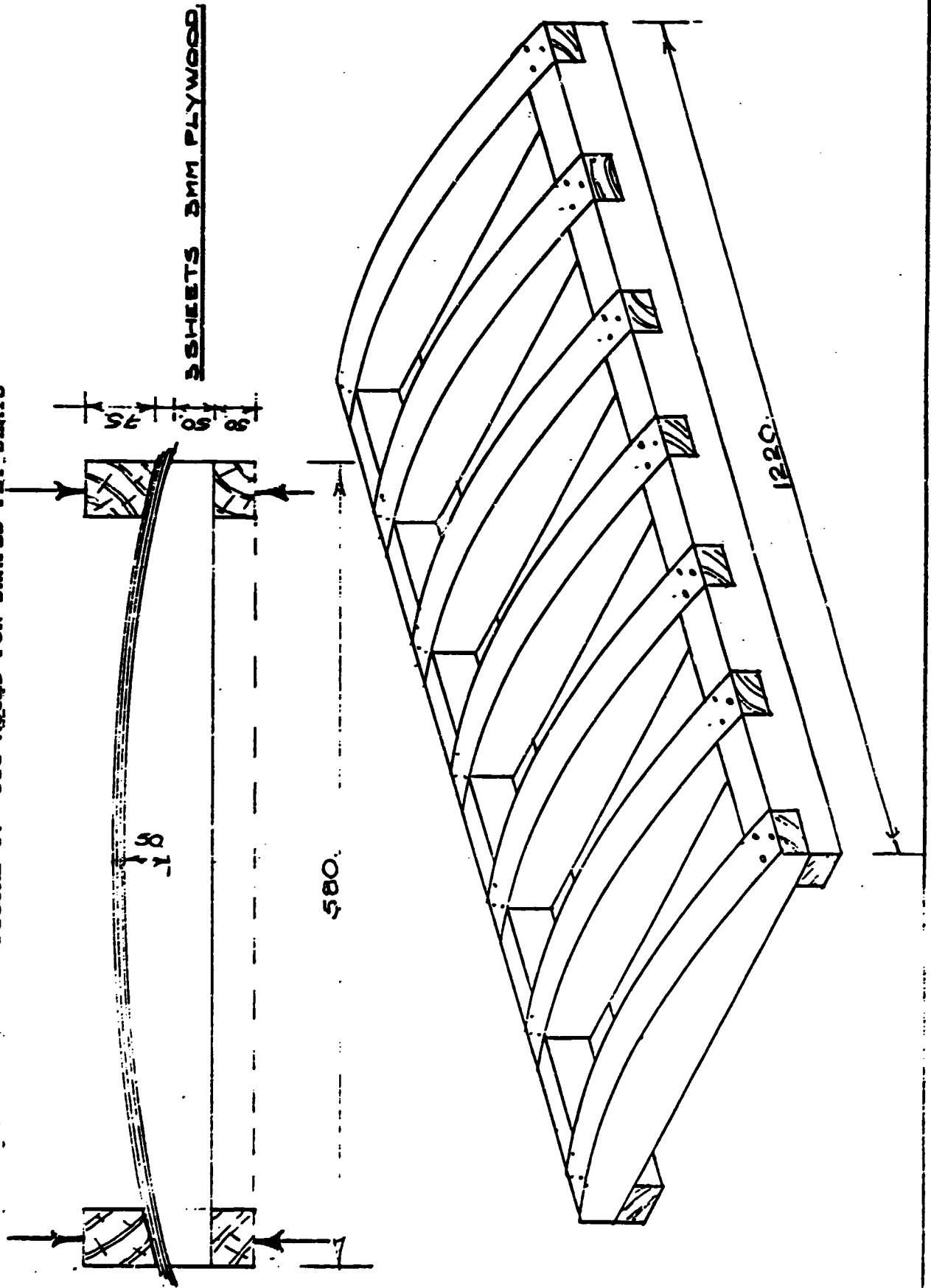


FIGURE 9: JIG MOULD FOR COMPLEX SHAPED PLY SEATS

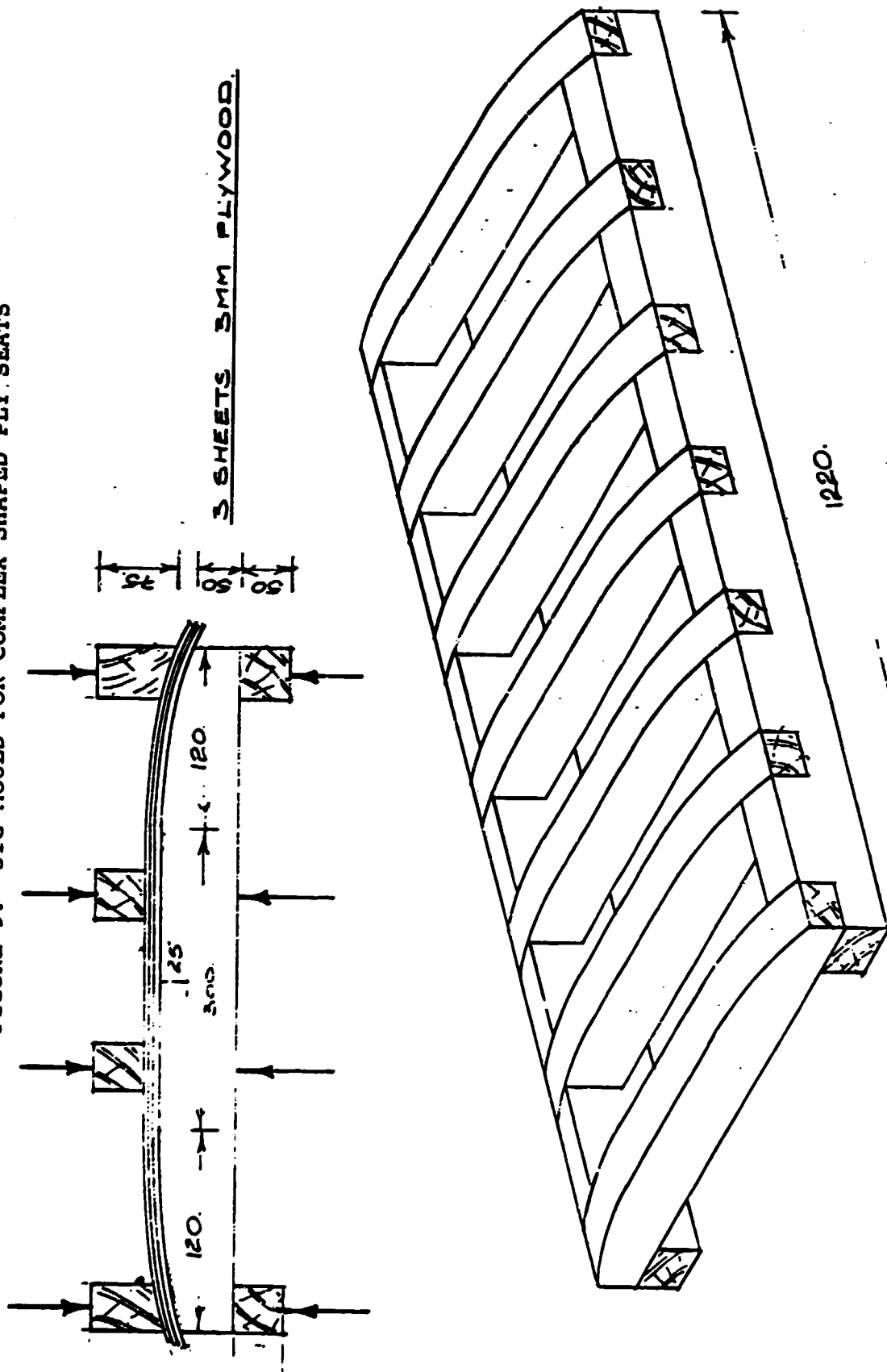
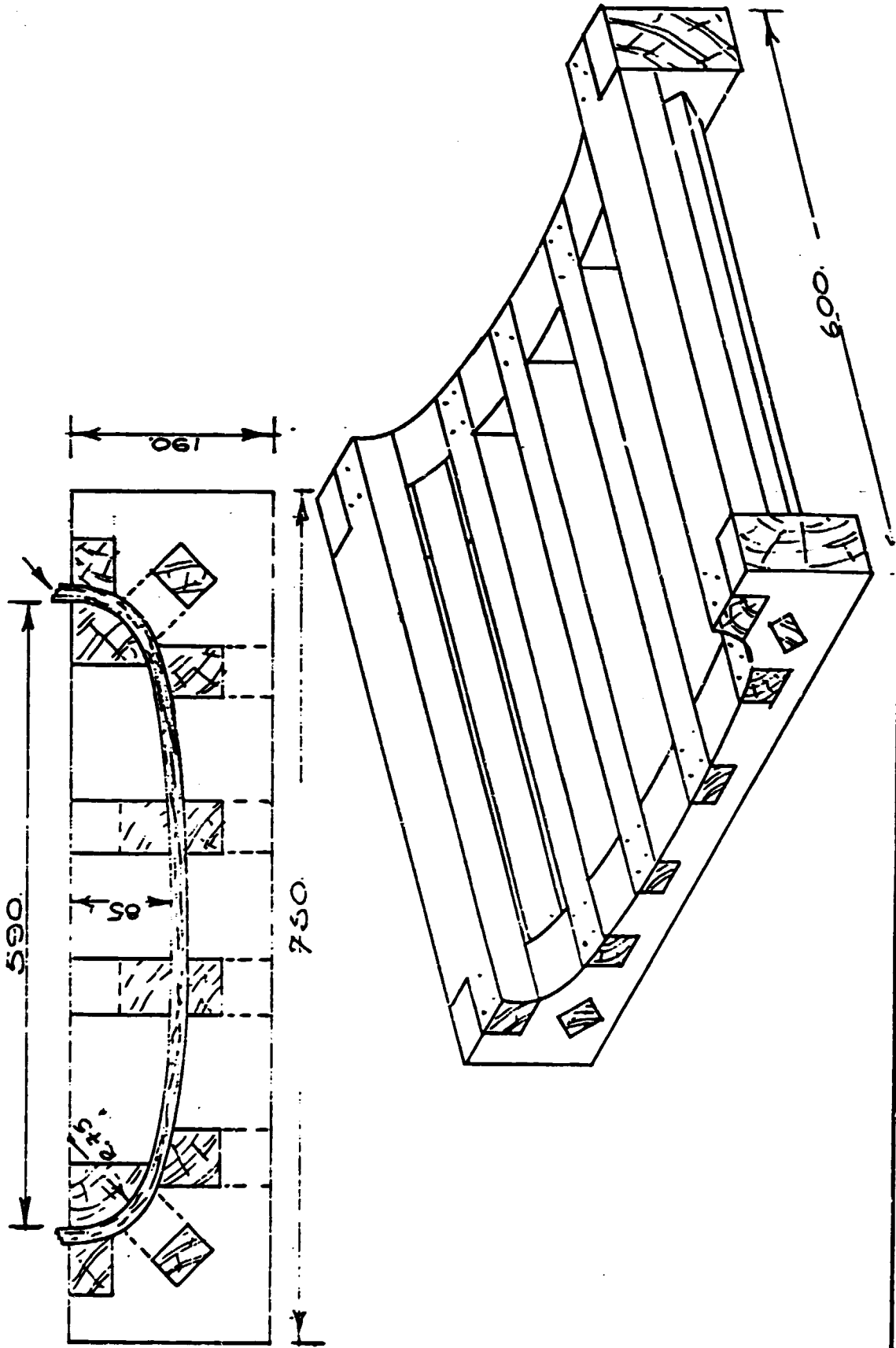




FIGURE 10: MALE AND FEMALE JIG MOULDS FOR PLY SEATS



## Annex 4

### Report on woodworking workshop of the Public Works Department

During the period covered by this report the workshop referred to above was closed down with the loss of 90 jobs. The stated reasons for the closure included the unacceptably high financial losses sustained over a protracted period of time. Contributory factors were undoubtedly many of the matters referred to in this report since the workshop, being the largest and best equipped of its kind in the Gambia, played a pivotal role in the commercial life of the remainder of the workshops in the country. Most government contracts were executed by this workshop or were sub-contracted via the workshop to other producers and they, in turn, were encouraged to pay for and use the better production facilities available at the workshop especially in woodcutting machining. Its closure, therefore, affected not only the employees immediately concerned but also the future viability of the remainder of the industry.

The consultant was requested to advise on how best the workshop might be re-constituted so that it would become a productive and profitable concern in the future, whether it remained in public ownership or was transferred to the private sector. Accordingly, he carried out an assessment of its current technological and management base and the following is a summary of his comments, conclusions and recommendations in this regard.

#### (a) Manufacturing facilities

##### 1. Buildings

These are sub-divided for the main storage and manufacturing activities concerned with furniture production as follows:

Timber storage	(12.4m x 8.4m)	104.6 m <sup>2</sup>
Machining	(29.0m x 16.2m)	469.8 m <sup>2</sup>
Assembly (i)	(29.0m x 16.2m)	469.8 m <sup>2</sup>
Assembly (ii)	(27.0m x 9.2m)	248.0 m <sup>2</sup>
Finishing	(17.8m x 10.7m)	190.46m <sup>2</sup>
Machine Maintenance	( 6.6m x 9.2m)	60.72m <sup>2</sup>
	<b>TOTAL</b>	<b>1,543.38m<sup>2</sup></b>

A total of over 1500m<sup>2</sup> of storage and manufacturing space is more than adequate for the future needs of the workshop. In addition, the condition of the building is good, floors are flat and are on one level enabling the establishment of good working conditions. There is a need for additional natural roof lighting and this could be further enhanced by whitewashing all interior walls. Additional storage is available in surrounding buildings, should the need arise.

(b) Machinery and equipment

The following is a list of the major items of woodworking machinery currently in the workshop together with an indication of the condition of each:

<u>MACHINE</u>	<u>MAKE</u>	<u>CONDITION</u>
Circular Saw	Stenner	Fair
Circular Saw	Wadkin	Fair
Universal woodworker	Dominion	Poor
Circular saw (L/duty)	Pickles	Good
Spindle moulder	Stenner	Fair
Single-end tenoner	Wadkin	Good
Dovetailer	Wadkin	Fair
Surfacer/thicknesser	Wadkin	Fair
Surface planer	Danckaert	Fair
Surfacer/thicknesser	Stenner	Poor
Belt Sander	Danckaest	Fair
Mortiser (chisel)	Wadkin	Fair
Wood turning lathe	Wadkin	Good
Bandsaw	Stenner	Fair
Bandsaw	Startrite	Good
Cross-out saw	Sagar	Fair
Disc Sander	Stendhal	Good
Saw sharpener	Wadkin	Good
Cutter grinder	Wadkin	Fair
Bandsaw sharpener	Robinson	Poor
Bandsaw brazer	Interwood	Poor
Universal tool grinder	Wadkin	Good

While it was not possible to make more than a visual examination of the above machines, the indications are that most, if not all, could be put into satisfactory working order with some re-conditioning and the essential renewal of parts, accessories and cutting tools, including the following:

<u>ITEM</u>	<u>QUANTITY REQUIRED</u>	<u>APPROX PRICE *</u>	
Mortise chisels and bits	40	ESTC 2,400	\$US 3,432 **
Cup grinding wheels	5	125	179
Square-edge grinding wheel	5	125	179
Round-edge grinding wheel	5	125	179
Planning knives	10 sets	300	429
Grinding wheels-saw sharpening	10	250	358
Grinding wheel for w/w tools	15	150	215
Grinding wheel, dresser type	1	60	86
Moulding cutter blocks	4	900	1,287
Tenoning cutter blades	4 sets	800	1,144
Dovetailing cutters	14 sets	500	715
Electric blower	1	150	215
Lathe turning tools	2 sets	100	143
Circular saws (Varying diam)	6	360	515
Cross-cut saws (14")	6	360	515
Drive belts (Various sizes)	30	200	286

ESTC 6,905 \$US 9,877

\* Subject to firm quotation. Does not include cost of delivery.

\*\* Calculated at a rate of ESTC 1 = \$US 1.43

Machinery are also recommended, particularly the following which should include appropriate tools, spares and accessories.

<u>MACHINE</u>	<u>MAKE</u>	<u>APPROX PRICE*</u>	
		<u>£STG</u>	<u>\$US</u>
High speed Router	Wadkin		
	or similar	3,750	5,363
Squaring/dimensioning panel saw	Wadkin	3,750	5,363
Horizontal single-sided borer	Rye or similar	2,000	2,860
Dowel Rod machine	Loser		
	or similar	1,250	1,788
Dowel-cutting machine	Loser		
	or similar	750	1,073
Electric bandsaw brazer incl. brazing metals, tools and tensioning hammers		500	715
Compressor with tank and pressure plates		1,800	2,574
Accessories for wide-belt sander incl. dust collector	Sanding Master	1,500	2,145
Spraying equipment	De Vilbiss or similar	1,500	2,145
Individual dust collector		650	930
Selection of power operated hand tools		500	715
Compressed air-line		500	715
Materials handling equipment		200	286
Stand-by generator		1,500	2,145
		<u>20,150</u>	<u>28,817</u>

In the assembly area all the woodworking benches need to be re-furnished with suitable woodworking vices. In addition, the worktops, which are badly chipped and dented should be removed, planed down in the thicknessing machine and re-fitted to their frames. Some additional electric power-operated hand tools such as drills, hand-routers and screw-drivers are included in the equipment manifest and hand tools would be provided by the workers themselves.

(c) Personnel

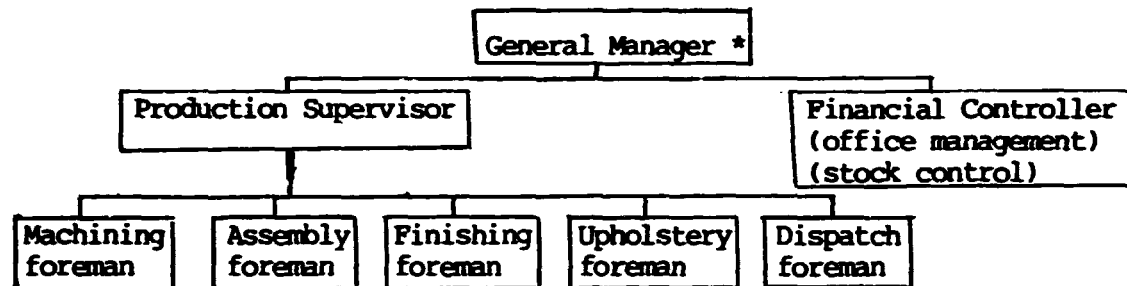
It is expected that most, if not all, the personnel to be involved in the re-constituted workshop would be drawn from among those who had been employed there previously and the indications are that it would be possible to develop a highly skilled and motivated workforce from this source. However, its success would depend on an equally well qualified management team capable of planning, organising and directing the workforce in accordance with established performance targets and standards which are consistent with its aims and objectives. Briefly these are to achieve, within the shortest possible time, acceptable levels of profitability and quality consistent with an undertaking of its size, level of investment and market potential.

Mr. M.M. Goswell, who was Senior Works Superintendent in the original workshop, is the obvious candidate to take over as General Manager of the new concern. He was trained in the U.K. and has had over 20 years experience of the woodworking industry both there and in the Gambia. He understands the financial implications of running a business of this nature and his knowledge

\* Calculated at a rate of £STG 1 = \$US 1,43

of local conditions in respect of personnel, raw materials procurement and market conditions generally, would be a considerable asset. The second member of the management team should be a Financial Controller whose functions should include overall financial planning, cost and budgetary control and office management. The third member of the management team should be responsible for production on the workshop floor and should therefore be fully experienced in all aspects of woodworking and furniture production technology, work planning, supervision and quality control.

Positions and relationships in the management and operation of the workshop may therefore be illustrated as follows:



\* With special responsibility for marketing/sales, government contracts and raw materials procurement.

The total proposed workforce requirements may be summarised as follows:

General Manager	1
Financial Controller	1
Production Supervisor	1
Production foremen	4
Draughtsman/Technician	1
Dispatch/storage foreman	1
Woodcutting machinists (skilled)	4
Machine maintenance technician	1
Joiners/Cabinetmakers (skilled)	7
Wood finishers (skilled)	2
Upholsterers (male) (skilled)	2
Upholsterers (female) (skilled)	2
General helpers (unskilled)	2
Accounts clerk	1
Secretary	1
<b>Total</b>	<b>31</b>

Draft job descriptions should be prepared in respect of each of the above disciplines in order to ensure complete coverage of all the functions involved as well as avoiding undue over-lapping of individual activities.

(d) Product and production policy

This should be in line with the proposals outlined in the chapter dealing with product characteristics. It is envisaged that the physical re-organisation of the workshop would be incorporated into the proposed follow-up technical assistance programme and therefore would benefit from on-the-spot

advice and assistance provided by the design and production consultants involved in the project.

Since, as has been suggested, the newly constituted workshop would be expected to play a leading role in the development of the industry and especially in co-ordinating the profitable commissioning of government and institutional contracts, it would have the added function of developing all the new designs to be introduced during the proposed projects to the stage when they could be manufactured in serial form.

Other services which could be provided in the future by the workshop include wood machining and machine maintenance facilities, timber drying facilities and applied research and development in respect of wood and woodworking activities for all government departments requiring such service.

(e) Financial evaluation

(i) Trading and profit estimate

			<u>Dalasis</u>
	Projected sales		1,000,000
Less:	Materials (35%)	350,000	
	Labour (25%)	250,000	
	Workshop expense (10%)	100,000	700,000
			<hr/>
			300,000
Less:	Sales expenses (5%)	50,000	
	Other expenses (10%)	100,000	150,000
			<hr/>
	Estimated profit (15%)		150,000

Note: This estimate is based on established performance norms for a workshop of its size and number employed.

The estimate is prepared for the purpose of estimating working capital requirements as follows:

(ii)

Estimated working capital requirements based on trading and profit estimates

	<u>Dalasis</u>
<u>Trade debtors</u>	
Assume 2 months credit allowed (1/6th of Di 1 million)	166,600
<u>Stocks</u>	
(a) Raw materials Assume stock raw materials 5 times p.a. (350,000 : 5)	70,000
(b) Work-in-progress Assume 3 week production cycle (3/52 nds. production cost of Di 700,000)	40,384
(c) Finished goods Assume 2 weeks stock finished goods at factory cost (1/26th. of Di 700,000)	26,923
<u>General overheads</u>	
Provide 3 months cover for sales and administration expenses ( $\frac{1}{3}$ of Di 150,000)	37,500
	<hr/> 341,407
Less: Credit from suppliers Assume 2 months purchases (1/6 of Di 350,000)	58,100
	<hr/> 283,300
Net Working Capital Requirement	283,300
Working Capital Factor	28%
(i.e. Requirement as % of sales)	

(f) Future status of workshop

It was not made clear to the consultant what the intention of the Gambian government is in regard to the long-term status of the newly re-constituted workshop or whether this would be decided either before or after the re-organisation had taken place. In either event, the proposed programme of re-organisation and investment is an essential pre-requisite to the achievement of viability and it is the opinion of the consultant that this should be completed before any decision is made regarding its future

ownership.

The following reasons are submitted in support of this point of view:

- (i) The extreme importance of the workshop in the context of the future of the industry as a whole and of the Gambian economy;
- (ii) The likely inability of those best capable of managing and operating the workshop to raise the necessary finance to carry out the re-organisation programme;
- (iii) The need for the continued involvement of government in order to facilitate the raising of the necessary capital required and the obtaining of the proposed international assistance;
- (iv) The inadvisability of selling off a publicly owned asset before its real worth has been properly assessed and valued.

Accordingly, the consultant recommends that his proposals regarding this and all the other woodworking workshops referred to in this report should be implemented without delay. In the case of the government workshop, this should be undertaken by a nucleus of key personnel drawn from those who, it is intended, will be re-employed in the future. Under the direction of Mr. Goswell the team would work closely with the consultants in carrying out the development programme.

The precise details and time-tabling of the programme would be agreed upon in advance and its subsequent implementation should be monitored by a committee made up of Mr. Goswell, the consultants and at least one high-ranking government nominee.