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An investigation into educational and occupational differences in test performance on a battery of adaptability tests for Africans

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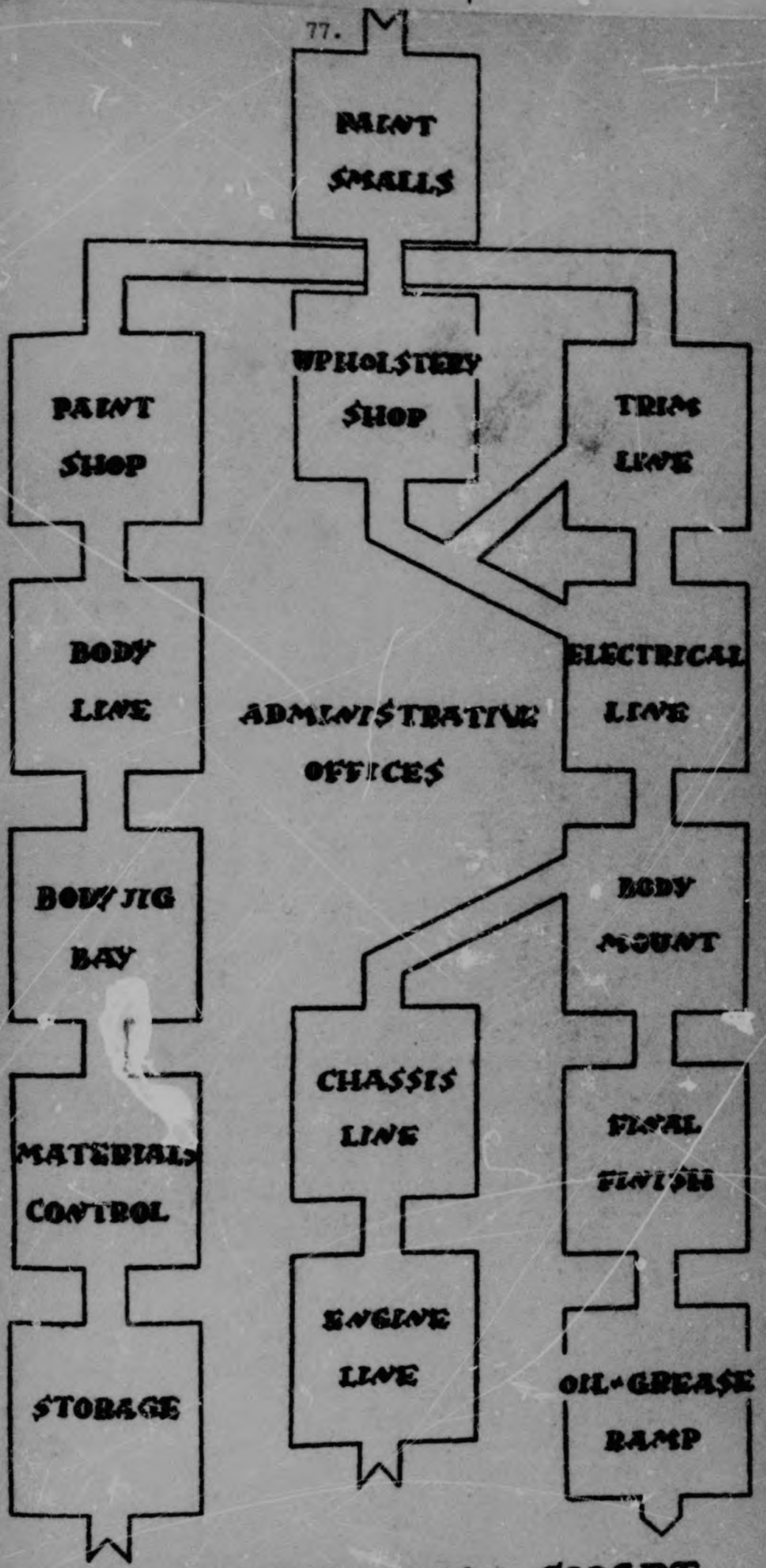
Of the above jobs the following were excluded from the job analysis:

1. First Aid - only one native, who could not be spared.
2. Police - being on night duty only, they could not be interviewed or tested.
3. Canteen workers - none of these workers could be spared, and as they are a group with special qualifications they are of little consequence.
4. Drivers - these boys were not tested because only natives in posession of a drivers licence were considered for the job.

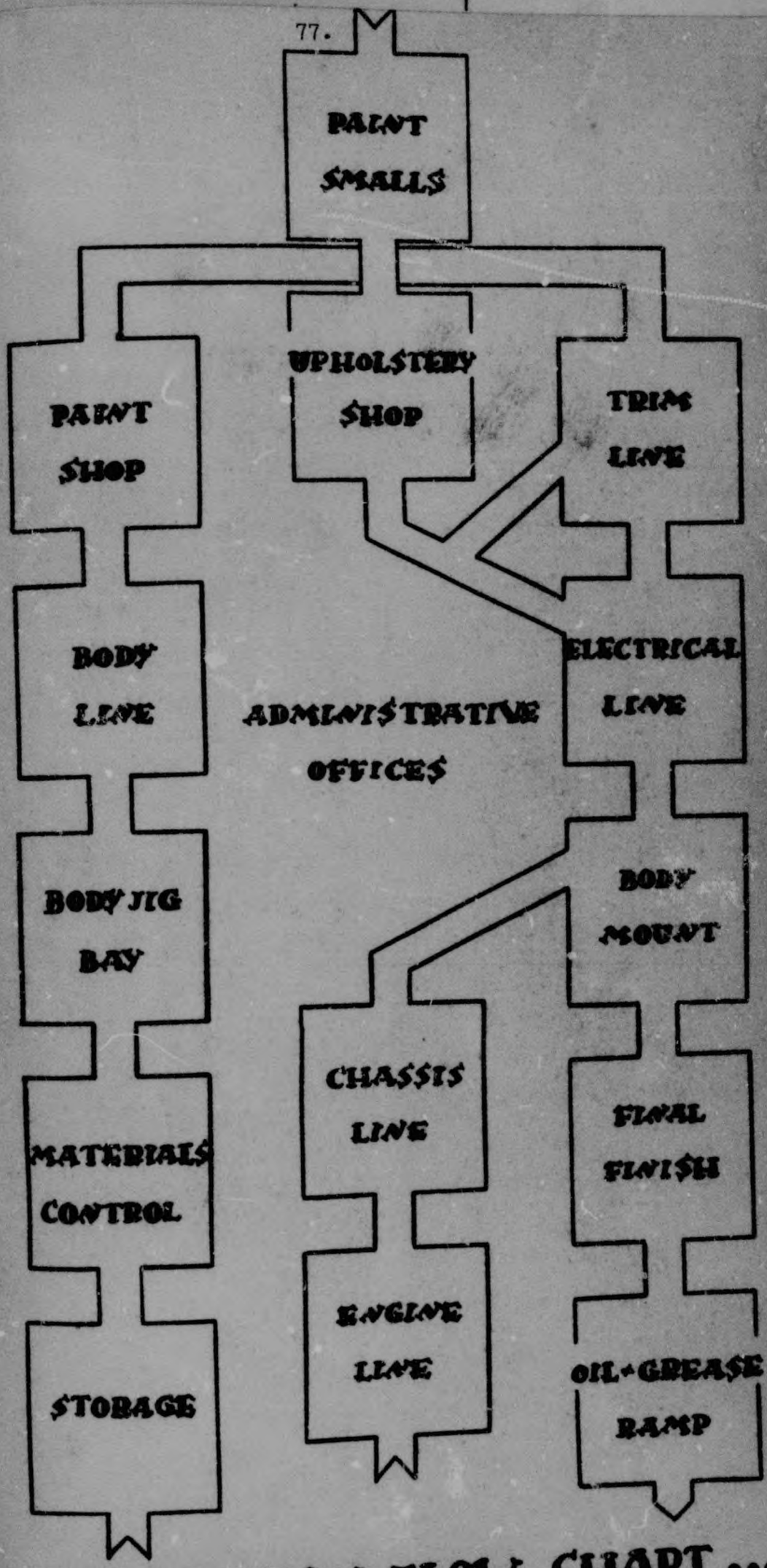
Isolation of duties on the various lines:

The plant may be conveniently divided into the sections shown in the "Production Flow Sheet". And these sections may in turn be redivided into Productive Lines and Non-Productive Lines, as follows:

Productive Lines	Non-Productive Lines
Body Jig Bay	Materials Control
Body Line	Distribution
Paint Shop	General Stores
Trim Line	Experimental Bay
Electrical Line	Maintenance
Engine Line	Machine
Chassis Line	Reception and Offloading
Body Mount	Cleaning Squad
Oil and Grease	Gardeners
Ramp Cleaners	Handymen
Seat Pullers	Wood boys
Final Finish	



PRODUCTION FLOW CHART ...



PRODUCTION FLOW CHART ...

Considering the Productive Line duties firstly:

1. Body Jig Bay: see"Photographic Sequence Chart" - photographs Nos. 6, 7 and 8.

"A jig is a device which when applied to work will of itself determine the size or shape of the work by acting as a guide for cutting tools or by determining the correct relative positions of parts of the work whilst they are being secured together." *

Within the body jig bay the "correct relative positions" of the parts which comprise the automobile body are determined by fitting these sections into the body jig and then spot, arc, or gas welding them together to form the body shell.

An ide of the duties involved in this line may be obtained from the following outline of sub-assemblies on the Willys 2 x 473 Station Waggon:

a) Assemble front floor in the jig, assemble rear floor; sub-assemble wheel arches.

b) Spotweld front floor to rear floor, weld arches to floor; weld corner plates to rear floor.

c) Sub-assemble body sides; weld filler strips to body sides fit and weld bonnet lid supports, weld cowl to body sides.

d) Assemble petrol tanks, assemble and weld grilles.

e) Assemble and weld body side pillars; weld top strips to windscreen header, weld top

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* The New Practical Metal Worker, vol II, editor Bernard E. Jones, article by R. Hutcheson. Published by The Waverley Book Co. Ltd., Farringdon Str., London, E.C.4.

strips to body sides and attach dome

f) Assemble and weld front fenders; weld supports to rear lower balance. Finish off body with gas welding.

Within the Body Jig Bay three jobs may be distinguished:

a) Spot welders

b) Arc Welders Classified generally as Welders.

c) Gas welders

Mechanical adaptability, skill, and manual dexterity of a high order are required in the successful performance of this duty. The welder must be an exacting, neat, alert, and fast worker, with a fine foot-hand-coordination, an intelligent understanding of his work and an excellent memory of the various jig fittings. He must be a conscientious, meticulous and methodical workman, able to follow a definite systematic procedure, maintain quality standards and produce at a constant rate. He requires a good mechanical comprehension, a light touch, quick reactions and fine judgement.

Because of the similarity of the requirements, it is considered that any attempt to distinguish between the various types of welders, would for the purposes of the present study, tax the discriminative ability of the test battery unduly.

2. Body Line: see "Photographic Sequence Chart" - photographs Nos. 9 to 14

During the welding process indentations are made in the body surface and in places portions of the body - shell are melted away or otherwise disfigured; this damage is repaired on the Body Line, the smooth outer surface is restored by file wiping, and discing the melted portions

remoulded with a lead compound to comform to the correct body contour, the doors fitted and in certain models the mudguards and bonnet. The sequence of events on the Body Line is usually as follows:

1. File wiping
2. Fough discing and/or routing
3. Tinning
4. Metal - wiping
5. Fine discing.

Where necessary panel beating precedes file wiping.

The Body Line comprises the following jobs:

a) File wipers
b) Discers - rough and fine and routing
c) Tinners
d) Metal wipers
e) Panel beaters
f) Mudguard fitters
g) Bonnet fitters
h) Door fitters

The requirements of the 5 jobs mentioned above, from a) to e), because of their many similarities may be considered together.

All these jobs require skills of an artistic rather than of a mechanical nature. Manual dexterity and ccordination, neatness of finish, meticulousness and an intelligent use of the various mechanical aids employed, is essential. Above all these workers must be patient and careful, with an appreciation of automobile body contour and line, and an eye for detail and smoothness of presentation. A light touch, a "straight-eye" and a



BODY LINE ASSEMBLY

certain artistic ability is necessary. Caution, conscientiousness, and a fair degree of intelligence are required.

Mudguard fitters, Bonnet fitters and Door fitters, are jobs required mechanical skill and adaptability. Neatness and care coupled with a definite mechanical dexterity and understanding, and an ability to formulate a plan of action based upon a good mechanical comprehension, are essential.

3. Paint Shop: see "Photographic Sequence Chart" - photograph No. 16.

As the name suggest, it is here that the body - shell is painted. It is, however, rather a complicated process. The Planning Department identifies thirty-one stations within the Paint Shop; they include among others, hot water washing the body, spirits and meths wiping, putty filling any small irregularities, flatting by hand and spray painting.

The jobs isolated in the Paint Shop are:

a) Flatters
b) Hot water washers (which include meths and spirits wiping)
c) Putty - fillers
d) Spray painters.

Flatters and Hot water washers do very menial tasks requiring no special skills, and little imagination or intelligence.

Spray Painters and Putty fillers on the other hand require definite artistic skills similar to the needs of Tinners, Metal Wipers etc.

4. Trim Line: see "Photographic Sequence Chart" - photographs Nos. 19 and 20.

Here the trimmings such as the door panels, armrests, window mouldings, sun visors and seats are fitted.

An idea of Trim Line duties may be obtained from the following trim fittings to the Austin A 40 Pickup:

a) Tack strips and retainers; tack headlining; fit draught excluders; windscreen glass and mouldings; fit rear trim panels.
b) Fit door stop rubbers and weathercord; fit door and vent window glass and mouldings; fit rear view mirror bracket.
c) Fit door trim panels and weatherstrips; drip rails and windscreen.

As it occurs that the same assembler is required to do a number of trim fittings, all of which, however, are very similar, one general name has been given to all these Trim Line duties, they are called:

a) Leather lining and hardware assemblers.

The requirements of this job involve mechanical adaptability of a high degree, very good manual dexterity, neatness of presentation, good eye-hand coordination and an ability to work carefully in cramped, difficult positions, requiring fine muscular coordination and skill in handling the tools and equipment used. A good memory for detail, a steady hand and a high degree precision of workmanship is needed.

5. Electrical Line: see "Photographic Sequence Chart" - photographs Nos. 21 and 22.

An extension of the Trim Line, on the Electrical Line the electrical connections and fittings are assembled and attached to the body. Such fittings include, among others, the installation of the instrument panel; the headlight, parking, stop and taillight harness; wiring the hooters; fitting trafficators, the windscreen wiper, the speedo cable, the voltage regulator and the dip switch etc.

All these duties are performed by what is known as:

a) the Electrical Trim assembler.

The Electrical Trim Assembler must be mechanically inclined (no detailed electrical knowledge is required), while manual dexterity is of prime importance and a definite skill in the use of tools is needed. Muscular coordination, mechanical adaptability, neatness of finish and extreme patience and care, coupled with a high degree of mechanical skill and an excellent memory, is essential for this work.

6. Engine Line: see "Photographic Sequence Chart" - photographs Nos. 24 and 25.

Although the engine arrives from overseas as a complete unit, certain sub-assemblies are attached to it in the plant. The work is of a delicate nature, great care being required as breakages are very costly and rough handling may badly damage or even ruin the engine unit. On this line such sub-assemblies as the fan, the crank case and vent pipes, the oil pressure pipes, the carburettor, the gear box, the starter, the generator, the sparkplugs and leads, the fuel pump and pipes and the distributor, are added.

Only one job exists on this line, namely:

a) Engine Line Assembler.

The requirements of an Engine Line Assembler may be considered together with those of both the Chassis Line Assembler and the Body Mounting Assembler.

These three jobs require a definite mechanical comprehension, an intelligent understanding of the work undertaken, fine judgement, a light touch and considerable skill in the use of a number of tools. Meticulous and careful workmanship is an essential, a systematic procedure and a conscientious outlook, is very necessary. Manual dexterity, muscular coordination, an eye for detail, a good memory and an ability to work to a fine degree of exactness and precision, is necessary.

7. Chassis Line: see "Photographic Sequence Chart" - photographs Nos. 26, 27 and 28.

Following on the Engine Line, the Chassis Line concentrates on the chassis assembly. The chassis of the Willys 2 x 473 Station Waggon, for example, involves the following sub-assemblies:

a) Fitting springs and front suspension
b) Assembling and fitting rear axle and shock absorbers.
c) Exhaust pipes, brake pipes, hand brake rods, and fuel pipes.
d) Fitting the brake mechanism sub-assembly, the steering mechanism and linkage.
e) Wheels and Engine to chassis.

As on the Engine Line, all these assemblies are performed by one type of assembler:

a) Chassis Line Assembler.

See the requirements given for the Engine Line Assembler.

8. Body Mount: see "Photographic Sequence Chart" - photograph No. 28.

This line marks the meeting of the Trim Line with the Engine and Chassis Line. It is here that the body shell is bolted to the chassis and the necessary connections and sub-assemblies fitted.

An idea of the duties involved on this line may be obtained from the following station layout for the body mounting of the Peugeot 203:

a) Mount body
b) Attach shock absorbers and fit front mounting and centre gearbox bolts.
c) Fit air cleaner; accelerator linkage and exhaust pipe.
d) Assemble steering column and cover, steering wheel, light switch and gearshift control.
e) Handbrake control connection and fuel and brake pipe clamps.
f) Sub-assemble and install bumpers; brake pipe connections and bleeding, test and fit radiators.
g) Wiring connections and install radiator grille.

All these duties are grouped under one heading, namely:

a) Body Mounting assembler.
See the requirements of an Engine Line Assembler.

9. Oil and Grease:

Unlike other lines no detailed sequence of duties can be set down for Oil and Grease boys. They

are required to thoroughly oil various portions of the car and to tighten loose bolts and sub-assemblies where they occur. Such workers being known as:

A) Oil and Grease boys.

Oil and Grease boys must display a good degree of mechanical adaptability and skill, they must be meticulous, systematic workers, manually adroit and skillful in the use of tools and certain equipment.

10. Ramp Cleaners: see "Photographic Sequence Chart" - photograph No. 30.

Before the final road - test, each car is cleaned and inspected for any faults by the Ramp Cleaners. These workers may be required to repaint a small section of the body, to retack portions of the lining, to reattach some loose trim sub-assembly, in addition to cleaning the body both inside and out.

All workers on the Ramp are known simply as:

a) Ramp Cleaners.

The requirements for this job are similar to those for Oil and Grease boys.

11. Seat Pullers: see "Photographic Sequence Chart" -photograph No. 18.

Seat Pulling is the one duty in the Upholstery Department carried out by natives. It consists of pulling the presewn leather cover over the wire seat frame, straightening the leather seams and hog ringing the cover to the framework.

The native doing this work is known as:

a) a Seat Puller.

Seat Pullers, like Metal Wipers, Panel Beaters etc., require a good degree of manual dexterity, a "straight eye and an appreciation of detail and exactness. They must be neat, careful steady workers.

12. Final Finish: see "Photographic Sequence Chart" - photograph No. 29.

Before the final Ramp Cleaning and inspection the cars are road-tested by qualified mechanics, and should any fault appear it is sent to the Final Finish Department for repair and recheck.

Each mechanic has a native assistant who is required to assist in the many repair operations.

Such natives are known as:

a) Final Finish Assistants.

Mechanical skill combined with a good adaptability, a retentive memory and an ability to act promptly and correctly to instructions, are the main requirements of this job. Manual dexterity, the skillful use of tools, a good mechanical understanding and a fairly high degree of intelligence are needed.

The Non-Productive Line duties:

1. Materials Control: see "Photographic Sequence Chart" - photographs Nos. 2 and 3.

Three main job categories exist in this section namely:

a) Unboxing boys - who break open the huge wooden boxes containing automobile parts under direct European supervision.

b) General Stores assistants - who pack the various parts in the bulk store ready for distribution.

c) Distribution boys - working under direct European supervision these boys distribute the necessary materials to the various production lines.

The General Stores Assistant and the Distribution boys, must be literate, highly intelligent and possess definite clerical ability. A battery of a strictly clerical nature would be required to select such workers.

2. Experimental Bay: see "Photographic Sequence Chart" - photographs Nos. 4 and 5.

In this section the jigs used in the Body Jig Bay are constructed.

The Native workers here do almost the same work as the Body Jig assemblers except that they work as assistants to Europeans and not as assemblers on their own.

Hence they are known as:

a) Experimental Bay assistants.

The requirements of the Experimental Bay, Machine Shop and Maintenance Assistants may be considered together.

All require a good degree of mechanical adaptability and dexterity, must be able to handle tools and certain machines with considerable skill, carry-out instructions promptly, and be neat, steady workers. They must be alert, able to formulate a plan of action in an emergency, intelligent and dependable.

3. Maintenance and Machine Shop:

Grouped together because both assist qualified Europeans, both must be able to handle tools and both must be able to do simple mechanical repair jobs.

They are known as:

a) Maintenance assistants and

b) Machine Shop assistants.

4. Reception and Offloading: see "Photographic Sequence Chart" - photograph No. 1.

Labourers whose job it is to manhandle the wooden crates containing car parts from the train to storage. A very menial task.

5. Cleaning Squad, Gardeners and Handymen:

Menial tasks with no special requirements.

The duties are self explanatory.

6. Woodboys:

This job simply consists of stacking the wooden sides of the crates broken by the Unboxing boys in a corner of the grounds ready for sale. A very menial duty.

Job Classification of Productive Jobs:

MECHANICAL JOBS	NON-MECHANICAL JOBS
Body Jig Bay:	
Spot welders, Arc welders, Gas welders } Welders	
Body Line:	
Door fitter	File wiper
Mudguard and Bonnet fitter	Discer, Panel beater
	Tinner, Metal Wiper
Paint Shop:	
	Flatters, Hot water washers
	Putty fillers
	Spray painters
Trim Line:	
Leather lining and hrdw. ass.	
Electrical Line:	
Electrical trim assembler	
Engine Line:	
Engine Line assembler	
Chassis Line:	
Chassis Line assembler	
Body Mount:	
Body Mounting assembler	
Oil and Grease:	
Oil and Grease Boys	
Ramp Cleaners:	
	Ramp Cleaners
Seat Pullers:	
	Seat Pullers
Final Finish:	
Final Finish assistants	

Job Classification of Non-Productive Jobs:

MECHANICAL JOBS	NON-MECHANICAL JOBS
Materials Control:	
	Unboxing boys
	General stores assistant
	Distribution boys
Experimental Bay:	
Experimental Bay ass.	
Maintenance and Machine Shop:	
Maintenance ass.	
Machine Shop ass.	
Reception and Offloading:	
	Reception and Off-loading
Cleaning Squad:	
	Cleaning Squad
Gardeners:	
	Gardeners:
Handymen:	
	Handymen
Wood Boys:	
	Wood Boys

Final Classification of Jobs:

MECHANICAL JOBS:

MECHANICAL ASSEMBLERS:

Engine Line Assemblers

Chassis Line Assemblers

Welders

Body Mounting Assemblers

Electrical Trim Assemblers

Leather lining and hardware Assemblers

MECHANICAL ASSISTANTS:

Experimental Bay Assistants

Final Finish Assistants

Maintenance and Machine Shop Assistants

Oil and Grease boys

Door Fitters

Mudguard and Bonnet fitters

NON-MECHANICAL JOBS:

BODY-SHELL WORKERS:

Spray Painters

Panel Beaters

Metal Wipers

Putty Fillers

Discers

Seat Pullers

Ramp Cleaners

File Wipers

Tinners

MENIAL WORKERS:

Unboxing boys

Flatters

Paint Shop Washers

Reception & Offloading boys

Cleaners and Sweepers

Handymen

Woodboys

3. Lever Brothers:

General:

The Auckland Park plant of Lever Brothers is responsible for the manufacture of:

1. Sunlight Standard soap
2. Sunlight six-penny
3. Springbok Blue and Yellow soap
4. Soft soap
5. Bulk soap powders
6. Vim, and the recovery of
7. Glycerine.

The plant may be divided up into four main sections:

1. Sunlight Section - manufacturing nos. 1 and 2 above.
2. Filled Soap Section - manufacturing nos. 3 and 4 above.
3. Soap Powders Section - manufacturing nos 5 and 6 above.
4. Glycerine Recovery Section - concerned with the recovery of raw glycerine from the oils and fats used in the manufacture of the various soap products mentioned.

In addition there are a number of sub-sections feeding into these main sections, as follows:

1. The Wood Box sub-section - for boxing Springbok Blue and Yellow soap, and Vim although at times cardboard cartons are also used.
2. The Cannister sub-section - making cannisters for Vim.
3. The Bagging - Off sub-section - for bagging soap-powders from the Bulk powders section.

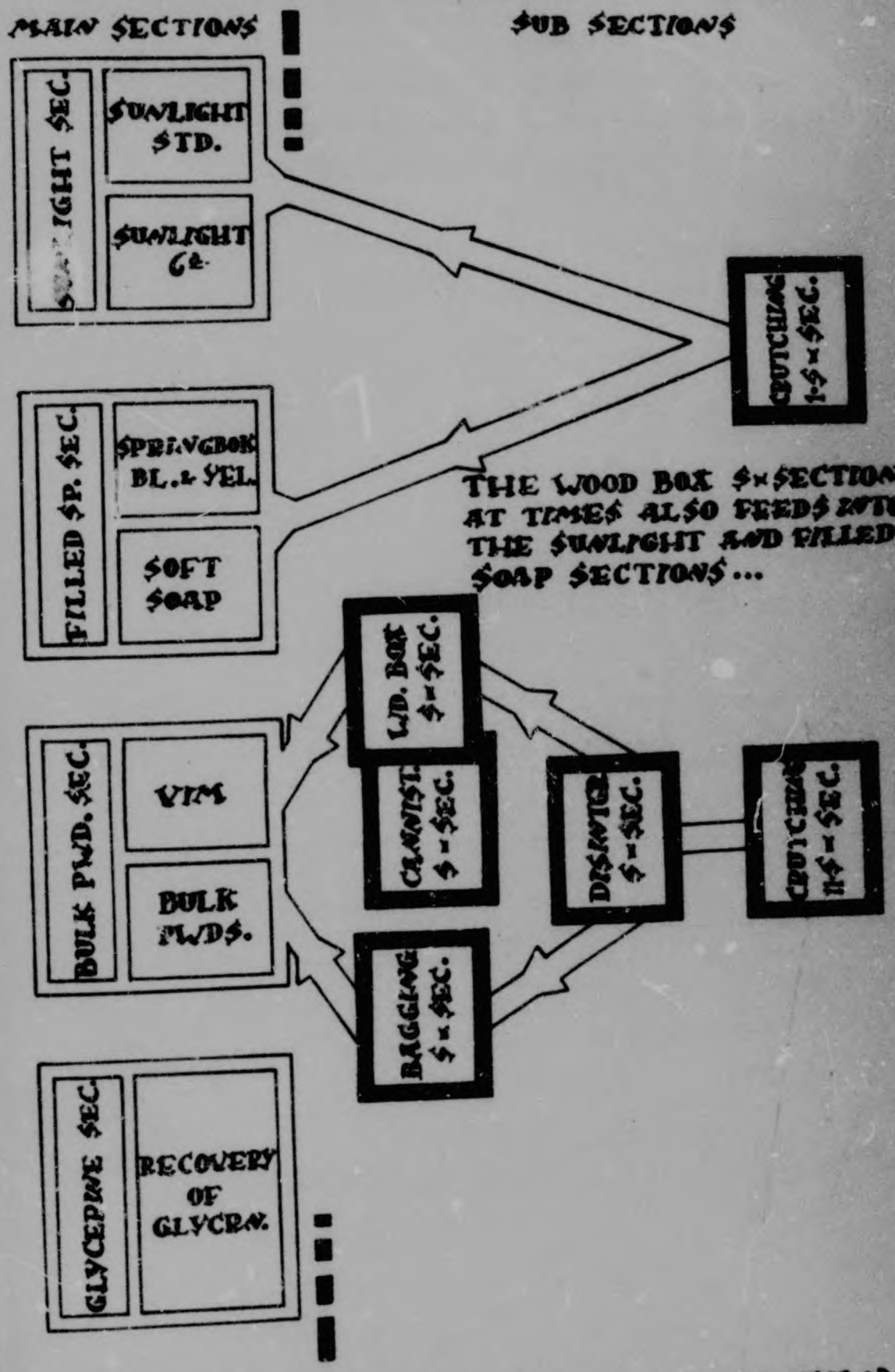

DIAGRAM OF THE RELATION BETWEEN MAIN ECT. AND $UB-$ECT$...

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4. The Crutching sub-section - for mixing or crutching the various constituents of Vim and other soap products.
5. The Disintegrating sub-section - for disintegrating powders to the correct fineness for Vim and powdered soap.

Labour position:

The native labour force is divided into four main groups:

1. Supervisors.
2. Charge Hands.
3. Grade II operators.
4. Labourers.

The labour being distributed as follows:

Section.	No. of Employees.
Packing	95
Wood Box	5
Frame Room	27
Powder Department	53
Pan Room	22
Glycerine	33
Engineering Department	48
Warehouse	33
Yard	31
Work Sundries	22
Police	17
Canteen	16
Transport	29
Office Cars	3
Laboratory Cleaners	3
Total:	437

Key to Photographic Job Sequence Chart:

Sunlight Soap Section:

Photograph No:

Oil Melting Out Section

1. Oils and fats in drums
2. melting out over the sump
3. storage tanks

Oil Services Section

4. bleaching oil
5. oil filter
6. measuring oil charge

Pan Room Section

7. soap boiling pans

Crutching Machine Section

10. Crutching pots

Frame Room Section

11. top-view of soap frames

Final Formation Section

12. slabbing machine
13. barring machine
14. cross-cutting and stamping machine
15. tabletting machine
16. inner wrapping machine
17. outer wrapping machine
18. packing and sealing

Glycerine Section:

8. lye diffusion section
9. glycerine stills.

Filled Soap Section:

Photograph No:

Note:

In the pan room certain pans receive filling substances, such as a greater percentage of fats, to form a cheaper soap known as filled soap. The filled soap frames are then diverted from the Sunlight Section to the Filled Soap Section.

22. hand name stamping and packing filled soap
23. box top nailing
24. wire machine

Wood Box Sub-Section:

Note:

Soap products are packed into either cardboard or wooden boxes, the Wood Box Sub-Section being attached to the Filled Soap Section in the Photographic Job Sequence merely as a matter of convenience.

19. printing press
20. nailing end battens
21. nailing sides and bottoms

Soap Powders Section:

Note:

Diverted from the Pan Room a portion of the boiled soap is led off to the Soap Powders Section.

25. crutching pots mixing silica, anti-oxident, etc.

Photograph No:

26. soap lumps shovelled from the drying floor into the nutter

Bulk Powders Section

27. soap powder from the disintegrator being bagged and weighed.

Vim Section

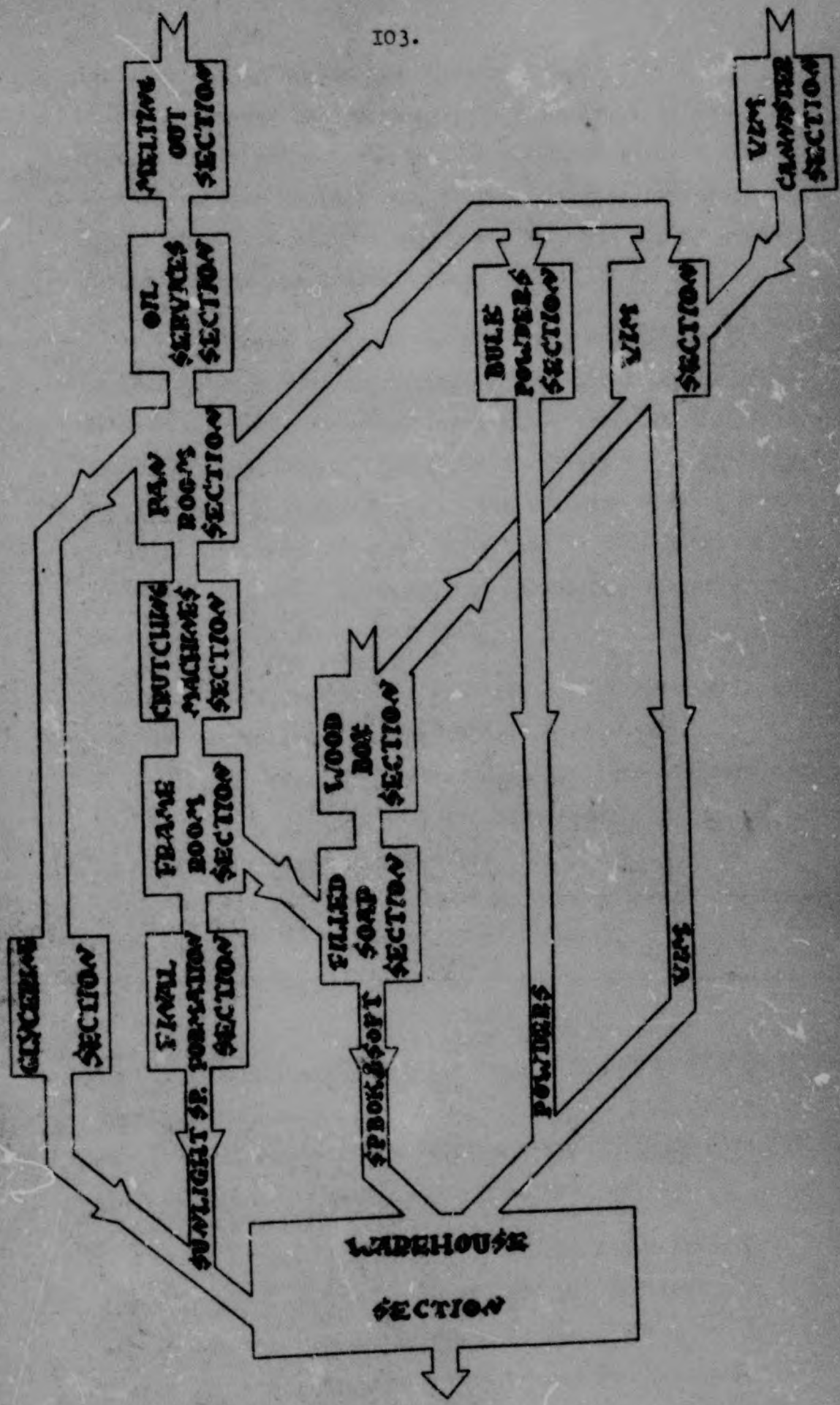
28. Vim Filler Machine
29. packing Vim

Vim Cannister Sub-Section:

30. the rolls of paper being cut to the cannister length in the Slitting Machine
31. the Cannister Machine rolling cannisters
32. seaming tops and bottoms to cannister
33. stamping out tops and bottoms in press

Warehouse Section:

34. a stack away boy in the warehouse



PRODUCTION FLOW CHART...

Isolation of duties on the various lines:

Labour duties within the plant will be considered under the various section headings given in the Production Flow Chart. Due, however, to the extremely menial nature of many of the jobs, only the higher grade duties will be considered in any detail.

Because of the type and variation of products manufactured, a workers duties in this plant cannot be set down in a specific sequence of stages, consequently, in the jobs summaries below, only brief descriptions of the main duties normally carried out by the operatives are given, in order that some idea may be gained regarding the differentiation of jobs. Although the actual job analysis was conducted in far greater detail.

Reference to the Production Flow Chart will be made in the following order of main sections:

1. Sunlight Section (ie: Sunlight Standard and Sixpenny)
2. Glycerine Section
3. Filled Soap Section (ie: Springbok and Soft Soaps)
4. Soap Powders Section (ie: Bulk Powders and Vim)

Considering firstly then, the duties within the Sunlight Section:

1. Melting Out Section: see "Photographic Job Sequence Chart" - photographs Nos. 1, 2 and 3.

As the name suggests, within the Melting Out Section the 45 gallon drums of palm oil and fats are melted out over a sump by means of steam jets, and then pumped up to storage tanks from whence the oil is led off to the Oil Services Section.

The worker requirements in terms of skills involved in the performance of this duty are virtually nil. The work is of such a menial nature that any African worker in the plant could do the job satisfactorily. No training - other than a brief explanation, is required for Melting Out Boys.

The one exception within the Melting Out Section is the Storage Pumping Boy - he should be literate, have a good mechanical memory (ie: know where the various pipelines lead to and how to divert oil from one section to another), be skillful and careful in the manipulation of the oil taps, and be a reliable, steady, conscientious worker.

The main duties in this section are performed by:

a) Melting Out boys and

b) Storage pumping boy

2. Oil Services Section: see "Photographic Job Sequence Chart" - photographs Nos. 4, 5 and 6.

The following sequence of events take place in this section:

a) Oil Bleaching: by heating the oil to the correct temperature as shown by the guage, weighing and adding the necessary bleaching materials, stopping and starting the mixer and bleaching for the stipulated time, taking samples to the laboratory and then setting the oil lines to the Oil Filter.

b) Oil Filtering: by opening and regulating the oil flow, starting filtering pumps, adjusting

the vacuum press, cleaning the press, recovering the fats and removing the sludge.

c) Oil measuring: by drawing off the filtered oil, setting the pipe lines correctly, regulating the flow, adjusting faulty connections and feeding the oil into the Pan Room according to the amounts given on the charge sheet.

The duties isolated in this section are:

a. Bleaching boys
b. Filtering boys
c. Oil Measuring boys
d. Pump boys

Definite mechanical skill of a relatively high degree is required in the successful performance of the above duties. The work involves many delicate adjustments requiring a good degree of mechanical dexterity, the skillful use of a number of tools, good eye-hand-coordination, the ability to carefully adjust hidden regulating screws by touch only, and a definite mechanical understanding of the workings of the machines used coupled with a good mechanical memory.

3. Pan Room Section: see "Photographic Job Sequence Chart" - photograph No. 7.

In the Pan Room all the soap boiling operations take place, the various chemicals are added in their correct proportions, adjustments are made to pressure and steam regulators and the pipe lines set to direct the soap flow.

The main duties isolated in the Pan Room are:

a. Pan Side boys
b. Pumping boys
c. Caustic boys

Pan Side Boys do jobs of a complex nature involving a high degree of mechanical skill, dexterity and adaptability; they must possess good eye-hand-coordination, be literate and conscientious workers. They must be constantly alert, able to act quickly and correctly in an emergency, possess leadership qualities in their supervision of the Pan Side Labourers, and be able to memorise the various chemicals added to the soap mixtures, their correct proportions, as well as the boiling temperatures for the various oils and fats.

Pumping Boys and Caustic Boys do jobs very similar to those of the Bleaching, Filtering and Oil Measuring Boys mentioned in the last section.

4. Crutching Machines Section: see "Photographic Job Sequence Chart" - photograph No. 10.

In this section the anti-oxident and perfumes are added and then mixed in the Crutching Pots. The native responsible for adding the correct chemicals, for stopping and starting the machine, engaging and disengaging the clutch, maintaining and adjusting the crutcher is known as

a. a Power Crutching Machine Boy.

The Power Crutching Machine Minders or Boys must exhibit a relatively high degree of mechanical skill and adaptability, and they must be manually adroit and dexterous, alert and conscientious workers, able to supervise the labourers working under them.

5. Frame Room Section: see "Photographic Job Sequence Chart" - photograph No. 11.

After being mixed and boiled the soap is run off into huge metal frames to cool and solidify. The frame joints are sealed by cork strips. Hand crutching boys continually stir the framed soap with long poles to keep it well mixed and to hasten the cooling process.

The main jobs in this section are:

a. Corking Frames boys.

b. Hand Crutching boys.

These two duties involve no actual skills. They are jobs of a very menial nature.

6. Final Formation Section: see "Photographic Job Sequence Chart" - photographs Nos. 12 to 18.

Four different stages may be distinguished in the formation of the soap tablet and three in the tablet wrapping process.

The tablet formation involves:

1. Slabbing the unframed soap into horizontal sections.
2. Cutting each of these horizontal sections into bars.
3. Cross-cutting the bars off into the correct size.
4. Tabletting the stamped sections with the name of the product and the factory.

All these operations are performed by machines of varying complexity, from the relatively simple Slabbing and Barring Machines to the complicated mechanisms of the Stamping and Tabletting Machines. All operators are required to do any minor adjustments called for, to disassemble clean or replace certain parts, to maintain the

machines in good working order and to report immediately any serious mechanical fault.

Tablet wrapping involves three main operations:

1. Inner Wrapping - where the translucent inner wax wrapping is placed about the tablet.
2. Outer Wrapping - covering the inner wrapping with the coloured paper wrapper advertising the product.
3. Packing - the completely wrapped tablets are packed into cardboard and/or wooden boxes and sent to the warehouse.

The natives operating the Wrapping Machines are required to maintain them, to adjust the feed mechanism, to dissassemble and clean parts and generally keep the machines in good running order.

With the Sunlight sixpenny tablet a slight difference occurs in that the soap is hand wrapped, a task which required a good deal of skill and manual dexterity to maintain the necessary speed and neatness.

In the Final Formation Section the following duties may be isolated:

a. Slabbing Machine Minders
b. Barring Machine Minders
c. Cross Cutting Machine Minders
d. Tabletting Machine Minders
e. Inner Wrapping Machine Minders
f. Outer Wrapping Machine Minders
g. Scale Boys.

The Slabbing, Barring and Cross-Cutting Machine Minders work simple machines requiring only a fair mechanical comprehension, yet involving a good degree of manual dexterity. They must be neat workers, quick and precise in their movements and able to maintain a steady pace.

The Tabletting, Inner and Outer Wrapping Machine Minders on the other hand, operate complicated machinery. They must possess a relatively high degree of mechanical adaptability, be constantly alert, quick thinking and neat-handed.

7. Considering the duties within the Glycerine Section: see "Photographic Job Sequence Chart" - photographs Nos. 8 and 9.

The duties of this section resemble those of the Oil Services Section in that the treatment of lye involves filtering, bleaching and distilling processes, as well as the addition of various chemicals. The lye is obtained from a number of sources as well as from this particular plant, it is a solution containing a high percentage of glycerine resulting from treated oils and fats used in the manufacture of soaps, creams, hair-oils etc. and is sent to the Auckland Park plant to be treated and distilled 'till 80% crude glycerine is obtained from the lye.

The duties within the Glycerine Recovery Section are:

a. Lye Treatment boys
b. Filtering boys
c. Glycerine Stills boys.

The Lye Treatment and Filtering Boys require a definite mechanical adaptability, skill in the use of tools, a light touch and a definite mechanical comprehension. Glycerine Stills Boys are labourers.

Concerning the Filled Soap Section:

The Wood Box Sub-Section which at times feeds both the Vim and Sunlight Sections, but is usually associated with the Filled Soap Section, will be discussed under this heading.

8. The Wood Box Sub-Section: see "Photographic Job Sequence Chart" - photographs Nos. 20 and 21.

The wooden boxes for packing soap products are nailed together in the nailing machine as shown in the photographs. The machine operator is responsible for setting the nail supply, cleaning the nail feed, adjusting the hammers, regulating and maintaining the machine in good working order, as well as for the construction of neat, strong wooden boxes.

The work is performed by:

a. a Nailing Machine Minder.

The basic requirements for this job may be tabulated as follows:

1. Excellent eye-foot-hand-coordination
2. Definite Mechanical adaptability
3. Manually adroit
4. A neat worker
5. A "straight eye" and light touch
6. Quick thinking and precise
7. Fast working and conscientious
8. With a definite understanding of the workings of the machine.

9. The Printing Sub-Section: see "Photographic Job Sequence Chart" - photograph No. 19.

This section feeds into the Wood Box Section, for it is here that the advertisement is printed on the wooden sections that comprise the sides of the box.

The work is performed by the:

a. Printing Machine Minder.

These job requirements are the same as those of the Nailing Machine Minder given above.

10. The Filled Soap Section Proper: see "Photographic Job Sequence Chart" - photograph No. 22.

The filled soap is both slabbed and barred but not cross-cut or tabletted. Instead each bar is hand-stamped and packed, the box lids are then nailed on and the box reinforced with a wire wrapping.

These two duties are performed by:

a. Filled Soap Name Stamping Boys

b. Wire Machine Minders.

With regard to the duties in the Soap Powders Section, they may most conveniently be discussed under three broad headings:

a. jobs in the Bulk Powders Section

b. jobs in the Vim Section

c. jobs in the Vim Cannister Section.

With the exception of a) Filled Soap Name Stamping Boys and b) jobs in the Bulk Powders Section, the worker requirements for all other duties in this section are the same as for the Nailing Machine Minders.

11. Soap Powders Section: see "Photographic Sequence Chart" - photographs Nos. 25, 26 and 27.

From the Pan Room certain of the boiled soap is led off to the Bulk Powders and Vim Section. Here silica, together with certain other chemicals are added and thoroughly crutched. The mixture is then spread over a floor to weather and dry, the larger lumps of dry soap are then nutted and finally disintegrated into a fine powder, which is bagged off and sent to the warehouse.

Three jobs may be isolated:

a. Nutting Boys

b. Disintegrator Boys

c. Bagging-Off Boys

The Disintegrator Machine boy is the only worker in this section requiring any mechanical adaptability, and apart from the danger of the work - which requires exercising considerable care - the duties may be equated with those of the lower grade Machine Minders - eg: a Barring M/M.

12. Vim Section: see "Photographic Job Sequence Chart" - photographs Nos. 28 and 29.

Vim follows precisely the same sequence except that the powder is filled into Vim cannisters and boxed.

The filling is performed by:

a. Filling [illegible]chine Boys.

A very menial duty with no special requirements.

13. Vim Cannister Sub-Section: see "Photographic Job Sequence Chart" - photographs Nos. 30 to 33.

In the formation of Vim Cannisters the following main duties were isolated:

a. Slitting Machine Boys

b. Cannister Winding Machine Boys

c. Metal press Boys

d. Bottom Seaming Boys

e. Top Seaming Boys

The above jobs all require a relatively high degree of mechanical adaptability, good manual dexterity and coordination, and an ability to work neatly and quickly and to maintain a constant speed.

14. Warehouse Section: see "Photographic Job Sequence Chart" - photograph No. 34.

The main duty in the warehouse, of stacking the finished products neatly and ready for transportation, is performed by a:

a. Stackaway boy.

A labouring duty of a very menial nature.

15. The Maintenance Section of the Plant forms two major job classifications:

a. Artisans assistants - known as Engineers

b. Boiler attendants.

A marked degree of mechanical adaptability, coupled with the skillful use of tools, a "neat-handed" dexterity and an alert quick-thinking mind, are the primary requirements needed here. The workers must be able to carry-out orders quickly and precisely, to be able to work to a good degree of accuracy and exactness, and to manifest a definite mechanical understanding in the execution of their tasks.

Job Classification of Sunlight Section:

(M/M : Machine Minder).

MECHANICAL JOBS	NON-MECHANICAL JOBS
Oil Melting Out Section:	
Storage pumping	Melting Out Boys
	Drum cleaning labourers
Oil Services Section:	
Oil pumping & measuring	Samples Messenger
Filtering	Oil Measuring Labourers
Bleaching	Brine makers, Clean press labourers.
Pan Room Section:	
Pan Side Boys	Pan Room labourers
Crutching Machine Section:	
Power Crutching M/M	
Frame Room Section:	
	Hand Crutching Boys
	Tank Skimming labourers
	Frame Room Corking
Final Formation Section:	
Stamping M/M	Soap Stacking Boys
Wrapping M/M	Hand Wrapping Boys
Slabbing boys	Rejects boy
Barring boys	Packing boy
Cross-cutting boys	Glueing boy
Wrpd. Soap Weighing M/M	Stamping Machine La.
Scale Soap Weighing Scale Boy	
Boys Sample Weighing boy	
Cut to Weight boy	

MECHANICAL JOBS	NON-MECHANICAL JOBS
Glycerine Section:	
Caustic Pumping	Lye Room labourers
Lye Pumping	Glycerine labourers
Job Classification of the Filled Soap Section:	
Filled Soap Section:	
Stamp & Pack Filled Soap	
Wire Machine Minder.	
Wood Box Sub-Section:	
Nailing Machine Minder	Printing labourers
Printing Press M/M	
Job Classification of the Soap Powders Section:	
Soap Powders Section:	
Disintegrator M/M	Soap Powders labourers
Power Crutching M/M	
Bulk Powders Section:	
	Bagging Off Boys
Vim Section:	
Vim Filler M/M	Vim Packing
Vim Cannister Sub-Section:	
Slitting M/M	Punching bottoms labs.
Tube Winding M/M	
Bottom Seaming	
Metal Press M/M	
Job Classification of the Warehouse Section:	
	Stackaway boys
	Loading boys
	Warehouse labourers
	Transport labourers
	Waste labourers

MECHANICAL JOBS

NON-MECHANICAL JOBS

Job Classification of the Maintenance Section:

Artisans assistants	General labourers
Boiler attendants	Work Office labourers
Relieving Grade II's	Cleaners and Sweepers
Fork Lift Driver	Garden boys
Stencilling cutting M/M	Yard labourers
	Laboratory labourers
	Handymen
	Canteen labourers
	Native Kitchen labourers
	Works Sundries.

A Note on Police Duties:

In the present set-up these boys may be called upon to perform any task of importance in the works, consequently as they may be required to work in any section of the plant they have been graded as mechanical boys, that is, they have been placed in the higher grade.

Final Job Classification:

Mechanical Jobs (M/M : Machine Minder)

Machine Minders and Operators - Higher Grade.

Supervisors
Charge Hands
Pan Side Boys
Tabletting M/M
Wrapping M/M
Slitting M/M
Tube Winding M/M
Nailing M/M
Power Crutching M/M
Printing Press M/M
Lye Treatment Boys
Punching bottoms M/M.
Stencil Cutting Boy
Oil Measuring
Oil Pumping
Storage Pumping
Caustic Pumping
Lye Pumping
Pumping Boys
Filtering Boys
Bleaching Boys
Artisans Assistants
Boiler Attendant
Police
Guillotine M/M

Machine Minders and Operators - Lower Grade.

Slabbing M/M
Barring M/M
Cross-Cutting M/M
Vim Top Fitters
Relieving Grade II's
Bottom Seaming
Hand Wrapping
Lift Boys
Wrapped Soap Weighing
Weighing Scale
Sample Weighing
Scale Boys
Cut to Weight
Stamp and Pack Filled Soap
Disintegrator M/M

Non-Mechanical Jobs:

Note:

All these duties are of such a very menial nature that no useful purpose would result from any sub-division of this group.

Labouring duties.

Melting Out Boys
Hand Crutching boys
Soap Stacking boys
Rejects boys
Packing boys
Glueing boys
Stackaway boys
Loading boys
Brine Makers
Pan Room labourers
Printing labourers
Chemical labourers
Frame Room Corking
Waste labourers
Lye Room labourers
Drum Cleaning labourers
Works Sundries boys
Yard labourers
Punching bottoms labourers
Glycerine labourers
Warehouse labourers
Laboratory labourers
Samples messenger
Canteen labourers
Native Kitchen labourers
Transport labourers
Work Office labourers
Clean Press labourers
Tank Skimming labourers
Soap powders labourers
Handymen
Stamping machine labourers
Vim Filling labourers.

4. South African Pulp and Paper Ind. Ltd.

GENERAL:

The Geduld plant of South African Pulp and Paper Industries - S.A.P.P.I. - concentrates on the manufacture of paper and cardboard of various qualities, colours and thicknesses, cut and parcelled according to the requirements of the buyer.

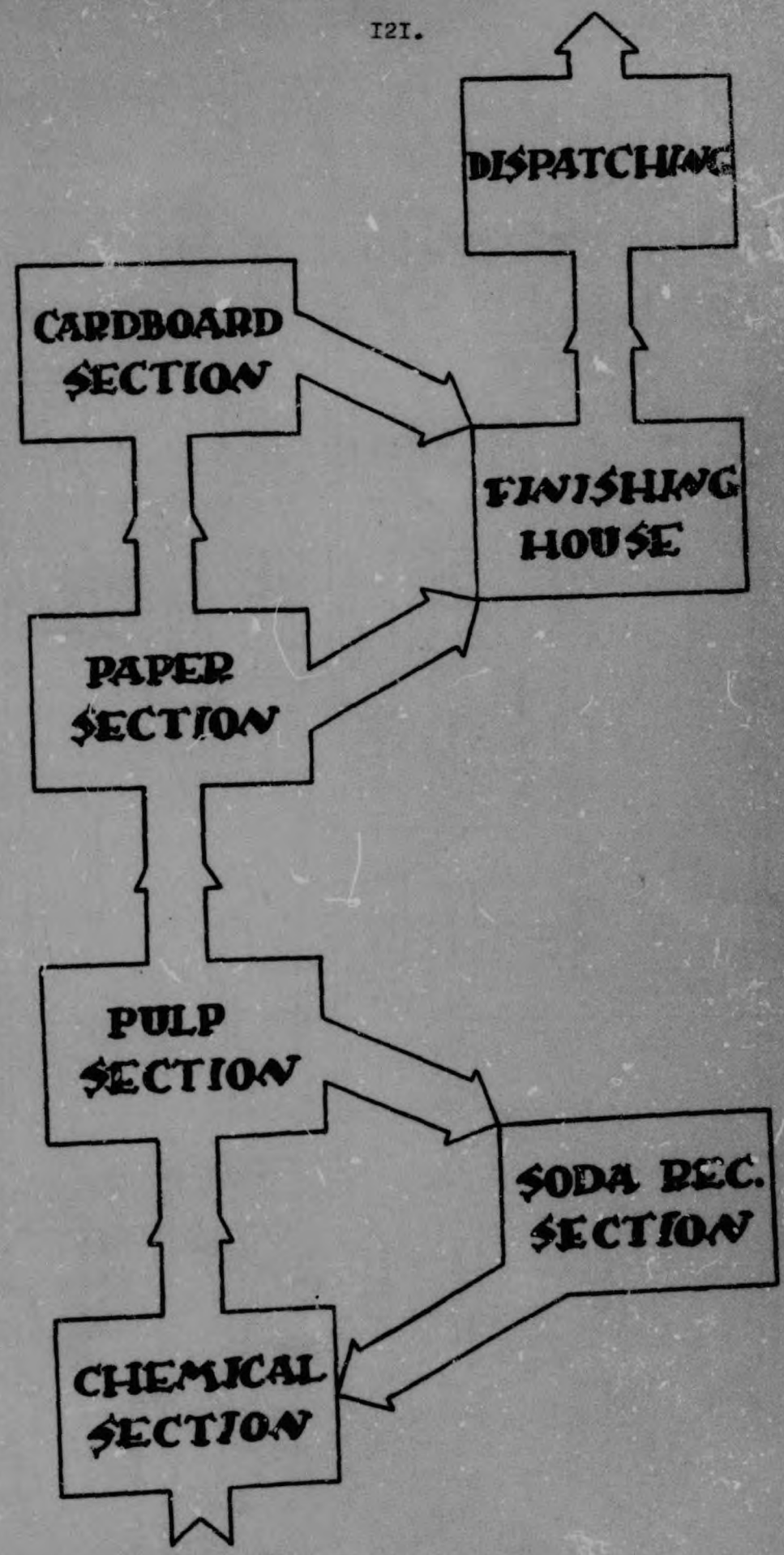
The plant is comprised of six main sections: (see the Production Flow Chart)

1. The Chemical Section.
2. The Soda Recovery Section.
3. The Pulp Section.
4. The Paper Section.
5. The Cardboard Section.

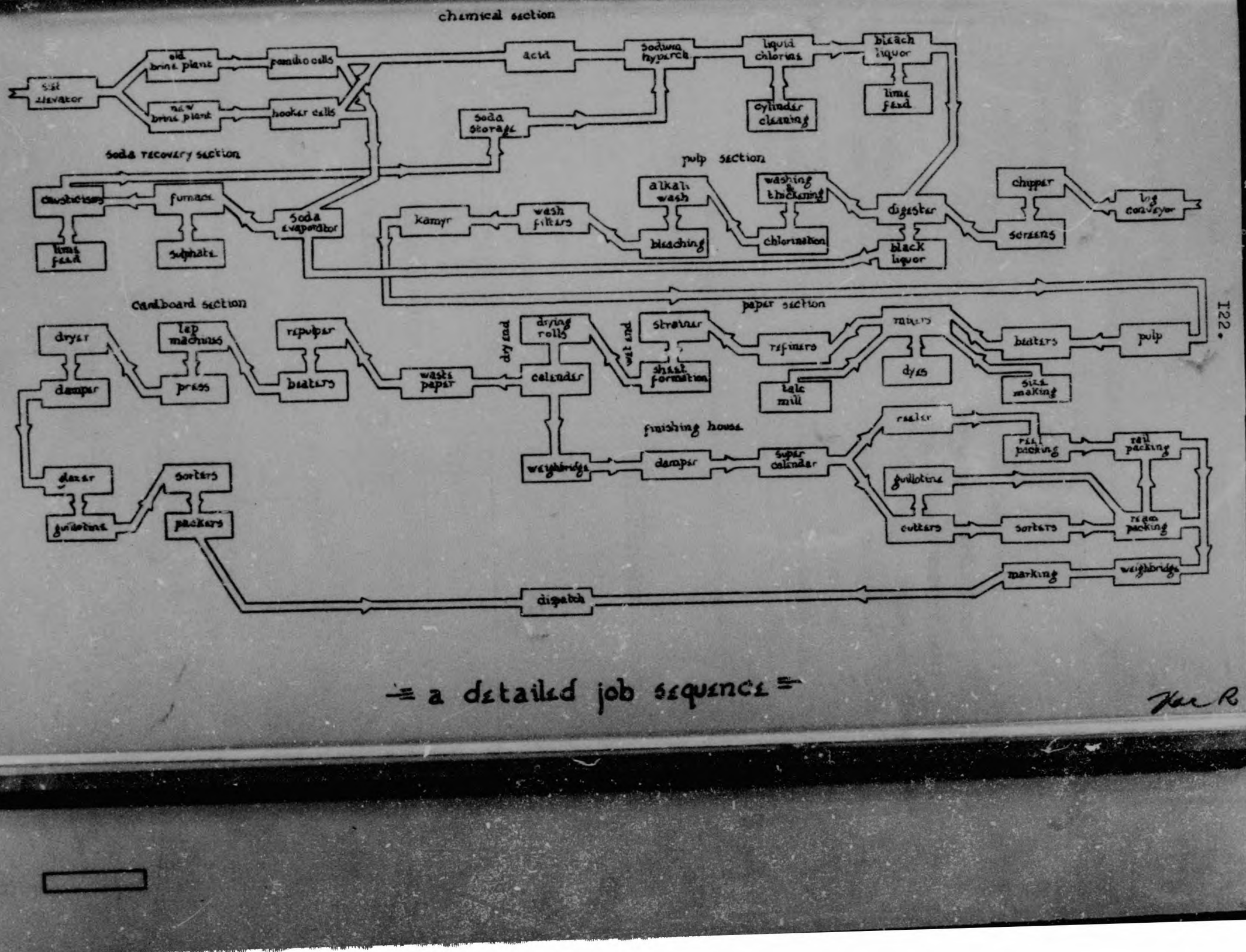
and 6. The Finishing House and Dispatch.

Within the framework of these main sections fall a number of sub-sections, which in some cases, such as the Brine Plant Sub-Section of the Chemical Section, occupy a whole floor, and in other instances, such as the Glazer Sub-Section within the Cardboard Section, consist simply of one machine.

The number and location of these Sub-Sections is shown in the "Detailed Job Sequence Diagram" in order to facilitate in the recognition of, and to realise the position of, the great number and variety of labour duties within this plant.



PRODUCTION FLOW CHART...



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= a detailed job sequence =

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