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*The Journal of the Qld. Manual Arts Teachers' Association*  
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VOL. 3 — AUGUST 1983

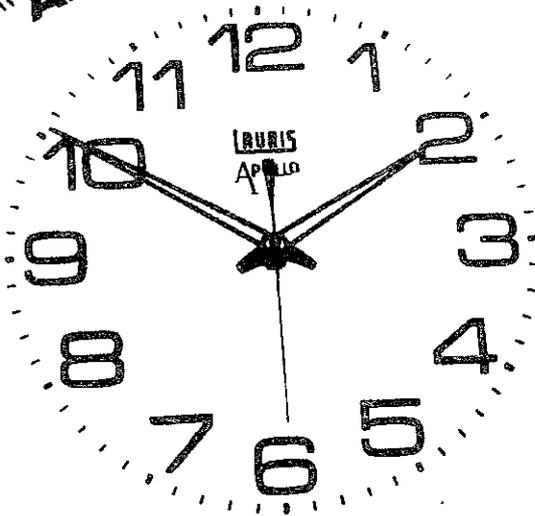
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Journal of the  
Queensland Manual Arts Teachers Association

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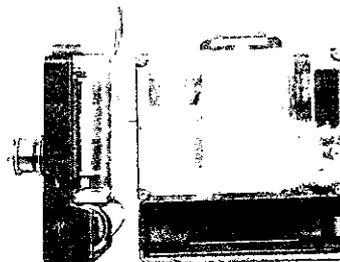
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*\*\*Views expressed in the Journal are those of the Author and not necessarily those of the Queensland Manual Arts Teachers Association.*

*Any material sent for Publication should be addressed to the Editor. Permission to reproduce any articles are granted providing acknowledgement is stated.\*\**

## Q.M.A.T.A. 1982 EXECUTIVE

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	Mr Alan Waltisbuhl	
	Mr Brian Wheeler	Springwood High School



SIX MUNCIE UGG I CUINT  
EVN SPEL SCOOOL TEECHER  
AN NOW I ARE ONE ...

E D I T O R I A L

The Country Meeting was held on 28th May at Merrimac State High School on the Gold Coast. A successful meeting was held with much of the interest centred on the report given by our Subject Advisory Representative of the BOSSS - Ted Connelly. He advised the meeting of the new representatives on this committee and the status of the new syllabi. There is a report by Ted later in this journal. Our thanks must go to Keith Pacey and Col Wheeler for their efforts in organising the venue, the social events and the visit to the Shark Cat Factory.

The Executive of QMATA has been working to obtain subjects with a Manual Arts bias in the Bachelor of Education program at the Brisbane College of Advanced Education. It now appears that as a result of these efforts, that such subjects will be introduced during the next three years. It is proposed that the first of these subjects will be introduced in 1984.

The dates for the Jasco display evenings have been changed to the 6th and 7th September. For Manual Arts Teachers in the Brisbane and surrounding areas it is always a pleasant and worthwhile occasion to see what is available in graphics equipment.

D.C.L. Surveying Instruments of 171 Logan Road, Buranda are offering a new service to schools. They will arrange to demonstrate mini Dumpy Levels, Cowley levels and plane tables at any school in the Brisbane area. They also offer student alidade sets at about \$50. Any teacher who requires further information can ring David McVeagh (07) 391 1911 or A/H (07) 303 057.

This journal includes some interest articles and jobs - the main article is the second lecture delivered by Mr Tom Dodd to the ACET Conference in Perth in 1982. The information about the next ACET Conference which will be in Melbourne in January 1984 is also in this journal. There is a drawing of one of the prize winning jobs in the "bring a job" competition from the Country Meeting - an adjustable clamp by Alan Borchardt.

*Happy reading,*

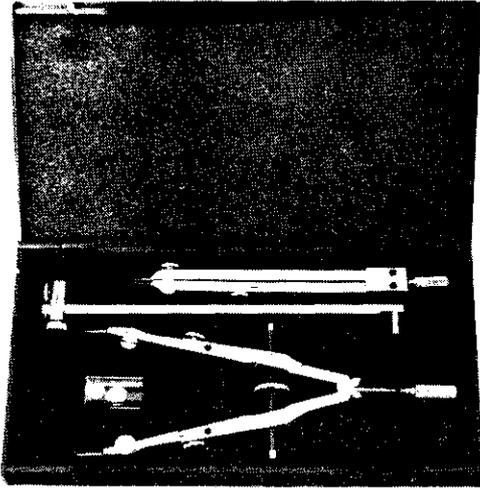
Denis Byrne

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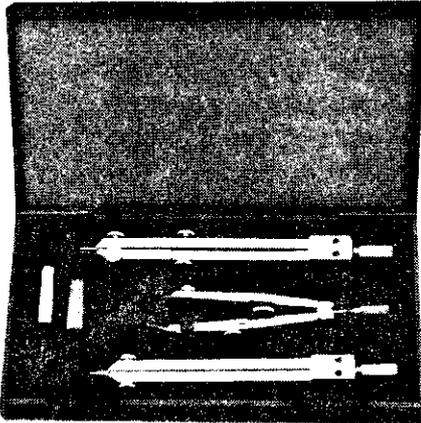
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# Q.M.A.T.A.

## CALENDAR OF EVENTS

<u>Date</u>	<u>Event</u>	<u>Venue</u>
AUGUST 26th 7.00PM	Dinner Meeting Judging of Graphics Competition	Mt Gravatt CAE Auditorium
SEPTEMBER 6th & 7th	Jasco Display Evening	Jasco South Brisbane
SEPTEMBER 8th 7.00PM	Executive Meeting	QTU Building
OCTOBER 13th 7.00PM	Executive Meeting	QTU Building
NOVEMBER 10TH 7.00PM	Executive Meeting	QTU Building
DECEMBER 9TH	Rest Day	
FEBRUARY 9TH 7.00PM	Executive Meeting	QTU Building
MARCH 8TH 7.00PM	Annual General Meeting	QTU Building

REPORT FROM.....

Subject Advisory Committee

A new Subject Advisory Committee has been appointed for the period 15 April 1983 to 30 April 1987. The members of the committee are as follows:-

*Chairman*

*Mr F. Peach*

Members:

*Teachers in Secondary Schools*

*Mr F. Stoneham*

*- nominated by the Director-General*

*Mr R. Powell*

*Mr G. Will*

*Mr D. Bowes*

*- nominated by AISQ GEO and QATIS*

*Mr G. Kunst*

*Mr J. Williams*

Nominees of -

*. Board of Advanced Education*

*Mr J. Buchan*

*. Board of Teacher Education*

*Mr K. Dodds*

*. James Cook University*

*Dr B. Best*

*. University of Queensland*

*Dr G. Shannon*

*. Association of Teachers*

*Mr E. Connelly*

*Officer of Planning Services*

*Mr R. Stevenson*

*Chief Moderator (ex officio)*

*Mr D. McNeil*

*ROSBA Consultant (ex officio)*

*Mr D. Tanner*

*ROSBA State Chairman A. & B (ex officio)*

*Mr D. Schlyder*

YEAR 11 & 12 GRAPHICS

At the August 82 meeting of the BOSSS the following points were noted regarding the evaluation of the trial syllabus -

- : Teachers had difficulty in coping with the new areas of study
- : Teachers appear to interpret the syllabus as requiring a deal of new equipment
- : Teachers appear to feel that there is not enough flexibility in the syllabus
- : Teachers appear to feel that the syllabus requires them to cover too much work in the time available.

Following this the BOSSS has directed that the syllabus be recast with a view to eliminating the above problems. In addition the following suggestions were made for consideration by the S.A.C.

- : That the total scope of the subject be reduced
- : That the general objectives in each area of study be made more specific while the suggested subject matter and suggested practical activities be made more general
- : That a pattern of core plus extensions be adopted in each area of study.
- : That ways of organising the subject matter in the syllabus to form units of study in a school work programme be stated in an organisation section.

Following this the S.A.C. resolved to form a sub-committee to re-draft the Trial Syllabus in Graphics Years 11 and 12 (ROSBA format) and that the sub-committee attempt to complete the re-draft and report to the S.A.C. meeting on October 28th.

#### JUNIOR MANUAL ARTS SYLLABUS

At the April meeting of the Curriculum committee it was agreed that some changes should be made to this syllabus.

To complete this the S.A.C. resolved to form a sub-committee to re-structure the Junior Manual Arts Syllabus. That the sub-committee aim to present the re-structured syllabus to the S.A.C. at the first S.A.C. meeting in 1984.

The points to be considered in the re-structuring are as follows:-

- : the syllabus be re-structured as core and/or the extensions and/or electives
- : the syllabus be left in stages
- : the syllabus be re-structured as three (3) documents to separate general shop A General shop B and Graphics
- : the syllabus objectives remain as they are but that some subject matter be written in as clearly defined core.
- : that the existing syllabus be restructured, but not drastically changed as the S.A.C. is not attempting to produce a new syllabus.

So from the above you can see that the S.A.C. is going to be kept busy in the coming six months. Some other points for the S.A.C. to consider in the near future could be the development of a Board Syllabus in Manual Arts Years 11 and 12. Thermosetting Plastics in the Junior Manual Arts Syllabus and changes in the Safety Notes for School.

Should you require further information on any of the topics presented here or if you have some views you would like to express concerning these matters, please write either directly to the Manual Arts S.A.C. c/- BOSSS or to me through the Secretary QMATA.

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	TERM OF LOAN IN FORTNIGHTS															
	13	26	39	52	65	78	91	104	117	130	143	156	169	182	195	208
	FORTNIGHTLY REPAYMENTS															
\$100	8	5	3	3	2	2	2	2	2	2	1	1	1	1	1	1
\$200	17	9	6	5	4	4	3	3	3	3	3	2	2	2	2	2
\$300	25	13	9	7	6	5	5	4	4	4	4	4	3	3	3	3
\$400	33	17	12	10	8	7	6	6	5	5	5	5	4	4	4	4
\$500	41	21	15	12	10	9	8	7	7	6	6	6	5	5	5	5
\$600	49	26	18	14	12	11	9	9	8	7	7	7	6	6	6	6
\$700	57	30	21	16	14	12	11	10	9	8	8	8	7	7	7	7
\$800	65	34	24	19	16	14	13	11	10	10	10	9	8	8	8	8
\$900	73	38	27	21	18	16	14	13	12	11	11	10	9	9	9	8
\$1000	81	43	30	24	19	17	15	14	13	12	11	11	10	10	10	9
\$2000	162	85	59	47	37	33	29	27	25	23			20	19	19	18
\$3000	243	127	88	70		51	44	40	36	33			30	29	28	27
\$4000	324	169	119	97		67	59	54	50	46	44	42	40	39	37	36
\$5000	405	211	147	118	96	83	74	67	62	58	55	52	50	48	46	45
\$6000	486	253	176	139	113	99	89	81	75	70	66	63	60	58	56	54
\$7000	567	296	206	163	133	116	104	94	87	81	77	73	70	67	65	63
\$8000	647	338	235	184	149	129	116	105	97	90	85	81	78	74	72	70
\$9000	728	380	264	207	172	149	133	121	112	104	99	94	90	86	83	81
\$10,000	809	422	294	229	191	166	148	135	124	115	110	104	100	96	93	90

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6 May 1983

Mr D.J. Peverill  
Secretary - QMATA  
Ferny Grove State High School  
P.O. Box 78  
FERNY HILLS    Q    4055

Dear Mr Peverill

I refer to your letter of 5 April 1983, concerning inspection of welding equipment and gas services in Manual Arts sections.

The Manual Arts Safety Handbook contains instruction on gas safety which cover the the care and maintenance of gas welding and LP gas services. These instructions are considered adequate to cover existing situations in our secondary schools.

Contact with the Gas Examiner reveals that he is unaware of any organisation which has implemented regular inspection of gas installations similar to our electrical inspections.

Yours sincerely

A handwritten signature in dark ink, appearing to read 'J.F. Guy'.

J.F. GUY  
A/ Director  
Division of Secondary Education

## QUEENSLAND MANUAL ARTS TEACHERS' ASSOCIATION

ALL CORRESPONDENCE TO BE ADDRESSED TO:

### C O U N T R Y M E E T I N G

Saturday, 28th May '83

Merrimac High School

Attendance: D. Peverill (Ferny Grove); D. Byrne (Salisbury); K. Schaffer (Loganlea); E. Connelly (Kingston); B. Craig (P.B.C.); W. Nason (Beenleigh); B. Wheeler (Springwood); P. Cutlack (Pine Rivers); G. Davis (Wynnum); R. Fletcher (Wynnum Nth); H. Pickering (Indooroopilly); M. Dale (Indooroopilly); B. Murray (Merrimac); C. Wheeler (Merrimac); K. Pacey (Keebla Park); A. Behrendorff (Keebra Park); J. Henderson (Springwood); A. Borchardt (Maroochydore)

Apologies: I. Hass (Caloundra); B. Murphy (Dalby); N. Williams (Wynnum North); B. Gray (Maroochydore); B. Murphy (Dalby)

Minutes: The minutes were confirmed by B. Nason, seconded T. Connelly. CARRIED.

Correspondence:  
moved H. Pickering that the correspondence be accepted, seconded R. Fletcher. CARRIED.

### Reports:

#### TREASURER'S REPORT:

Balance at 28.5.83 \$3078.68 moved K. Schaffer the report be accepted, seconded B. Wheeler. CARRIED.

#### MEMBERSHIP:

B. Fletcher reported we have 268 financial members and 5 life members

#### SUBJECT ADVISORY:

T. Connelly reported that the Year 11-12 Graphics Syllabus had been scrapped and the Years 8, 9, 10 syllabi are to be reconstructed. The main reason given in the evaluation report on the syllabus (Graphics 11-12) was the high cost of the equipment schools were requesting. Mr Connelly stated he felt the last four years work put in by M.A. teachers had been wasted in the development of the Year 11 and 12 Graphics.

There was discussion on the core, electives and extensions in Shop subjects and how this can work on the 1966 syllabus. A recommendation that a syllabus guide be printed showing core electives and extensions. B. Nason moved that 'a survey of Queensland Private and State schools to see if the 1966 Syllabus in Shop subjects should be phased out as intended.' The survey document to be checked by subject advisor to eliminate ambiguity; seconded T. Connelly. CARRIED.

MEETING WITH THE MINISTER OF EDUCATION:

H. Pickering reported on this meeting. The following subjects were discussed:

Reduction of class sizes  
Welding course for M.A. Teachers  
An increase in grants for Manual Arts  
Manual Arts Assistants

The Minister gave the deputation a good hearing and indicated he would consider the matters presented. He stated that the Grant was a budget issue and as the student takes the object home they should pay the extra.

BCAE B.ED. PROGRAMME:

D. Byrne reported that a meeting had been set up to discuss the Manual Arts based electives proposed in B.Ed. program at the Brisbane College of Advanced Education. It is expected that 2 units in the elective area with a Manual Arts bias will be included in the B.Ed. program in 1984.

General Business:

B. Nason reported on Burnie Custom Wood a very fine grained board.

B. Wheeler stated that he believed that there was confusion in the minds of Manual Arts teachers throughout the state about the future direction of Manual Arts caused by new syllabi presented, then withdrawn and ROSBA started then delayed. He moved that 'a conference of Inspector, Subject Advisors, BOSSS members, Curriculum Branch, QMATA Executive and Community Leaders be set up to formulate the aims of Manual Arts in the 1980' seconded T. Connelly. PASSED.

B. Nason moved that 'a letter be written to the appropriate industrial body to check if any regulations are available on safety standards about dust collection.' Seconded K. Pacey. CARRIED. The cutting of particleboard, hardboard, and imported timber on circular saws and lathes and the lack of dust extractors meant that a possible health risk to members existed.

Prize Winners of "Bring a Job":

1st - Folding Saw Stool - Merrimac High School  
2nd - Cramp - Maroochydore High School

Meeting closed 12.55

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YOU ARE CORDIALLY INVITED  
TO PARTICIPATE IN THE  
SIXTH NATIONAL CONFERENCE  
**CONFRONTING TECHNOLOGY  
EDUCATION**

**PROGRAM OUTLINE**

MONDAY, 16th January.

Afternoon:

- Registration.
- Provision for special interest groups to meet.
- Display.

Evening:

- Pre-dinner drinks.
- Conference dinner.
- Conference opening.  
Mr. John Cain, Premier of Victoria.
- Keynote address:  
"CONFRONTING TECHNOLOGY EDUCATION"  
Mr. Barry Jones, Minister for Science and  
Technology.

TUESDAY, 17th January.

Morning:

- Dennis Hensche: South Australia.  
"Technology Education - Future Perspectives"
- Ken McKinstry: New Zealand.  
"A Workshop Technology Approach to Design  
Education".

Afternoon and Evening:

- School innovation workshops.
- Trade displays.
- ACET Biennial General Meeting.

WEDNESDAY, 18th January.

Morning:

- John Haynes: South Australia.  
"Microprocessors - tools for the physically  
handicapped".
- School innovation workshops.

Afternoon and Evening:

- School innovation workshops.
- Display of books and student projects.

THURSDAY, 19th January.

Morning:

- Rex Wills: Victoria.  
"Plastics, more than a materials study".
- School innovation workshops.

Afternoon:

- Plenary session.
- End of conference.

FRIDAY, 20th January.

- Tours for interstate visitors as selected.

A.C.E.T.

The Australian Council for Education through Technology is a national body which represents the interests and fosters the professional development of teachers of Workshop Practices, Manual Arts, Technical Studies, Industrial Arts, Graphic Communication and other technologically oriented subjects.

**THE CONFERENCE**

The Victorian State Committee of A.C.E.T. cordially invites persons interested in technology education to attend the Sixth National Conference in Melbourne.

The conference theme is:

"CONFRONTING TECHNOLOGY EDUCATION"

In planning the program organisers have sought stimulating and relevant speakers to provide input to the conference theme.

Particular attention has been directed towards implementing a recommendation of Tom Dodd, Brunel University, London, who was keynote speaker at the last A.C.E.T. conference in Perth, 1982.

Mr. Dodd's recommendation was:

"... that a major purpose of the next conference should be to provide a forum for practising teachers to report on successful school programs".

A major part of the conference time has been allocated to practising teachers from various States to share their innovative programs relating to technology education.

The organisers have also placed a high priority on the benefits of social interaction between conference participants. Accordingly they have directed their planning to organising a residential activity. Participants are encouraged to live in at the conference venue.

**THE VENUE**

Glenn College is on the campus of Latrobe University, Bundoora, approximately 15 km north east of Melbourne.

The College is an ideal setting for a residential conference. First class accommodation and meals, excellent recreational and club facilities and a very

pleasing natural environment are among the many attractive features. Delegates will have access to excellent sporting and recreational facilities adjacent to the college. These include swimming pool, gymnasium, squash courts, tennis and sauna.

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**MEALS**

For participants staying at Glenn College all meals are included. Casual meals are available if required by those residing elsewhere.

**FOR PARTNERS**

Melbourne is noted for the range and quality of its shops and shopping centres. Shopping visits and trips to places of interest will be organised for people accompanying participants. Details will be available at conference registration.

**WHEN MEETING IN MELBOURNE FLY THERE BY TAA**

Trans Australia Airlines has been appointed Official Carrier to the Conference. They are experts in all aspects of travel.

In the interests of all Australian Delegates, it is strongly recommended that you contact your local TAA Convention Travel Consultants, as listed below who are the only persons able to offer group discounts, where applicable.

You will also be able to discuss the possible application of other types of individual concession fares to your travel requirements.

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CANBERRA	DI MOSLEY	46 1811
BRISBANE	CHRIS HOUGHTON	33 2011
ADELAIDE	BARRY SMITH	216 1911
PERTH	PAMELA HALL	323 0331
HOBART	CORALEEN BENNETT	38 3511
LAUNCESTON	MIKE BUTLER	32 9911
NEWCASTLE	CHRIS BOURKE	26 1544
TOWNSVILLE	BILL PELLOW	81 6211

Coaches will be at Melbourne Airport on Monday 16th January to transport delegates arriving on the following TAA flights.

**Arrive Melbourne**

Perth	Flight No	15FT	(5.00 a.m.)
Brisbane	Flight No	411	(10.15 a.m.)
		481	(12.25 p.m.)
Canberra	Flight No	473	(11.00 a.m.)
Sydney	Flight No	405	(11.15 a.m.)
		461	(1.15 p.m.)
Adelaide	Flight No	TN27	(11.20 a.m.)
Hobart	Flight No	454	(11.30 a.m.)

A light lunch will be available for early arrivals.

**CONFERENCE APPLICATION**

Surname ... ..

Preferred given name... ..

Home address... ..

... ..

School, College, Company etc. ... ..

... ..

Phone: Business... .. Home ... ..

YES OR NO

I will be residing at Glenn College

I will be attending the Conference Dinner

To calculate total conference costs see over. 

Deposit to be submitted with this registration form

Registration/Course Fee. \$24.00

Conference Dinner: Single \$20.00

Double \$40.00

Accommodation deposit (if applicable) \$40.00

**TOTAL**

**DETAILS OF PERSON ACCOMPANYING DELEGATE**

Surname ... .. Given Name ... ..

YES OR NO

I will be residing at Glenn College

Accommodation deposit (if applicable) \$40.00

Please make cheque payable to: A.C.E.T. Victorian State Committee.

This application form should be completed and forwarded with the necessary deposit to:

Mr Ron Weir,  
Victorian Secretary ACET,  
38 Noorong Avenue,  
Bundoora, Vic. 3083.

Apply early to avoid disappointment.

**COST**

These costs are based on a participant living in at Glenn College from Monday 16th to Thursday 19th after lunch.

**INTER-STATE PARTICIPANTS**

Registration/Course Fee \$24.00  
Conference Dinner \$20.00 Single  
\$40.00 Double  
(Dinner wines and pre-dinner drinks included)

Accommodation and meals \$102.00

Persons accompanying delegates can choose to reside at Glenn College. Single room accommodation and all meals are available at the same cost as to delegates, \$102.00.



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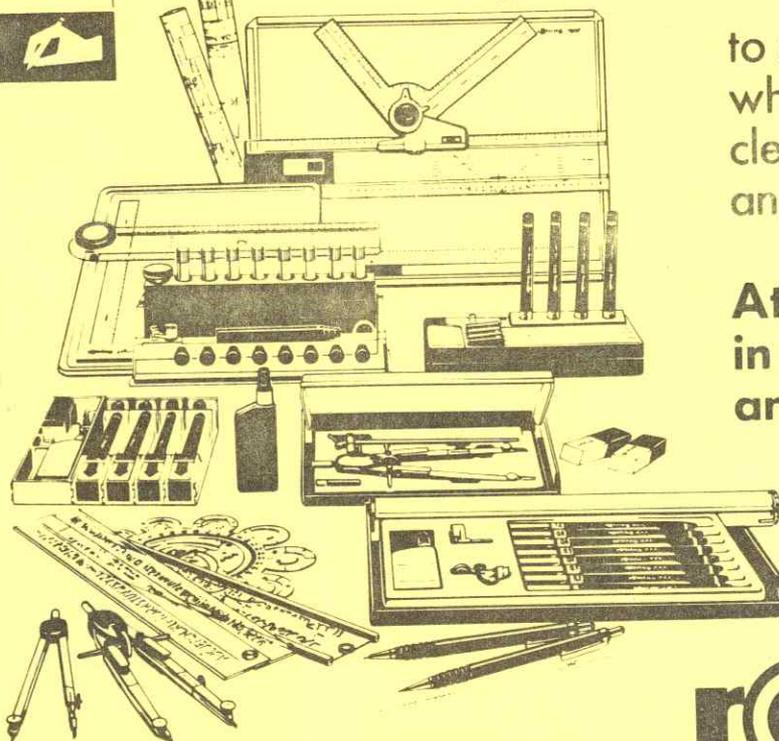
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A l e t t e r f r o m . . . .

the Membership Registrar

---

R. Fletcher  
Membership Registrar, QMATA,  
c/- Wynnum North SHS  
Stradbroke Ave,  
WYNNUM NORTH. 4178.

Dear Members,

I have been asked to make a few points regarding membership.

As you are no doubt aware membership costs \$7.00 per year with a discount of \$1.00 for payment before the 1st April of each year. Not only is it of a monetary advantage to join early but as well there is the certainty of receiving all four journals for the financial year.

Many of you may not be aware of an association rule which states that a financial member only receives the journals printed after he becomes financial. This may seem a bit tough at first glance but we only print enough journals for the financial members at the time of printing. I'm sure all will agree that the association cannot afford to over order in the hope that they will be used and not just wasted.

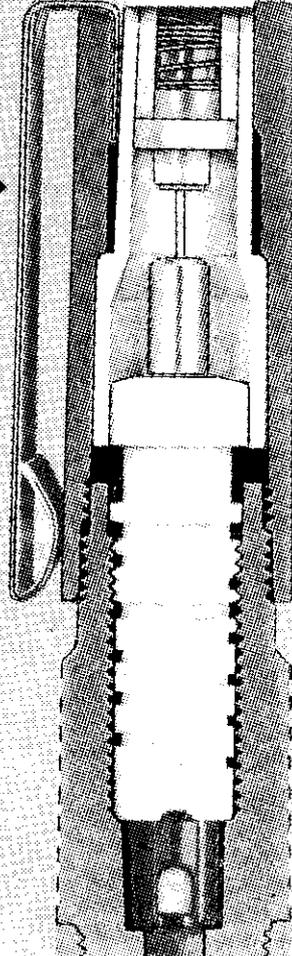
I would also put it to you that when renewing your subscription next year all members at a school remit their subscription in the one envelope. I can make further savings on postage by mailing receipts in bulk. Such cost saving action as this can only work to postpone the inevitable increase in annual subscriptions which, fortunately, are not envisaged in the immediate future.

Membership stands at 5 life and 416 financial members which constitutes a large percentage of our subject teachers.

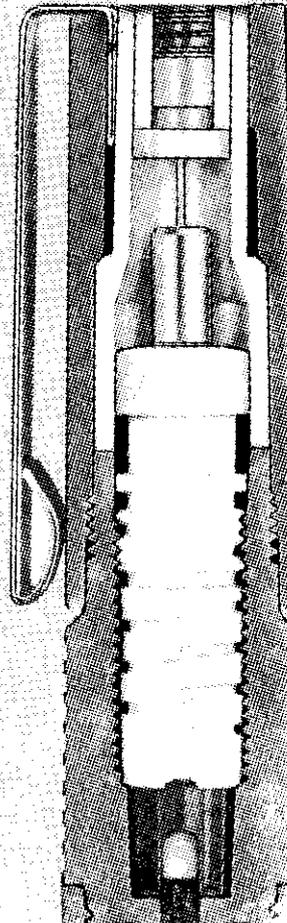
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HAMILTON RD  
WEST CHERMSIDE

MR S ZAMMATARO  
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PO BOX 815  
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15 WARMINGTON RD  
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CNR CAVENDISH RD & STAN  
COORPAROO

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MIRANI SHS  
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PO BOX 23  
BOOVAL

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NERIDAH ST  
LOGANLEA

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30 ROSS ST  
YEPPON

MR K WOLSKI  
38 LUSITANIA ST  
EAST IPSWICH

MR R CARELESS  
IPSWICH SHS  
HUNTER STREET  
BRASSALL

MR A WEBB  
TOOWOOMBA SHS  
STUART ST  
MT LOFTY T'WMBBA

MR P WILD  
2/A ROBERTS ST  
NORTH IPSWICH

MR K WOOD  
COORPAROO SHS  
CNR CAVENDISH RD & STAN  
COORPAROO

MR S SHEPHERD  
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PO BOX 79  
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B A S I C M E C H A N I C S S E M I N A R

held at  
 FERNY GROVE HIGH SCHOOL 1983

In the classroom, Basic Mechanics can be broken down into peripheral exercises at a station in the room, as with the lathe, or complete class exercises where students can work on one or a variety of exercises at the same time.

<u>EXERCISE</u>	<u>RESOURCES</u>	<u>ASSESSMENT</u>
<u>YEAR 8</u>		
<u>Cycle Front Hub</u> Pull down and reassemble Time: 25 min/student	Resources Department supplied hub and film strip, spanners and stand . Worksheet of photos and subtitles. RAG SUPPLIED BY STUDENT	Assessment Learning experience only
<u>YEAR 9</u>		
<u>Cycle Coaster Hub</u> Pull down and reassemble Time: 25 min/student	Department supply hub spanners and stand, worksheet or photo and subtitles. RAG SUPPLIED BY STUDENT	Learning experience only Terms - bimetallic, caged bearing etc.

As with year 8 names could be printed on silhouette board e.g. bimetallic linings, caged bearings, sprockets etc.

<u>Door locks</u> Remove and pull down Reassemble and install Time: 30 min/student	Mini door and frame, mortice lock, screw drivers, worksheet procedure. Name 8 parts on exploded view.	Following a procedure recognizing parts from drawing .
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Peripheral exercise with work sheet, time span again.

<u>Bolts and Locking Devices</u> Heavy angle iron and offcuts Time: 3 periods/student	Drill, taps, sockets, spanners, bolts, nuts, washers, tension wrench, drill jig	Part, tools, devices, Tapping sizes
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Students mark, drill and tap a piece of large angle iron at least 10mm thick. The metal is cramped to a bracket on drill table. 10mm bolts, nuts, washers and spring washers are supplied to student. The bolt is tensioned using an open end spanner and a ring spanner. The spring washer is removed and the bolt is sheared off using tension wrench (yield point). A lock nut is fixed to the underside of the thread, to prevent turning and the bolt centred and drilled out. The drill need only start to do the full cut.

<u>Car Fuel Pump</u> Pull down and assemble Time: 2 period/student	Screwdriver, worksheet	Learning experience, parts and terms, gaskets
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A class group could be taken on this exercise by asking the wreckers to save fuel pumps. Cardboard gaskets can be made by students to match the fixing lugs. A small cam can be set up on the demo to show how the pump operates. Caution students see this exercise as they would a pump type oil can.

<u>EXERCISE</u>	<u>RESOURCES</u>	<u>ASSESSMENT</u>
<u>Washing Machine Gear Box</u> Turn handle on pulley to see the agitation action; unbolt to see gearing Time: 2 students/1 period	Spanners, screwdriver, worksheet	Terms e.g. agitate, crank, fill in worksheet
Only moving parts are bolts, oil is removed and names painted on gears.		
<u>2 Stroke Motor</u> Victa - remove cylinder head and reassemble Time: 6 periods/2 students	Stripping procedure; drawings Large parts only. LARGE STORAGE NEEDED.	Following a procedure, parts and tool recognition
As a number of periods are spent on the project it must be in a lockable storage area.		
<u>YEAR 10</u>		
<u>2 Stroke Motor, Victa</u> Victa - working order, Start; pull the head off, assemble and start Time: 4 periods/2 students	Motor on stand. Procedure sheet, spanners, tension wrench	Parts and cycles of engine, tools and terms
Same storage problem as year 9.		
<u>2 Stroke Carboretors</u> Pull down and assemble Time: 3 periods/student	Flow chart, spanners, silhouette board	Terms Flow chart
As a lot of small parts are involved a silhouette board is the best method of checking. *		
<u>Car Distributor</u> Pull down set points, assemble Time: 4-6 periods/student	Procedure and diagram, check with cam dwell angle. Test, feeler gauge	Terms - ignition and electrical
A demo board can be set up with lights to show how the rotor distributes the spark, a small job little storage problems.		
<u>4 Stroke Briggs and Stratton</u> Start engine, remove inlet valve for grinding, assemble and start again Time: 6-8 periods/2 students	Procedure sheet, spanners, feeler gauges, tension wrench. STORAGE FOR PARTS.	Terms and Tools
Storage problems for engine and parts		
<u>Car Gear Box</u> Pull down and assemble Time: 4-6 periods/2 students	Procedure sheet, spanners, sockets tension wrench, feeler gauges STORAGE FOR PARTS.	Terms and Tools
Simple Holden box suitable stand and storage for parts.		

\* One problem with assembly exercises, especially no-go engines, is checking all parts are replaced. A way around this problem is to have an exploded view or photograph and assembly programme. All parts are laid out on a silhouette board and the student has to assemble and strip down again on to silhouette board for checking.

L E C T U R E   I I   -   M R .   T .   D O D D S  
ACET CONFERENCE  
Perth 1983

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LECTURE II: DESIGN AND TECHNOLOGY  
AND THE SECONDARY SCHOOL CURRICULUM

"ADAPTING TO CHANGING NEEDS"

Firstly, I must indicate the way in which I use the words

Design     -   from the word dessin meaning 'to draw'  
                  "planning to some pre-determined end"  
                  (probably the reason why we say that it  
                  is possible to have designs on a lady).

-   it is a way of approaching a problem/  
    opportunity.

Technology - "the art of making things"  
                  "a systematic approach to the practical  
                  arts"  
                  "the means by which man seeks to change  
                  or manipulate his environment".

The two are included because although they are very close together in education they traditionally reflect a slightly different context. The one having overtones of art and the visual, the other relating to science and function. We might use Design as the process and Technology as the context.

However, they are the key to our world because they are the ways by which we have fashioned our environment and constructed our lifestyle.

One side of the coin is to do with

"How we have applied our knowledge to satisfy  
our needs and solve our problems"

Whilst the other is concerned with the question

"Whether we considered the social implications".

I might have called the subject TECNIK like they do on the Continent of Europe.

"the synthesis of knowledge from many disciplines to  
devise technical and economic solutions to practical  
problems".

Again we emphasise the activity rather than the subject, the course rather than the discipline and the involvement of the individual in the decision making.

Dr Patrick Nuttgens went so far as to say that

"without creative personal innovation, all work tends towards uniform mediocrity".

- thus furthering the message about educating for capability and this he describes as

"involving not only thinking and analysing but the ability to make and do and the ability to do what you say you will do".

To put the word Curriculum into a context. It is to do with the intended and organised teaching and learning activities of the Secondary School (11 - 18  
(11 - 16) + 2

One of the first things I must do is to indicate that Design or Technology has a method which is quite different to either Art or Science. For example, the classic scientific method is to do with:

hypothesis, experimentation and principle/law.

Whereas Technology is to do with the process by which man has solved his practical problems. The starting point lies in the recognition of the problem and the method involves the consideration of a number of possible answers before the decision is made to settle on a compromise solution. Design is to do with compromise and the final solution may need to rest between the opportunities, resources and constraints and may also include important value judgments about the solutions contribution to the quality of life.

Art on the other hand has a more cyclic internalised method in which the problem, method and evaluation are common to the artist. The designer has to satisfy the public at large with his answers - not so the Artist.

A Designer has been described as one who harnesses the objectivity of the Sciences to the subjectivity of the individual. Design is an integrated process. A curriculum argument may, therefore, be offered in which the tools of learning (the disciplines) are used to solve the problems of everyday.

Perhaps I should use the words as follows:

Design - the process

Technology - designing in a context

In an effort to get a shop floor view of the technological process I consulted the E I T B Technicians Guide, which said that technicians should:

1. - be able to gather and communicate information
2. - be able to diagnose, solve problems and find faults
3. - understand manufacturing and commercial routines
4. - be able to measure and use measurement
5. - be able to choose materials and processes and understand the nature of materials.

6. - be able to plan and organise ones own work and that of others.

If we are, therefore, to use this process in the educational system it has to be recognisable as such even though we know that we have changed the point of emphasis from the artefact to the process.

Michael Fores calls technology "creative ingenuity"

If one considers the list of abilities then we know that some of these may be acquired through highly structured exercises - but further questions must surely be asked about how "creative ingenuity" may be developed.

The key lies in the educational use of the industrial process thus putting the pupil into the role of client, designer, maker and evaluator. The total process includes analysis, synthesis, decision making and value judgment. The important feed back loops which are present in practical activities of this kind reinforce the learning and encourage individual participation of a most sophisticated kind.

One thing is certain, that if Design and Technology are key to the development of our world, then they should have an important place in the curriculum. "An education system which will not accept technology is an education system which turns out cultural cripples".

DEFOUGE      The Teaching of Technology      Council of Europe Pub

Questions about the nature of the understanding inevitably throw up possibilities of Design and Technology occurring at different levels within the curriculum.

1. Macro Level - Curriculum these like Design awareness Technological literacy straddle many subject fields in that they all contribute to these developments.
2. Micro Level - especially at the level of capability in which pupils learn to solve problems, acquire specific experience at a subject or activity level. Doing encourages Capability.

It is all very well but how does something like this operate in school given a fairly traditional subject oriented organisation.

One school in London has come up with a plan which resembles a weave of different coloured threads in which curriculum developmental themes are set against individual activities or subjects.

		YEAR				
etc.						
Tech. Lit.						
Graphicacy						
Design Awareness						
Literacy						
Numeracy						
	Maths	D.T.	Art	Geog.	Science	

This method of producing a matrix to see how certain activities can contribute to educational objectives was used by Nisbet in his useful little book 'Purpose in the Curriculum'. He constructed his chart and used large X's for direct relationships and little x's for less pronounced relationships and the outcome is a useful piece of analysis.

I am not suggesting that all planning should be done in this way but such an approach, at least, indicated important relationships and sequences.

What can be said about D.T. as an educational activity

- it can be an exciting, motivating and creative activity
- it provides a link with the outside world
- it is a vehicle to convey knowledge and understanding of science, materials, practical techniques, visual effect and human need
- it can have a unifying effect across the arts and science disciplines of the curriculum.

If one accepts this rather general statement then how do pupils actually manage the activity of designing when we know there are two distinct bases for decision making. One emerges from the sciences and enables us to quantify but pupils also must handle the qualitative decisions in a realistic way.

When I try to sum up what D.T. is, I see it as a subject which contributes to the achievement of those important general educational aims, (which help young people to become adequate and capable citizens, workers and private individuals).

Three main areas of development seem to me to be important and G.B.H. indicated these in a recent lecture. Many school subjects could be analysed thus:

1. Resources

(knowing and knowing how)

- of fundamental and applicable knowledge
- of physical and intellectual skills
- of experience
- Knowledge of materials, workshop processes, techniques, components
- Knowledge of structures/mechanics
- Knowledge of power, energy and transfer
- Knowledge of measurement etc. etc.

2. Capability

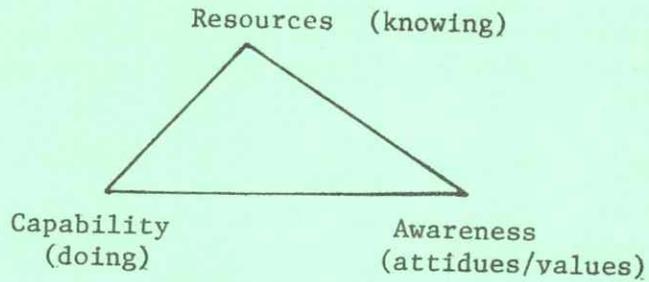
(doing)

- the ability to dream, imagine and invent
- to solve problems
- to create and realise dreams in practical terms
- to gauge effect and significance of action and inaction
- the ability to solve real problems of a personal, social or environmental kind.
- the ability to recognise, identify and specify needs capable of being met by a practical solution.
- the ability to use enterprise, resourcefulness and determination to achieve results.

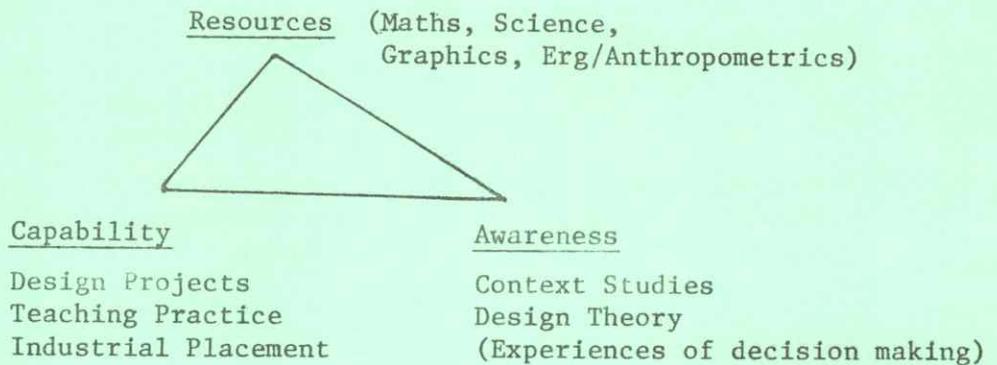
3. Awareness

(attitudes, values and knowing why)

- self and social consciousness, aware of potentials, relationships and implications
- appreciation of cultural heritage and tradition and of aesthetic values, of motivation excitement and sense of purpose
- understanding historical development
- culture of arts and manufacture
- appreciation of aesthetic values
- national and personal economic necessity to create and earn a living
- a history of creative activities of humanity etc.



Perhaps it will be useful if I illustrate the point from our own course at Brunel University because the degree course has been shaped with teacher training in mind although industry is also very interested in the outcomes which to them are in attractive blend of the analytical aspects of engineering design and the visual aspects of industrial design. The concentration on making has reinforced the important design criterion of designing for making/production and this, as we know, is central to manufacturing industry. The added benefits of graduates who can communicate and deal with the technical and aesthetic together makes the package quite attractive to those product manufacturing firms with small design sections. It is disciplined and structured and might be shown thus:



Brunel University B.Tech. (Hons).

Design Technology with Education

1. 4 years (Hons.) )
2. D. & T. with Education)
3. T.P. for QTS ) Entrance Qualification
4. Ind. Placement )
- 5.
6. Two year common core
  - design criteria
  - design experience in context

7. Two year Specialisation
  - specific context
  - depth/development
  - open ended
8. Safety courses
9. Academic input - skills and awareness
10. Integrated elements like Tech. module in Year II

#### Conclusions about Design Technology in Schools

1. The method is designing
2. Making is at the heart of the subject
  - the problem solving is at the
3. Solutions may vary according to the nature of the problem and the individual ability of the pupil concerned.  
(thus traditional assessment procedures are of little use).
4. The design problems may reflect different combinations of the functional and the visual (especially in the early days). Later on specialisation may be desirable.
5. The approach to the problem is crucial - the knowledge base may vary according to the nature of the problem.  
(silver goblet, radio, and for handicapped persons, or a steering mechanism for a kart)
6. Academic inputs need tailoring to pupil needs and developing awarenesses. Important design skills will enable pupils to inject new thinking into their work.  
(maths, ergonomics/anthropometrics, history, art etc).
7. So many activities seem unrelated so it is important to introduce the context idea - alongside the common methodology.

Recently in a report on our engineering system of training "Engineering Our Future" complained that many engineers lacked flair and imagination. The culprit was too much prescription and too much analysis - even our engineering designers are suggesting that without synthesis we will only perpetuate what we have.

Perhaps a lesson is to be learned because in the past the entrance qualification to Engineering Courses has been a pattern of Maths/Science. These two subjects attract the convergers and the divergers are often kept away from industry because they chose what they saw as more exciting and interesting subjects. Often these subjects had an aesthetic dimension and thus we lost those who could contribute in terms of the qualitative.

Surely through Design Technology we must

1. enable all pupils to gain the awarenesses and skills of problems solving using materials by experiencing project work. Thus decision makers in society will, at least, be aware of the nature of technology and use it sensitively and sensibly.
2. enable others to follow a career which is based on interest/motivation.
3. to support many others through their individual pursuits and leisure activities to spend their time profitably and with due satisfaction.

May I just leave you with a thought about the relevance of D.T. Studies to our pupil's futures.

Children entering Infants Schools this year will only be 23 in A.D. 2000. When you think of the changes we are told are likely to happen by then we really must ask ourselves what the important features of schooling should be - and, more specifically how D.T. may contribute to the wellbeing and survival of those young adults in a world likely to be very different from our own.

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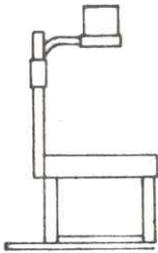
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B O O K    R E V I E W

Critic: H. Pickering

Title:    METALS IN THE SERVICE OF MAN

Author:    Dr A. Street and Professor W. Alexander

Publisher :    Penguin Books

"The science of metals is a specialised one and tends to be shut away from the general reader in rather grim-looking text books and papers." So states the preface to the book. Metals obviously have a great attraction to and wonder for the authors. They have written this book so that all those who handle metals in their "leisure, pleasure and daily work" will be able to understand the text and share their enjoyment of metals.

The book has a number of clear drawings and plates to illustrate the text. It is the text that makes this book so attractive by using easily understood language so that even complex subjects are readable to the lay person.

A comprehensive glossary explains specialised technical terms. The contents include the following units: (1) *Metals and Civilisation* (2) *How We Get our Metals* (3) *Making Iron* (4) *Making aluminium* (5) *Alloys* (6) *Metals under the Microscope* (7) *The inner structure of Metals* (8) *Shaping of Metals* (9) *Testing of Metals* (10) *Iron and Steel* (11) *The Role of Carbon in Steel* (12) *Cast Iron and Alloy Steels* (13) *Aluminium* (14) *Copper* (15) *Four Common Metals* (16) *Magnesium* (17) *Some Minor Metals* (18) *Corrosion* (19) *Joining Metals* (20) *Powder Metallurgy* (21) *Metals and Nuclear Energy* (22) *The Future of Metals*

This book is an excellent teacher/student reference book and is a must for any library.

Quick Check List:

RECOMMENDATION:	Excellent Teacher/Student Resource
COUNTRY OF ORIGIN:	England
COST:	\$9.95 May '83
SIZE:	10 1/2" x 155mm
READABILITY:	Grade 11 - Teacher
SUITABLE FOR:	Reference Material
ILLUSTRATION USAGE:	Clear/Adequate
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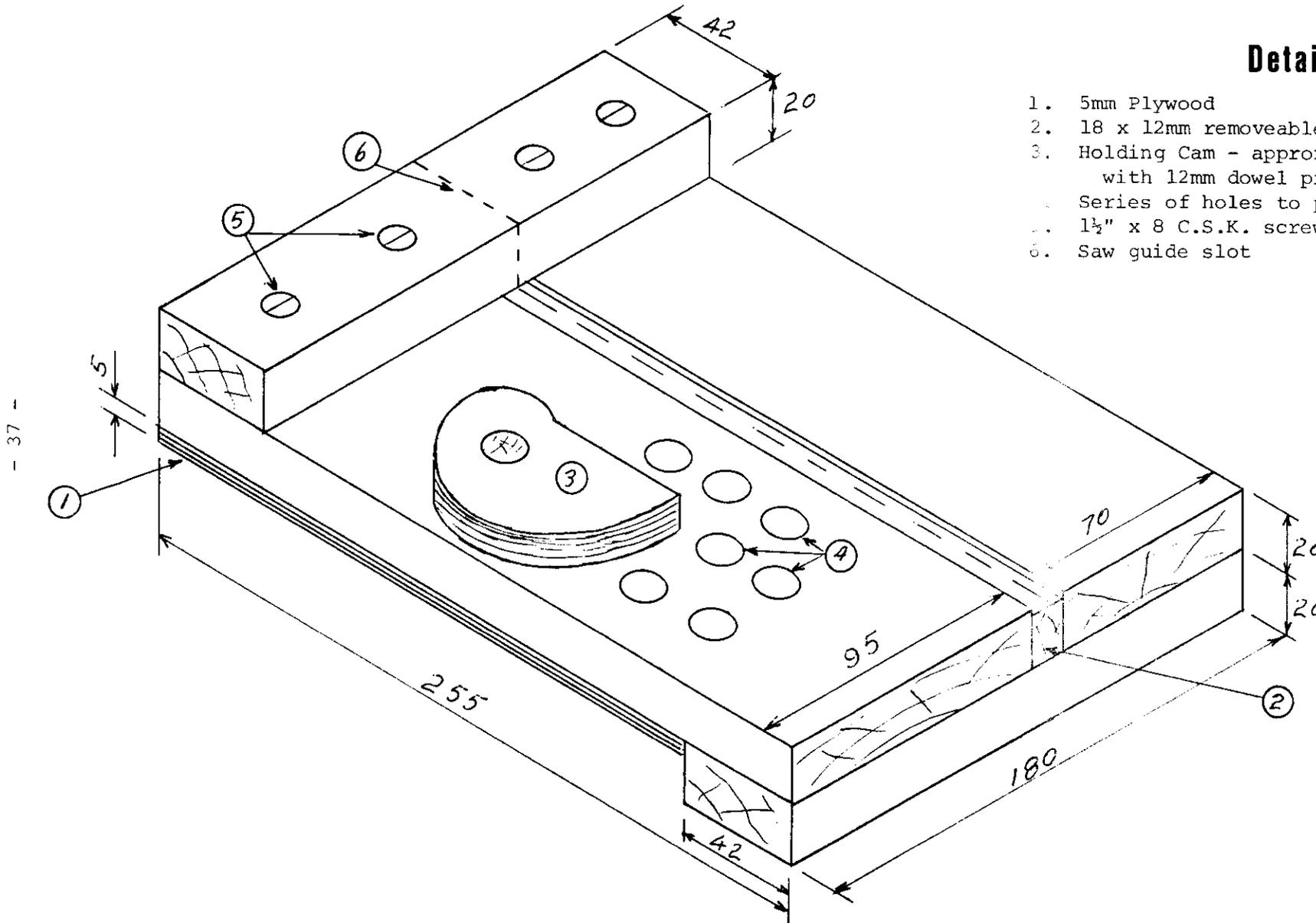
**66 ERNEST STREET, STH. BRISBANE, P.O. BOX 55, STH. BRISBANE, Q. 4101,**

# BENCH HOOK

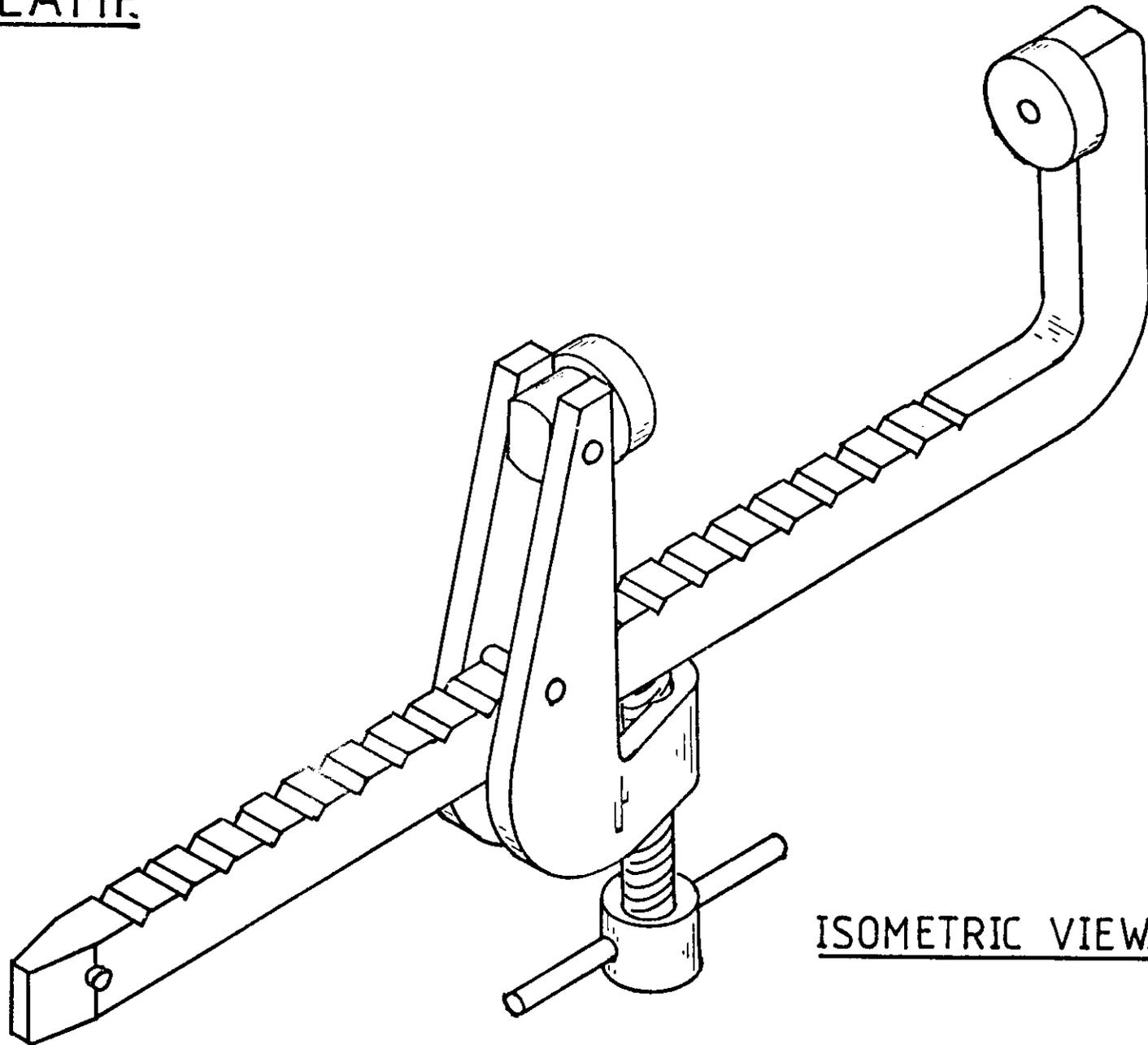
Sample supplied by Les Quick  
Darling Point Special School

## Details

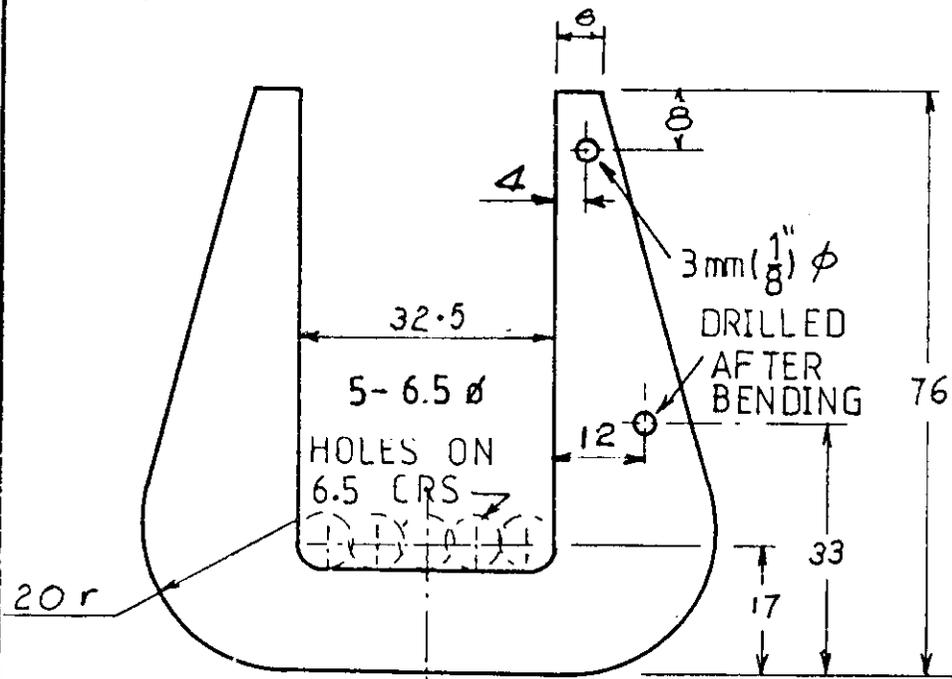
1. 5mm Plywood
2. 18 x 12mm removeable strip - spot glued
3. Holding Cam - approx 80 x 50 x 12mm  
with 12mm dowel pivot
4. Series of holes to position cam
5. 1½" x 8 C.S.K. screws
6. Saw guide slot



CLAMP

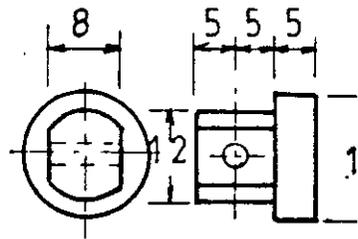
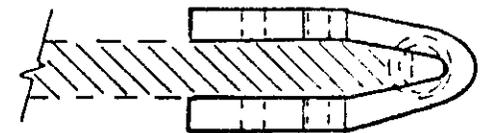


ISOMETRIC VIEW.

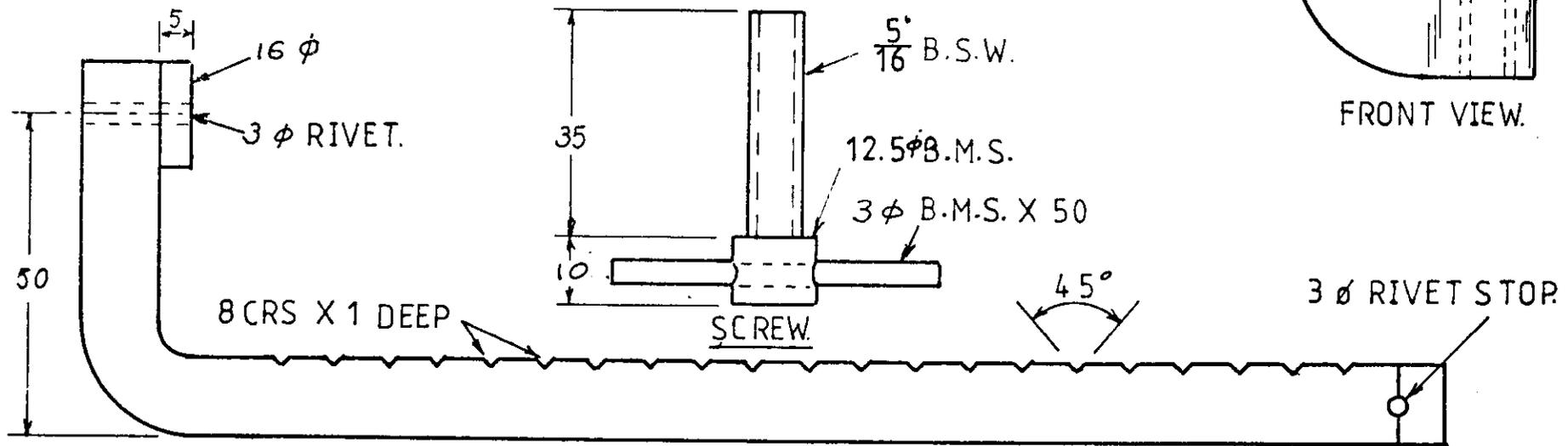


MOVING JAW. 76 X 4 X 73 B.M.S.

BEND ABOUT  $\perp$ .  
 FILE END OF MAIN BAR  
 TO FIT AS SHOWN.  
 CLAMP, THEN DRILL  
 & TAP FOR  $\frac{5}{16}$  B.S.W.



39



MAIN BAR 250 X 8 X 12 B.M.S.

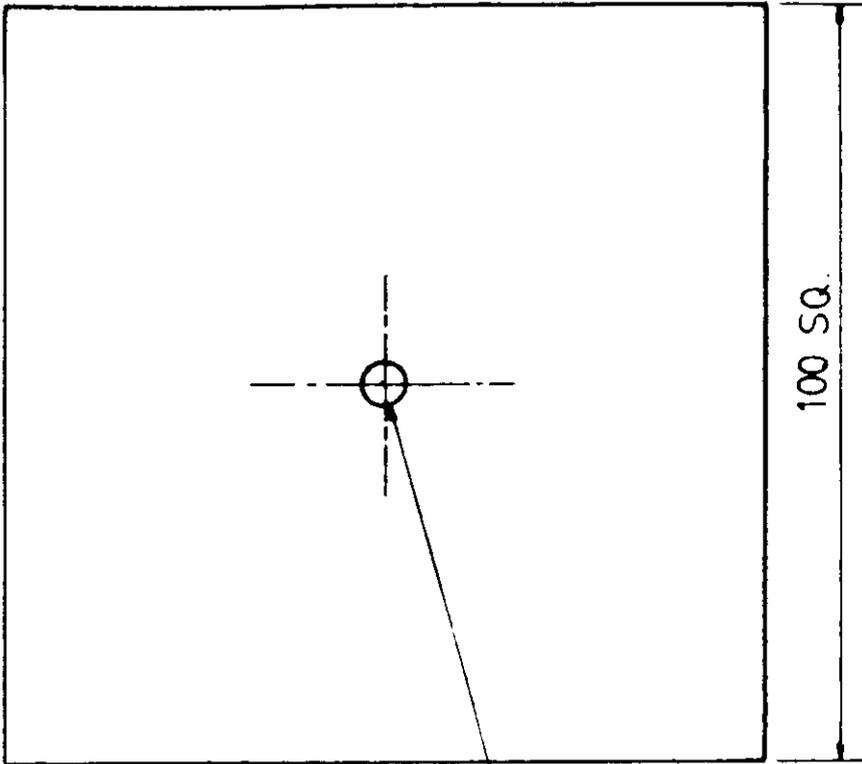
C A N D L E   H O L D E R   -   Y E A R   8   S H O P

The acrylic top is cut square. Students file edges checking with square, round corners and edges by draw filing, then sand and polish. Acrylic is drilled with a steel drill with edges ground back (negative rake). Time : About 4 periods work.

Base is copper or aluminium, dished out and planished using a fish plate bolt from a railway line. The bolts round heads are filed and polished in lathe. These small mushroom stakes are better mounted in hardwood blocks than in vice. The edges of the copper or aluminium are filed to remove any planish marks or burrs. The base is then cleaned with steel wool and polished with brasso. There is no need to lacquer the aluminium. Time : About 4 periods. Job is bolted with roofing bolts 1/2" or 3/4" x 3/16.

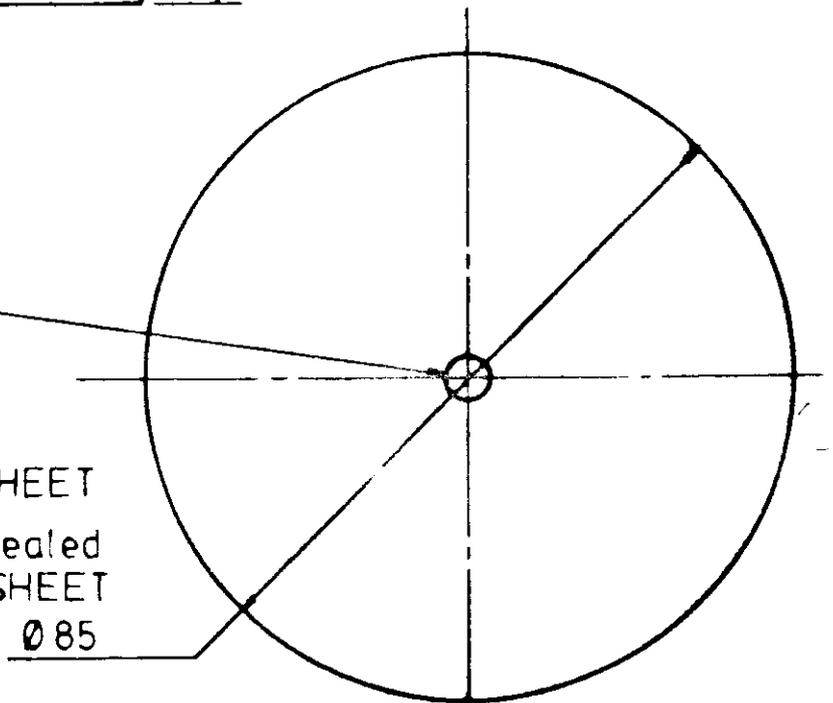
Jig for moulding the acrylic consists of a plate with four curved rods standing upright. A dowel (candle size) with a 3/16" centring pin fits in the hole and lines up in the jig.

Students use gloved fingers to stop the soft acrylic folding into two instead of 4 petals when being moulded to shape.



Formed up in jig provided

DRILL 6mm



HOLDER - 3mm ACRYLIC SHEET

BASE - 0.7mm Semi-annealed  
COPPER SHEET

Ø85

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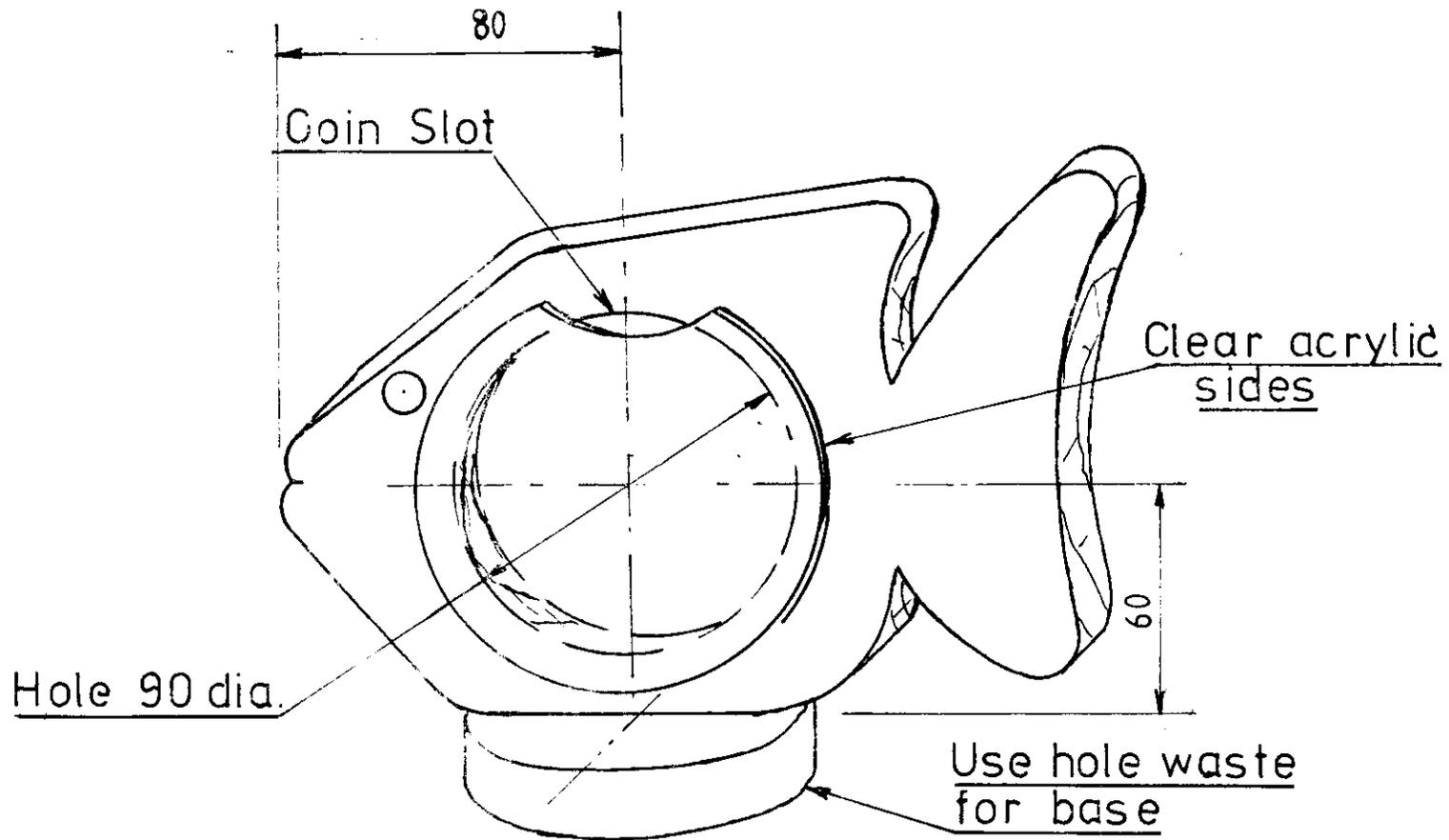
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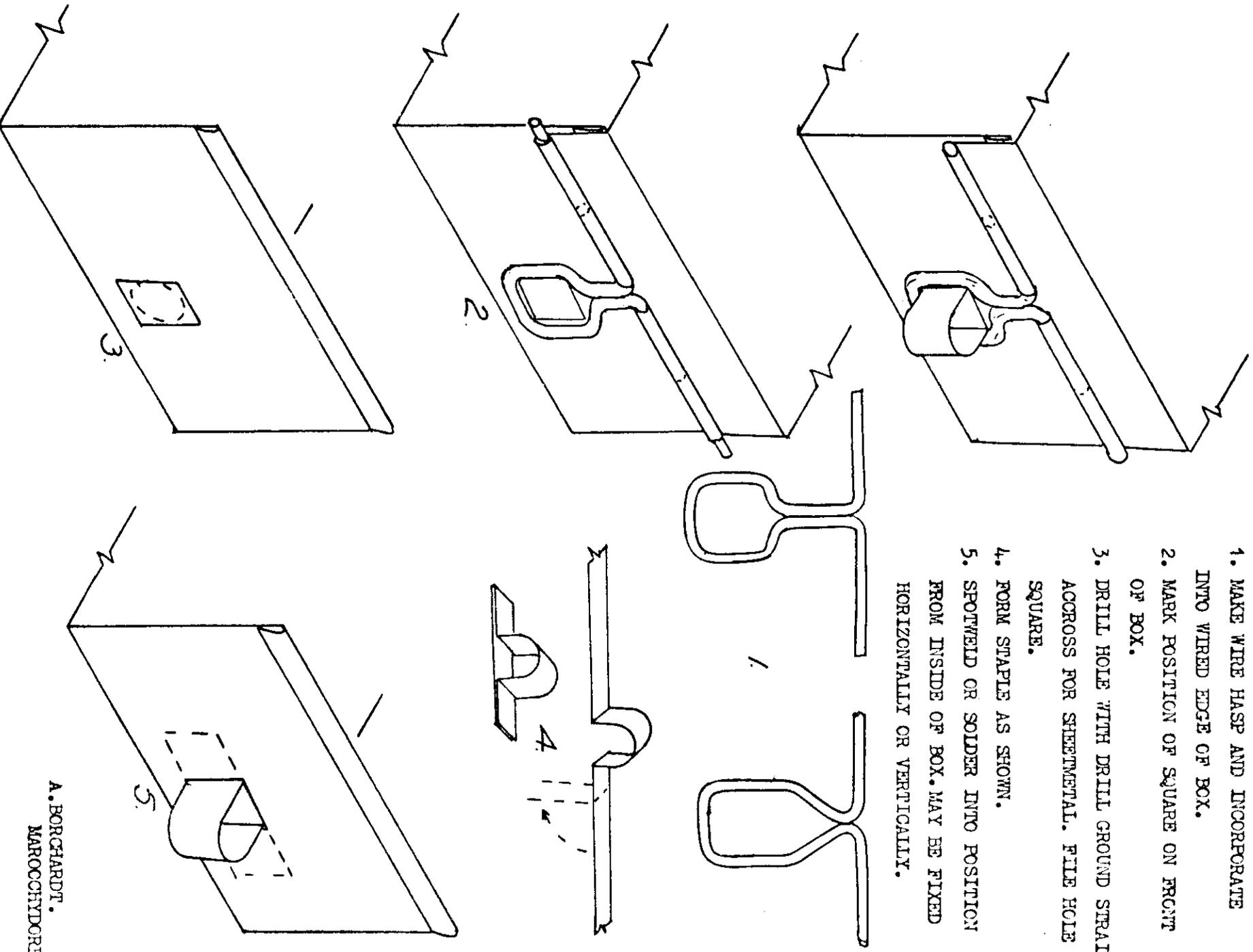
OBLIQUE VIEW

Acrylic  
 105m.m. Sq.  
MATERIAL : — Slashed Pine  
 19 X 150 X 240m.m.

GR. 8 MONEY BOX

HASP & STAPLE FOR A SMALL BOX.

1. MAKE WIRE HASP AND INCORPORATE INTO WIRED EDGE OF BOX.
2. MARK POSITION OF SQUARE ON FRONT OF BOX.
3. DRILL HOLE WITH DRILL GROUND STRAIGHT ACROSS FOR SHEETMETAL. FILE HOLE SQUARE.
4. FORM STAPLE AS SHOWN.
5. SPOTWELD OR SOLDER INTO POSITION FROM INSIDE OF BOX. MAY BE FIXED HORIZONTALLY OR VERTICALLY.



A. BORGHARDT.  
MAROCCHYDORÉ.

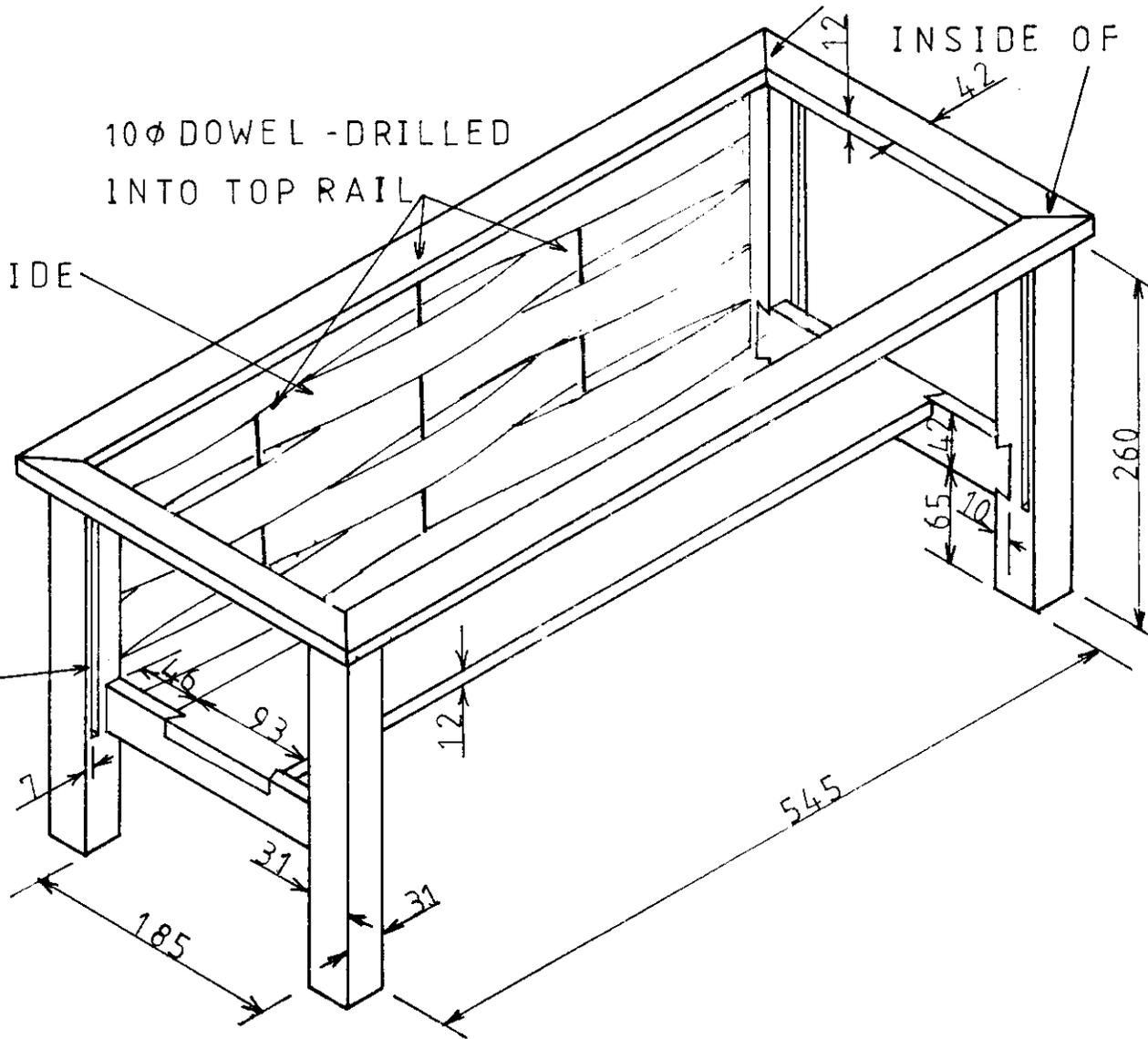
# PLANTER BOX

MITRED CORNERS - FLUSH  
INSIDE OF LEG

10 $\phi$  DOWEL - DRILLED  
INTO TOP RAIL

3 PLY - 5 STRIPS - 40 WIDE  
FOR EACH SIDE

GROOVE - PLY - 8 DEEP



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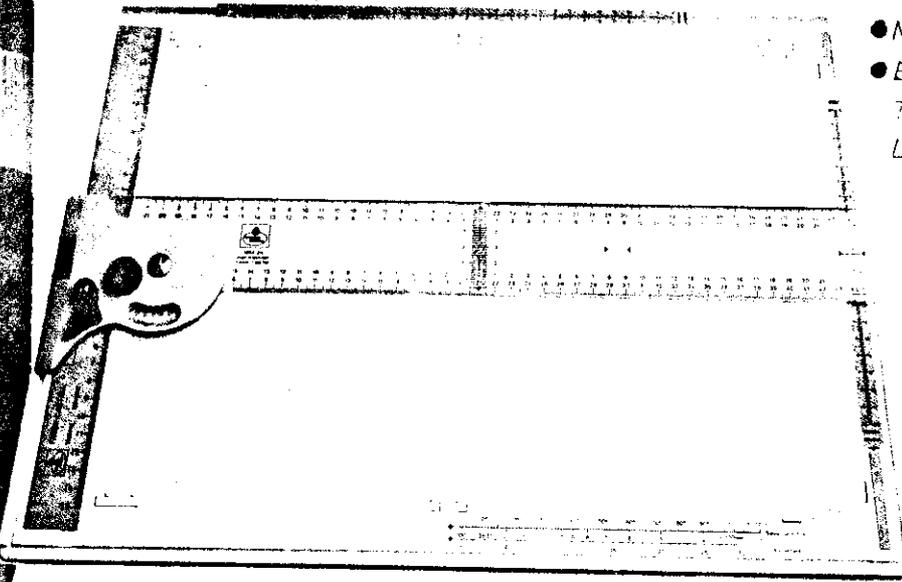
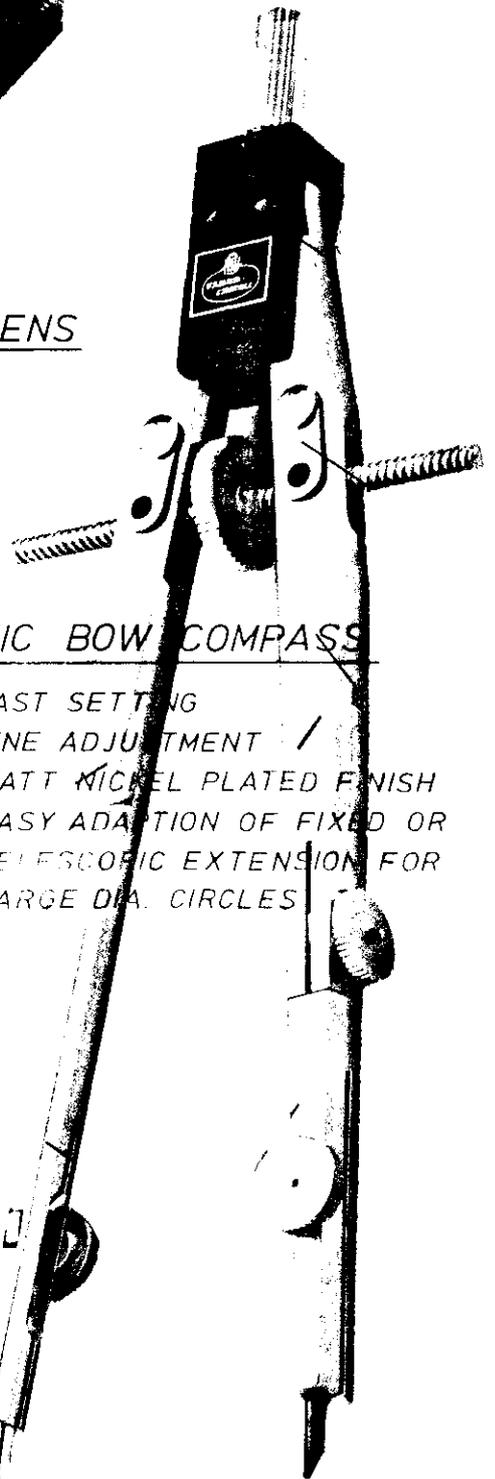
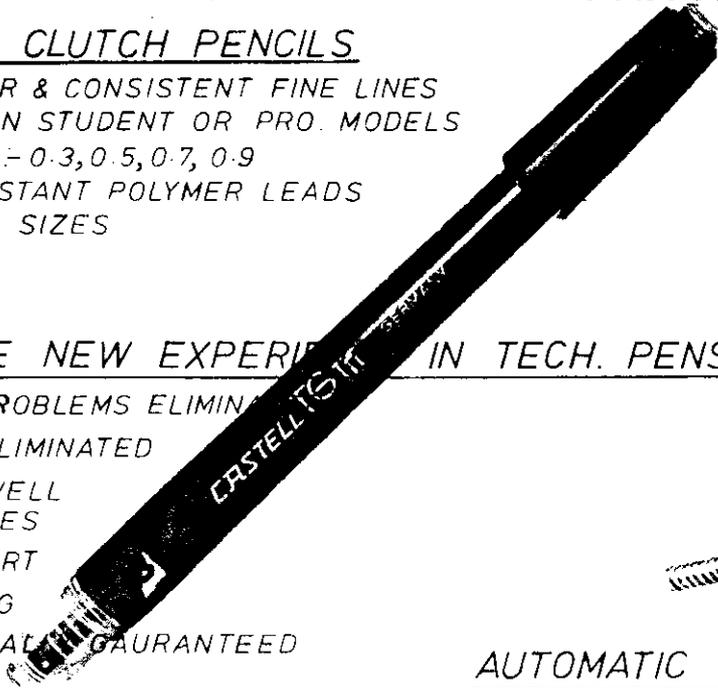
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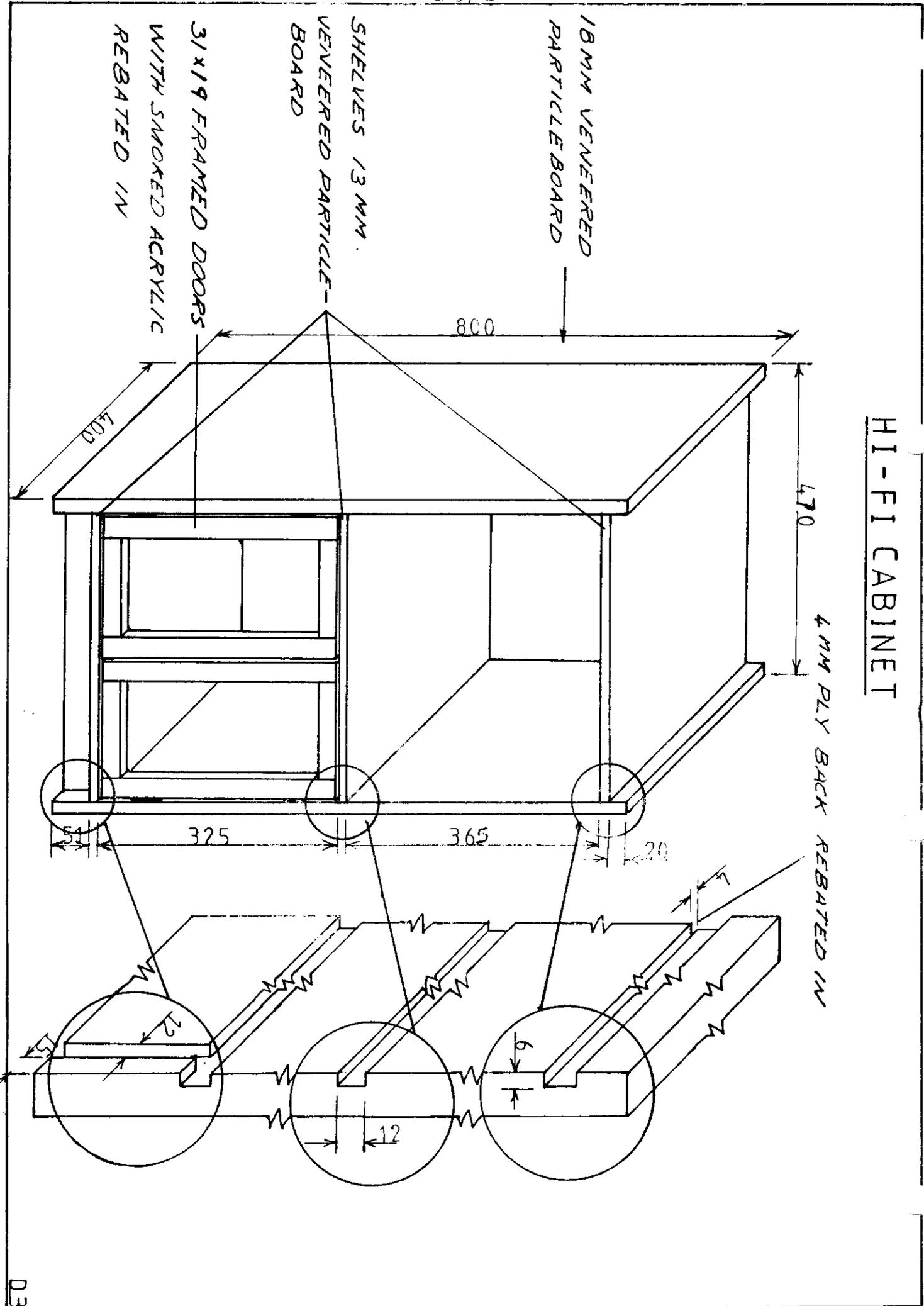
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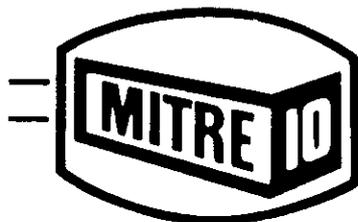
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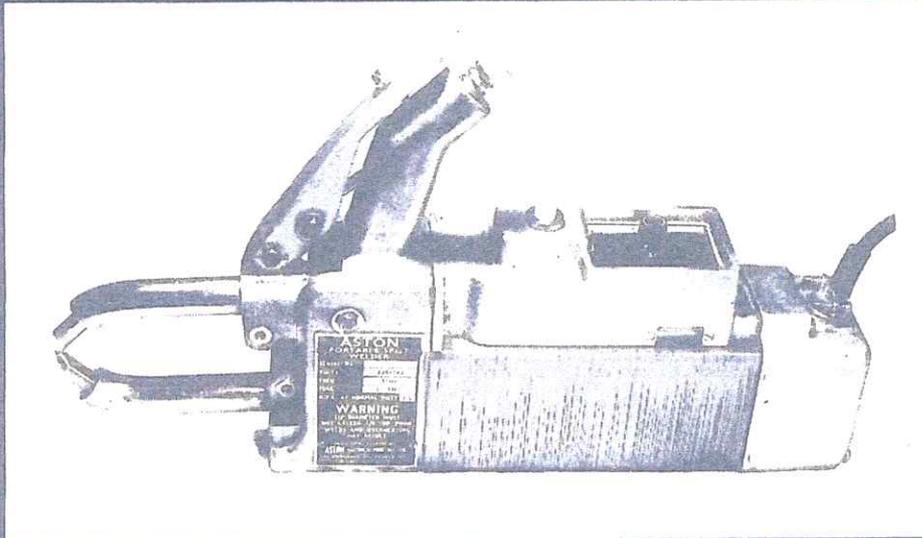
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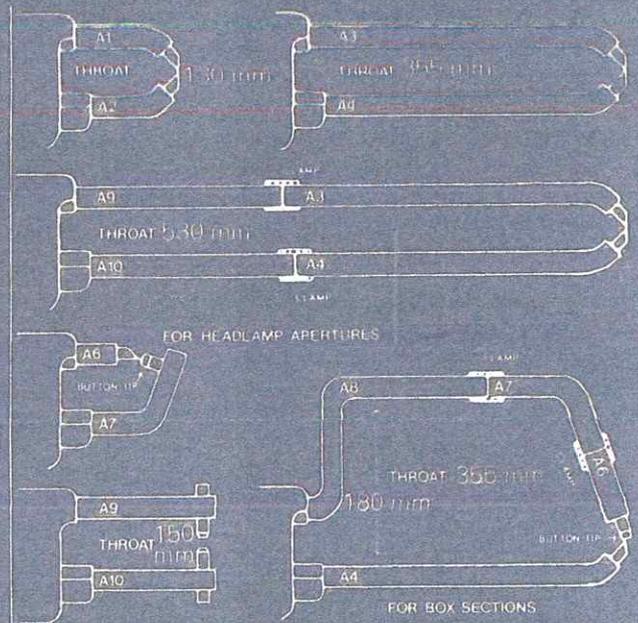
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