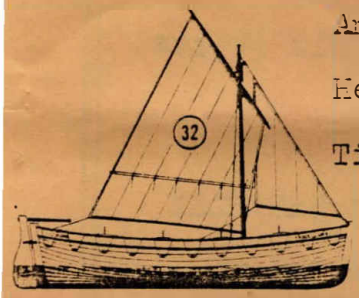
San Diego Ship Modelers Guild

Volume II NEWSLETTER --August/September 1978 Number 7



The crank-throw gives the double-bass, the feed-pump
sobs and heaves
An' now the main eccentrics start their quarrel
on the sheaves;
Her time, her own appointed time, the rocking
link-head bides,
Till -- hear that note? -- the rod's return whings
gimmerin' through the guides!

...Kipling: Mc Andrews' Hymn (1893)

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NOTES from the August Meeting:

Dave SELLERS brought quite a collection of pictures of USS LANGLEY (CV-1) and discussed plans available for our club project. These include the ship plans in 1/8" scale (1922), the Jupiter plans in 1/4" scale (1920) and second deck aft plans all of which are available from the National Archives. Our thanks to Dave for the extensive time and effort spent to date to get this project going. The waterline model will be about 89" in length and will probably be a diorama showing the ship at anchor so that seaplanes can also be depicted. LANGLEY was converted to a seaplane tender in 1937. Members of the Aerospace Museum will be building one of each type aircraft which used LANGLEY .

Al LHEUREUX gave a report on the status of the Fall Regatta and was able to solicit many volunteers to assist in the various tasks required. Bill BENSON asked for volunteers to assist the Maritime Museum restoring several models; if interested, contact Bill for further details. Doug McFARLAND showed slides of the sailing ships EAGLE and ESMERALDA during port visits here earlier this summer. Twenty attended this meeting.

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MODELS DISPLAYED:

Bill BENSON	USS Niagara - Scratch
Bob BRADY	Anchor Winch - "
Lew HARMELING	Boiler "start" parts - scratch
Al LHEUREUX	Submarine - Nautilus - "
Doug McFARLAND	Norske Love - plank on frame
Royce PRIVETT	HMS Victory - X section; Kit

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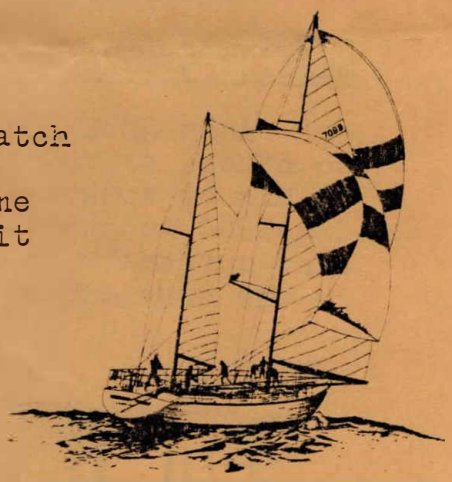


SAN DIEGO SHIP MODELERS GUILD

Elected Officers

CAPTAIN: Doug MCFARLAND /redacted/

LOGKEEPER/
EDITOR: Fred FRAAS

PURSER: Bob BECKER

STEERING
COMMITTEE: Bill BENSON - Vic CROSBY - Al LEEURUK

MEETINGS: 3rd Friday of each month at 08:00 PM aboard BERKELEY

MEMBERSHIP DUES: $ 6.00 per year for members of the Maritime Museum Association of San Diego; $12.00 for all non-members. Out-of-state residents may join for $ 6.00.

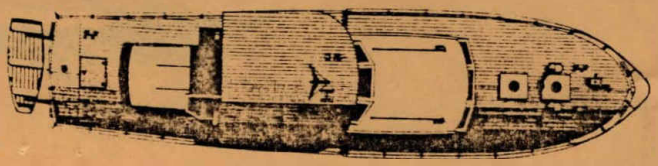
Founded in 1971 by the late Russ MERRILL and Bob WRIGHT

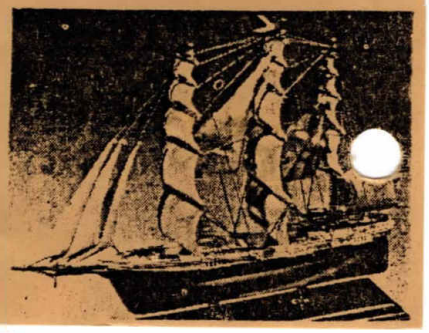
EDITOR'S NOTES:

My sincere thanks to Skipper Doug McFARLAND for his assistance in getting this newsletter out. Doug wrote and typed the next four pages. My apologies for being very late in even getting this one out. Besides the demands of the new job, my oldest daughter required two major surgeries in the last six weeks and now I'm trying to play "catch-up". Hopefully, the dust will settle somewhat in the near future. Haven't spent five minutes modeling since starting the job in May and my boat batteries are in sad shape as well. For the benefit of our out-of-state members and friends, we will be holding elections in January. I would expect that anyone who runs on the platform of "getting out the newsletter monthly" would be elected without hesitation. In the meantime, several members have volunteered to assist me which I greatly appreciate. Our club is a vital, growing organization and we intend to keep it that way.

MISSING SAWMILL PICTURES???

Andy ANDERSON is in the embarassing position that has happened to others of us. He has a set of pictures of a sawmill that was sent to him by someone. If you are that "someone", please contact Andy at /redacted/ and he'll be very happy to return them. (If any of you are also currently in this delimea, we could start a "lost & found" column in the newsletter.





SEPTEMBER MEETING

Skipper Doug MCFARLAND called to order the group of what seems to be a constantly dwindling number of members attending the meeting. Only five models were displayed for show-and-tell. With the absence of Dave SELLARS there was no update on the Langley project although at last report Dave still had not received the plans from Washington D.C. Al L'HEUREUX went over the final details of the Scale R/C Contest and another plea for help for Fred FRAAS and the newsletter was urged.

As regards the Langley project, Dr. C.A. STERN has volunteered to take parties of up to seven people for Saturday afternoon cruises around the harbor in his 27' sailboat. He is asking $10.00 per person which he will donate to the club as funds for the construction of the Langley model. (The plans for the Langley alone are going to cost nearly $100.) Contact Dr. STERN at /redacted/ and make your reservations soon while the weather is still nice. His first trip is scheduled for October 28.

Instead of bringing a model this time Lew HARMELING brought some samples of lemon wood he is salvaging from his backyard lemon tree. He has been selecting branches which form natural frames he plans to use on a scaled-up version of his live steam tugboat. Al L'HEUREUX treated us to some movies he took underwater of his and Phil HEADLEY'S submarines including shots of torpedos being launched. It certainly was interesting to see these models in action from "down below!"

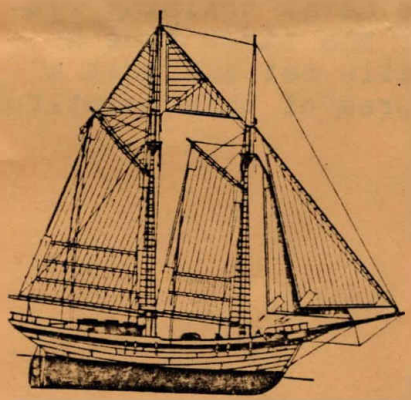
MODELS SHOWN

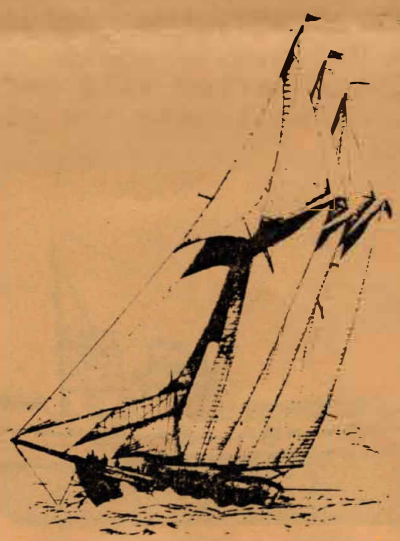
Doug MCFARLAND - Santa Maria - kit, plank-on-frame
John SLOWECZEK - Dapper Tom - kit, solid hull
Royce PRIVETT - HMS Victory - cross section, kit, plank-on-frame
Jack MATHEWS - Andromede - kit, solid hull
Roy NILSON - Lake Bondo - scratch, R/C freighter

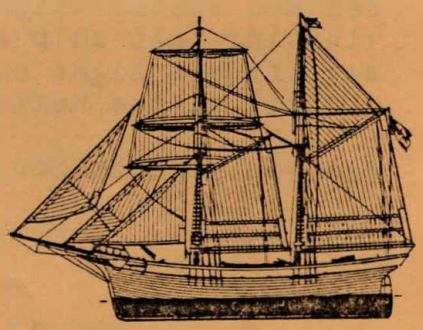
NEW MEMBER

John SLOWIECZEK
/redacted/

Next meeting will be on Oct. 20, 8:00 P.M. aboard the Berkeley.







CAPTAIN'S CORNER

There comes a time in everyone's life when an event occurs that will haunt him for the rest of his days. Such an event happened to me a few meetings ago and it cost me the friendship of one of the most wonderful people I have ever met. I made a remark whil introducing him during show-and-tell that at the moment seemed clever and witty, but as soon as I had said it I knew I would regret my stupidity for the rest of my life. He and his wife did wonderful things for my wife and me and I repaid him by insulting him in front of his peers. I make no attempt to justify my actions nor will I mention names or specifics. I only hope that someday he will find it in his heart to forgive me and perhaps once again call me friend.

I would like to extend my deepest thanks and, I'm sure, those of the rest of the club members, to Ann MERRILL and the rest of the wonderful ladies who prepared the marvelous feast for our 7th anniversary party and to Bill BENSON for obtaining and showing the film "Iron Lady of the Sea." Everyone who attended seemed to have a great time and the weather cooperated perfectly. It was also a great pleasure to have Capt. George FALKESGAARD of the barkentine CALIFORNIA as my guest.

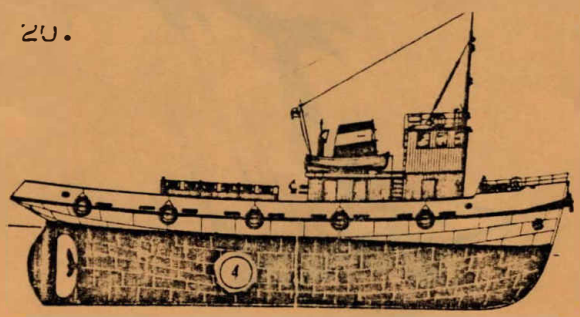
More thanks are in order: To Bette THORPE and Peggy SELLARS (you wonderful darlin's) for volunteering to make the food arrangements for the dinner cruise aboard the CALIFORNIA. The cruise, as those of you who were aboard can testify, was a smashing success. We've really been lucky with the weather lately and August 12th was no exception. With the great food, a beautiful ship and wonderful people for company, no one in San Diego could have spent a better evening.

I have received a letter from Capt. FALKESGAARD stating that a check for $/redacted/ has been sent to the Maritime Museum Assn. as a result of the dinner cruise. This brings the total donations to the Museum to well over $/redacted/. Thanks to all of you who have participated for making this possible.

As our logkeeper Fred FRAAS stated in his last newsletter, the requirements of his new job have cut tremendously into the time he has available to put the newsletter together. I would like to add my plea to his for your help. Fred has done an outstanding job in the past and he has done it virtually alone. Any services you can offer, be it doing some typing, addressing the nwesletters, licking stamps, writing articles or taking the material to the printer, will be greatly appreciated. Please contact Fred at /redacted/ and let him know what you can do to help.

I was once again fortunate to be invited aboard the CALIFORNIA to greet another tall ship, the N.R. SAGRES, the Portugese naval training vessel and sister ship of the U.S.C.G.C. EAGLE. For the first time a visiting tall ship entered the harbor with her sails set and what a magnificent sight she was. I will have the pictures of this beautiful arrival at the next meeting.

See you all October 20.



A.

SCALE R/C CONTEST

Our first Scale R/C Show and Contest was a complete success. Participants from as far away as Monterey, Calif., helped make September 24th a most enjoyable day. Once again the weather cooperated and everyone had a great time.

The day started with registration of models, a chore handled by Mike LEEDER. This was followed by the static portion of the competition with Bill BENSON, Bob CRAWFORD, and Dave BELLARS doing the judging. (Well done, mates!) Then the boats were required to pass in review to demonstrate their operational capabilities. Finally the contestants were required to run the obstacke course consisting of four bouys. Each contestant had to guess what his total time would be from start to finish and the operator coming closest to his estimated time was the winner. The contest closed with the awarding of the prizes.

Al L'HEUREUX was the Contest Director and did an excellent job of overseeing the entire day's activities. Roy NILSON built the dock used for the launching area and also photographed the entire contest. Lew HARMELING, Phil HEADLEY and Bill KELLY-FLEMING acted as contest monitors and Mike LEEDER assisted with the timing of the obstacle course event, using Bill KELLY-FLEMING'S stop-watch. Club Skiper Doug MCFARLAND handled the announcing chores. (If we missed anybody who helped, please accept our apologies.)

Winners of the Contest were:

BEST OVERALL - Gordon WILES - Encino

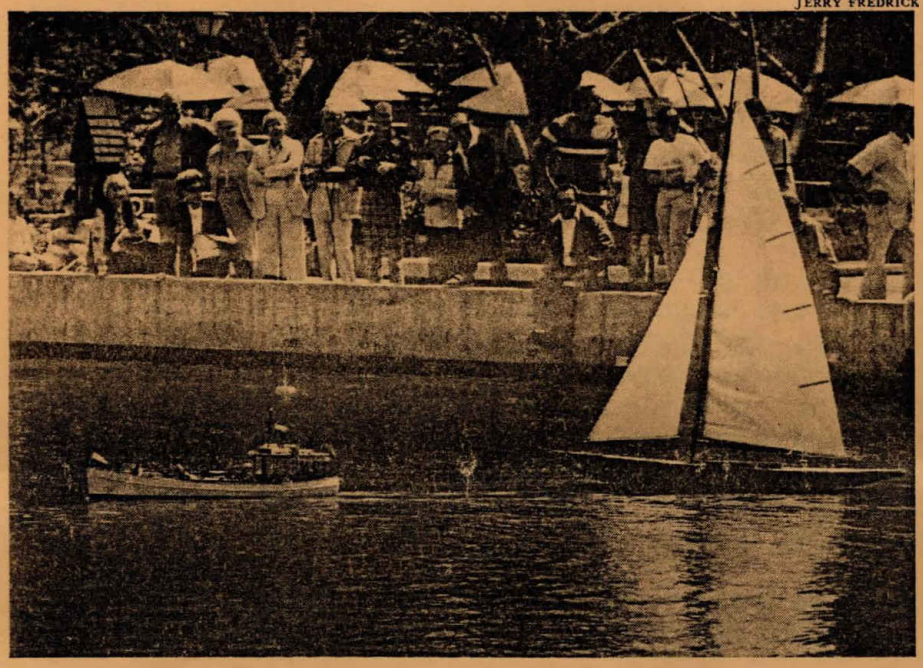
SCALE	OBSTACLE COURSE
1. Val PETERSON - San Diego	1. Gordon WILES - Encino
2. Ray HAYES - Los Angeles(?)	2. Brian INGOLDSBY - Los Angeles
3. Gordon WILES - Encino	3. Rad FRANKE - San Diego
4. Tom FORDHAM - Monterey	4. Earl SCHWEIZER - San Diego
5. Bill BROWN - Fallbrook	5. Gene ARDINGER - Laguna Niguel

Congradulations to each of you!!

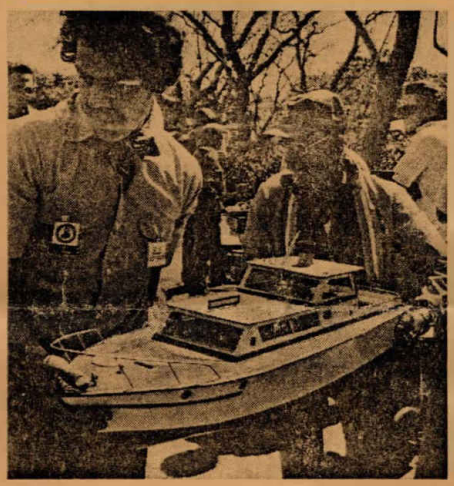
Special thanks to:

The Gray Whale, Seaport Models Ltd. and West Coast Hobbies for donating merchandise for prizes; the San Diego Argonauts for the judging stand, P.A. system, rowboat and marker bouys; Capt. George FALKENGAARD of the barkentine CALIFORNIA for tables and back-up P.A. system; everybody for making the day such a success.

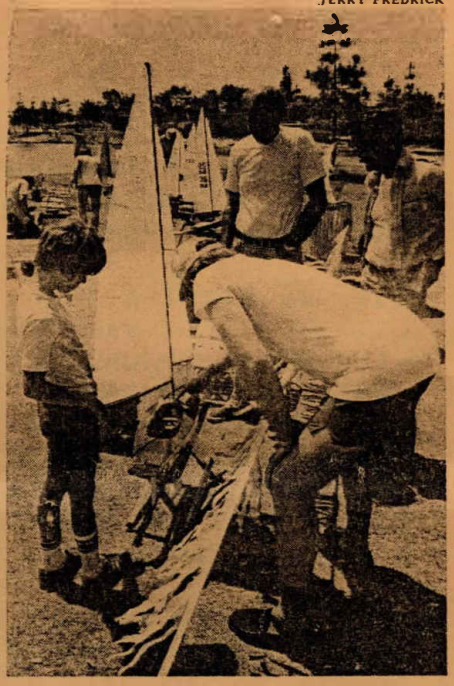
JERRY FREDRICK



Steam launch with tiny crew *puffs past wind-powered sloop at Busch Bird Sanctuary in Van Nuys; both are radio-directed. Three-foot cruiser, at right, heads for the water*



JERRY FREDRICK



Yachts and yachters *get prepared for the serious business of a miniature regatta in Long Beach's El Dorado Park*

Mini-boat watching . . . Van Nuys south to San Diego

A fresh breeze, a fair sky, and the pleasures of a fascinating hobby are sure to draw Southern California's model boaters to the banks of suitable lakes and ponds almost any weekend that you'd like to come watch them. The performances of the mini-fleets are impressive, and the boats themselves are often marvels of craftsmanship. And most skippers, when not concentrating on guiding a vessel, are happy to talk about their increasingly popular hobby.

You can watch gracefully gliding model yachts that are driven by the wind, faithfully detailed scale-model ships powered by batteries or steam, and miniature power boats propelled by gas-burning motors—all maneuvered by remote-control radios. Because the power boats can reach speeds to 80 mph, however, you're not likely to see them operated close to other kinds of models.

Boaters like small lakes where launching is easy and other water activities are minimal. The following areas are particularly favored, both by individual skippers and by model boat club members. At one of the locations listed, you can see a mini-ship builder at work.

Van Nuys

Busch Bird Sanctuary, at the main lagoon. On the second Sunday of each month (September 10 this month), model yachts and scale-model boats are launched around 10 and sail until 2 or so. The sanctuary is at 16000 Roscoe Boulevard; exit west from the San Diego freeway (Interstate 405) onto Roscoe Boulevard.

Long Beach

El Dorado Park, at the lake in Area 2. There's activity most Sundays, from about 9 until midafternoon, with model yachts sailing or racing. To reach the park, exit west from the San Gabriel River Freeway (Interstate 605) onto Spring Street. Turn north at the first drive and follow signs to Area 2.

South El Monte

Whittier Narrows County Recreation Area, at Legg Lake. Model power boaters congregate on the west side of the south section of the lake on Saturdays and Sundays, with informal races starting at about 8 or 9 and lasting into mid-afternoon. Official races are scheduled October 7 and 8, from 9 to 4.

To reach Legg Lake, exit east from Rosemead Boulevard (State Highway 19) at Durfee Avenue; turn left onto Santa Anita Avenue and follow signs into the park.

San Diego

Mission Bay Aquatic Park, at the Model Yacht Basin on Vacation Isle. Scale-model boats sail on Saturday mornings from about 8 to noon; model yachts sail or race from noon until midmorning or later. On Sundays, the model power boats start racing at about 9 and continue through the day. Wednesday afternoons are also usually busy, but almost any day you'll find some kind of model boat activity at the pond.

San Diego's Maritime Museum, aboard the Berkeley. Bill Benson constructs and restores scale model boats in a glass-walled room on the main deck of the ferry boat *Berkeley,* from 10 to 5 Tuesdays through Fridays. He'll share a wealth of information on his specialty; however, the communicating window is closed when fine detail work demands all his attention.

On display in the *Berkeley* are several scale-model boats, many of which can be sailed. Admission to the museum is $2 for adults, 50 cents for children, free for those under 5; the same ticket also admits you to the historic *Star of India,* which is moored alongside at 1306 N. Harbor Drive. □

SIMPLE ARITHMETIC CAN CONTRIBUTE TO THE SUCCESS OF YOUR MODEL. SOME SIMPLE SUMS DESCRIBED.

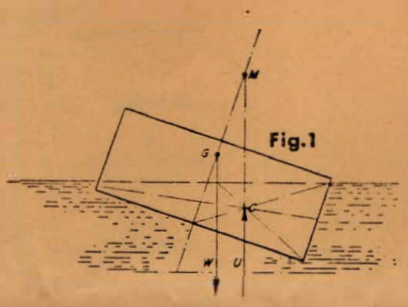


Fig.1

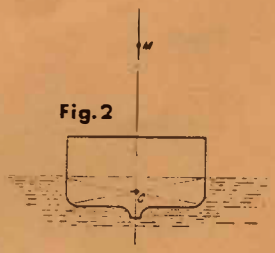


Fig.2

BY A. J. R. BELFORD, B.Sc.

STABILITY FORMULAE FOR BOATS

THE serious model boat builder is usually able to calculate many of the factors pertaining to the design of model craft, but the stability is frequently judged by experience or trial. It may sometimes happen for example, say, in the case of a model steam vessel, that the builder is in some doubts as to whether he should set his boiler high to obtain a good firing space and risk instability, or vice versa. It is in cases such as this that a formula for calculating the stability of a floating body is of value.

The following data apply of course to models and to full sized craft.

First let us consider the concept of the "Metacentre". A body floating on the surface of a liquid is under two forces. There is the force W due to its weight, acting downwards through the centre of gravity of the body, and there is the upthrust U, exactly equal to this, acting upwards through the centre of gravity of the displaced liquid. If these forces are not in line, the resultant couple will either tend to right the body if G is lower down than M, as shown in figure 1, or else tend to capsize it further if G is above M.

The point M, viz the point in which the upthrust U meets the axis of symmetry of the body, is known as the "Metacentre". In general it varies according to the inclination of the body, but as the axis of symmetry MG is brought to the vertical, M tends to a limiting position. If then we can calculate the position of M it is only necessary to provide that the centre of gravity of the boat lies below M and the boat will be stable. The further below M the centre of gravity is brought. the more stable the boat will become, i.e. it will be able to right itself through a steeper angle.

Now consider figure 2, representing the cross section of a vessel. The plane in which the boat meets the surface of the water is termed the "Plane of flotation". This is just the plan section at the waterline.

Let M be the Metacentre

Let C be the centre of gravity of displaced water

Let V be the volume of displaced water in cu. ins.

Let I be the moment of inertia of the plane of flotation about the axis of the boat in inches^4. Then the Metacentric Height in inches $= MC = \frac{I}{V}$

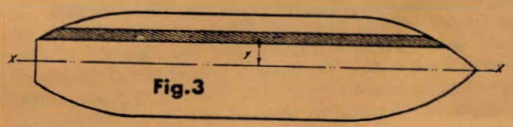


Fig.3

It will be observed that this is a rational formula i.e. if we take I in cm^4 units and V in cubic cms. $MC = \frac{V}{I}$ will be in centimetres, and so forth.

Notwithstanding the great simplicity of the equation, considerable calculation may be required in evaluating I and V. The task, however, may be simplified by making use of approximations, but to be on the safe side, the error in approximating I should be low and in approximating V should be high.

The moment of inertia of a plane about a line is defined as the sum of all the elements of area multiplied by the square of the distance from the line). We may therefore use this method directly as shown in figure 3. If we divide the plane into strips parallel to the axis XX, multiply the area of any strip by the (length y)^2, and add them all up, we get an approximate moment of inertia about XX. If the plane of flotation is divided up into a few thick strips, the work is simplified but is not so accurate as if we divide up the figure into many narrow strips. Mathematically the value of Ixx is the sum of an infinite number of strips, each infinitesimally wide, and multiplied by its respective y^2.

Alternatively the plane of flotation may be divided into rectangles, trapeziums etc. provided the axis of symmetry XX passes through the centre of each component. The moment of inertia of the figure is then the sum of those of each component. Figure 4 gives properties of a few simple sections.

The volume of displaced water may readily be found by calculating the weight of the vessel and determining the volume of water to equal this. If a predetermined waterline has been calculated, the volume may be roughly assessed by dividing the submerged part of the hull into slices through the section lines and treating each section as a short prism.

To obtain the centroid of the displaced water is more difficult. If the main cross section of the submerged portion is rectangular (as in the example below) or trapezoidal, triangular or elliptical, the approximate centre of gravity may be found from the data in figure 4. Since however the metacentric height MC is generally large compared with the discrepancy in the position of C, the slight errors caused by approximating this centroid are not serious.

In order to amplify the method of calculation a concrete example is given:-

Suppose we are contemplating building a canoe of dimensions as shown in figure 5, and of estimated weight 100 lbs. Two persons each weighing 140 lbs. are to sit in the canoe amidships. It is required to find the metacentre. Take the foot as the unit of length.

Fig. 6

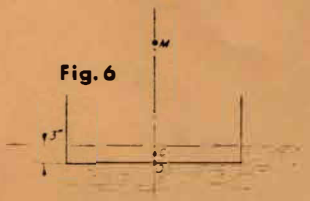


Fig. 5

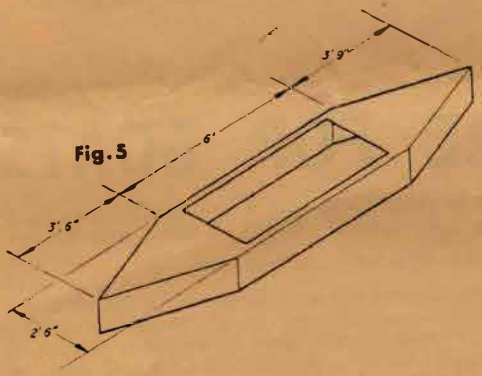
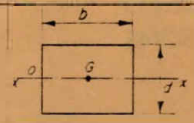
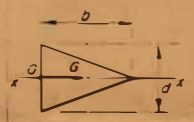
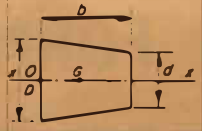
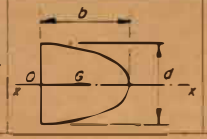


Fig. 4

		MOMENT OF INERTIA I_{xx}	POSITION OF CENTROID OG	AREA
RECTANGLE		$\frac{b\,d^3}{12}$	$\frac{d}{2}$	$b\,d$
TRIANGLE		$\frac{b\,d^3}{48}$	$\frac{d}{3}$	$\frac{b\,d}{2}$
TRAPEZIUM		$\frac{b\,d}{48}\left(\frac{D^4-d^4}{D-d}\right)$	$\frac{b\,(D+2d)}{3\,(D+d)}$	$\frac{b\,(D+d)}{2}$
SEMI-ELLIPSE OR SEMI CIRCLE		$\frac{\pi\,b\,d}{64}$	$\frac{4\,b}{3\,\pi}$	$\frac{\pi\,b\,d}{4}$

V = Displaced volume due to 100 + 280 = 380 lbs. water is 62.5 lb. per cubic foot.

$$\therefore V = \frac{380}{62.5} = 6.1 \text{ cubic feet} \quad \ldots\ldots\ldots\ldots (1)$$

The plan area, (dividing into triangles and rectangle)

$$= \frac{3\frac{1}{4} \times 2\frac{1}{2}}{2} + 6 \times 2\tfrac{1}{2} + \frac{3\frac{1}{4} \times 2\frac{1}{2}}{2}$$

$$= 4.4 + 15 + 4.7 = 24.1 \text{ sq. feet}$$

$$\therefore \text{The submerged depth} = \frac{6.1}{24.1} = 0.25 \text{ feet}$$

The centroid of a rectangular section, see figure 6, is equal to half the depth.

$$\therefore OC = \tfrac{1}{2}(0.25) = 0.125 \text{ feet}$$

The waterline plane may be divided into one rectangle and two triangles. The moments of inertia of these (data from figure 4) are

$$\frac{3.5 \cdot (2.5)^3}{48} + \frac{6 \times (2.5)^3}{12} + \frac{3.75\,(2.5)^3}{48}$$

$$= (2.5)^3 \left(\frac{3.5}{48} + \frac{6}{12} + \frac{3.75}{48}\right)$$

$$= 15.6\,(0.073 + 0.5 + 0.078) = 15.6\,(0.651) = 10.1$$

$$\therefore \text{Metacentric height} = MC = \frac{I}{V} = \frac{10.1}{6.1} = 1.675 \text{ feet}$$

$$\therefore MO = 1.675 + .125 = 1.8 \text{ feet} = 21\tfrac{1}{2} \text{ inches}$$

Thus the canoe will remain stable provided the centre of gravity of the vessel and passengers is not more than $21\frac{1}{2}$ in. above the bottom. For seated passengers this is about level with their necks, but obviously the canoe would be instable if both passengers stood up.

It is easily seen from these calculations that the stability would be considerably increased by either lightening the vessel, say by removing one passenger, as this would decrease V and leave I unchanged and hence MC would be increased, or alternatively by increasing the beam to, say, 3 feet, which would have the effect of increasing I while V remained unaltered.

Example for model work

Figure 7 shows a model cargo vessel of somewhat simple construction. This was built round a Stuart Turner single cylinder double acting engine and the boiler was made from a fire extinguisher case.

Using inches as the unit of length.

V = Displaced Volume. This is divided into three sections

i) Triangular Prism 7″ base, $10\frac{1}{2}$″ long $3\frac{1}{2}$″ deep.
$= \frac{1}{2}(7 \times 10\frac{1}{2}) \times 3\frac{1}{2} = 114$ cu. in.

ii) Prism 7″ wide, $3\frac{1}{4}$″ deep, 2′ 3″ long with $2\frac{1}{2}$″ radii
$= (7 \times 1\frac{3}{4} + 2 \times 2\frac{1}{2} + \frac{1}{2}\pi \times 2\frac{1}{2}^2) \times 27 = 725$ cu. in.

iii) Quarter Sphere $3\frac{1}{4}$ rad.
$= \frac{1}{4} \times \frac{4}{3} \times \pi \times 3\frac{1}{4}^3 = \frac{36 \text{ cu. in.}}{875 \text{ cu. in.}}$

I = Second Moment of Area of Surface Plane
This is likewise divided into three sections

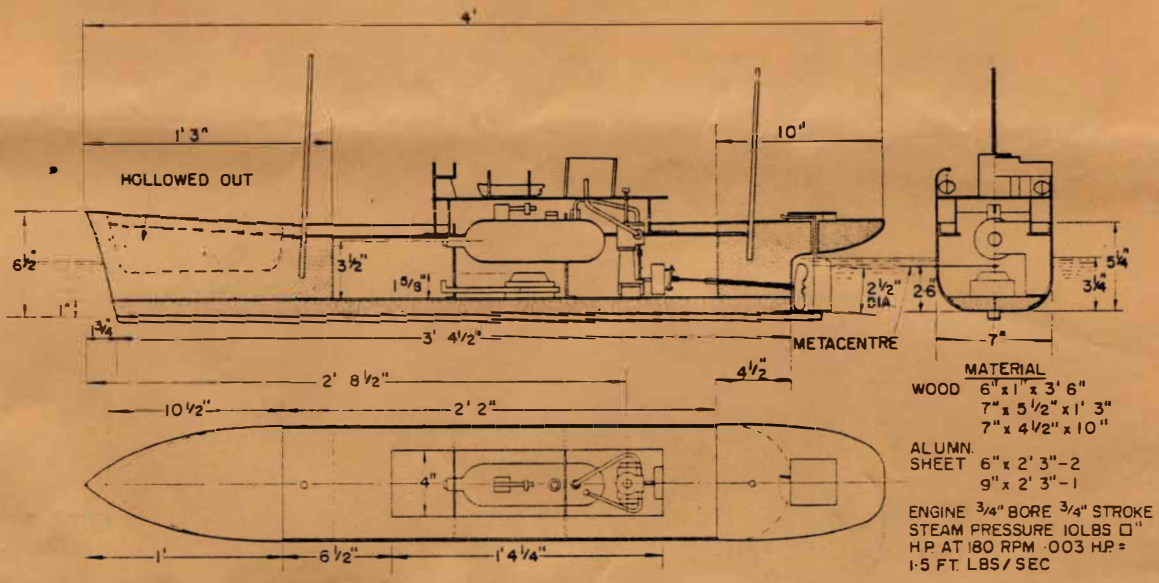
i) Triangle
$$Ixx = \frac{bd^3}{48} = \frac{10\frac{1}{2} \times 7^3}{48} = 75 \text{ in.}^4$$

ii) Rectangle
$$Ixx = \frac{bd^3}{12} = \frac{27 \times 7^3}{12} = 770 \text{ in.}^4$$

iii) Ellipse
$$Ixx = \frac{\pi}{64} bd^3 = \frac{\pi \times 3\frac{1}{2}^4}{64} = \frac{7 \text{ in.}^4}{852 \text{ in.}^4}$$

$$\text{So } MC = \frac{I}{V} = \frac{852}{875} = .975 \text{ inches.}$$

The centroid of the displaced volume is obviously slightly above the centroid of the central section assumed rectangular, i.e. point C is at least $1\frac{5}{8}$in. from the bottom. Hence the metacentric height = 1.625 + .975 = 2.600in. This is shown on the drawing. From an examination of the cross section it is apparent that the stability of this model will be critical. To remain stable the centroid of the ship must lie below the point C. The heavy plank along the bottom contributes to this, as would the hollowing



out of the upper part of the block of wood forming the bow. The weight of the boiler on the other hand will tend to raise the centroid and render the model unstable. In point of fact, by using light aluminium sheet for the deck and upperworks this model was rendered stable, but matters would have been greatly improved with a beam of, say, 7½in.

If the submerged portion of the hull is rectangular in cross section, and the sides are parallel in plan view then the ends may be omitted for an approximate assessment of metacentric height.

In diagram d is the width of the vessel
h is the submerged depth
b is the length which need not be known.

Then $I = \frac{bd^3}{12}$ $V = bdh$

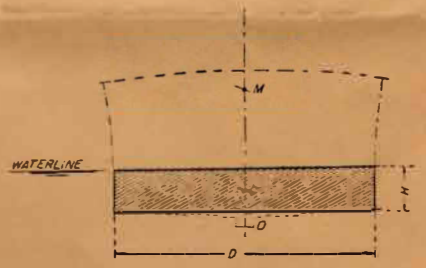
So $MC = \frac{I}{V} = \frac{d^2}{12h}$

And $OC = \frac{h}{2}$

So $OM = \frac{h}{2} + \frac{d^2}{12h}$

Tabling values for ratios $\frac{d}{h}$

$\frac{d}{h}$	OM in terms of d
1	$\frac{7}{12}$ d
2	$\frac{5}{12}$ d
3	$\frac{5}{12}$ d
4	$\frac{11}{24}$ d
5	$\frac{31}{60}$ d
6	$\frac{7}{12}$ d
8	$\frac{35}{48}$ d
10	$\frac{53}{60}$ d
12	$\frac{25}{24}$ d



These values are shown on the graph diagram