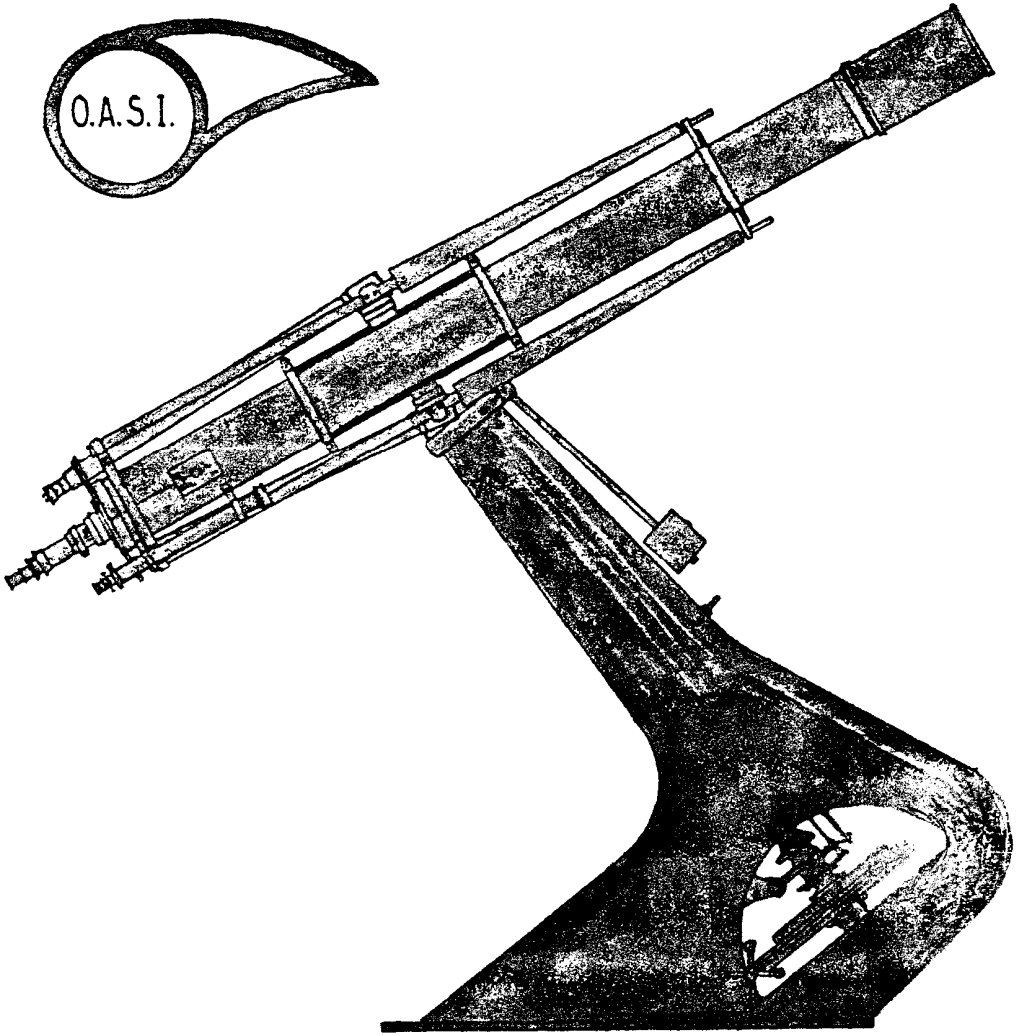
1983
JANUARY

THE JOURNAL OF THE ORWELL ASTRONOMICAL SOCIETY (IPSWICH)

Your submissions of items for the Journal will be welcome.



The Orwell Park Observatory 10-inch Astronomical Telescope at Nacton near Ipswich

New Year Resolutions . . . .

NOW IS THE TIME TO MAKE PLANS . . . . . by Roy Adams

WITH 1983 now here, what do you aim to do astronomically during the year?

REMEMBER, the World of Astronomy is dependent upon PEOPLE for its activities and interest. That means you, and other people, of course, as if we acted just on our own, we would be limited to the means each by ourselves may have, so our overall knowledge and resources just as go-it-alone individuals would be really very limited.

HOW does this affect you? Will you let the O. A. S. I. help you this year, so you in turn can contribute in some way toward the Astronomical World? This is really what the O. A. S. I. is for, among many other Societies and organizations throughout the country and the world.

We of the 'Orwell' are very fortunate in having the use of a splendid ten-inch diameter equatorial refracting telescope and associated Observatory and Clubroom. We have a well-stocked library which is constantly replenished by up-to-the-minute news and other material. We subscribe to several of the main publications in the astronomical field. There are, too, many older volumes of much interest.

The Society owns many items of additional equipment, old and new, and among the Society's members there are many people who help to make all these things available to their best ability.

The rest is up to you. There is always room for new members and for people whom the frequently-present people seldom see. As can be seen from the O. A. S. I. Programmes published in the Journal which is another feature of the Society's activities, there are generally three or four official observing evenings, often continuing well into the early hours when warranted, every week.

ON THESE EVENINGS, ANYONE IS WELCOME TO COME AND VISIT OR JOIN IN WITHOUT PRIOR ARRANGEMENT. The message is in capitals because there may be some doubt as to whether one should ask first. It is only necessary to make prior arrangements on nights not Programme-listed. This is to assure that someone authorized will be up there to open-up and generally be on hand, the reasons for which will be obvious, and for satisfaction of terms of our agreement with Orwell Park School to whom the telescope and Observatory belong.

There is also a transit telescope next to the main Dome which used to be an essential for accurate time-determination in the days when Orwell Park Observatory was one of the main observatories of Europe for many years at the end of the Nineteenth century.

We in the Society are continually adding to the equipment and amenities for the Observatory, with a further-improved drive system now about to be installed.

For those just interested in instrumentation, there is a great deal to be involved with, although use of the telescope is reasonably simple in spite of its size and age. To give some idea of the superiority of the 10-inch, Pluto has been seen on several occasions as far as we know from its recent years of use, alone.

Considerable maintenance and decoration work has been done at the Observatory in recent years by many members and help in occasional similar work is always welcome. The Society members also arrange many outside meetings, including visits to other Societies, observatories and Museums as well as those for observational

work with members' own telescopes. We may even see some new telescope-making done this year! The Society also arranges occasional lecture meetings in Ipswich.

And what about other astronomical societies and organisations? There are plenty of those, and where best to find out what is going on in all these as well as up in the sky, than to take a more active membership in your own local Orwell Astronomical Society (Ipswich)? With a normal membership of over seventy - including families - there is a wide variety of talents in the Society. Whatever your interests, photography, organizing, mechanical work, reading, handicrafts, electronics, even writing for the Journal (!) and meeting people, sport, collecting things, and just plain old astronomy, there are folk in the Society with similar leanings to chat with. Also, for ladies who think this is just a 'man's show', there are already many lady members.

THE NIGHT SKY AS SEEN FROM ORWELL PARK IN JANUARY

THE nights of January, though perhaps coldest of all, may yield the best views of the Heavens. The greatest depth of darkness occurs for the longest period. Even if Sirius and Procyon are twinkling merrily, meaning the air is not as still as it could be, why should that stop us searching the sky for images of beauty often ages old? For taking pictures at our telescopes, the conditions may be less than suitable, but for looking in the normal way visually, especially with lower powers and binoculars, or for taking pictures of whole areas of sky with ordinary cameras, there is little to lose and a lot to be gained. Well, are the stars shimmering tonight?

Beside the bright stars which we can use as landmarks - Sirius in Canis Major and Procyon in Canis Minor in the South, and those in Orion and Auriga - there are the dimmer objects of possibly more interest. The faint constellation of Cancer (nothing above mag. 4) contains at its middle the delightful 'Beehive' cluster or Praesepe, M44, diamonds on black velvet on a clear night. The Horsehead Nebula in Orion is still visible for a few hours after sunset. The Milky Way section between these two objects, and between Gemini and Taurus provides a whole feast of objects worth looking at and sweeping with binoculars is always rewarding.

Another inconspicuous constellation, Monoceros, holds some spectacular fields, for example H VII 2, a cluster 10° east and 2.5° south of Betelgeuse.

The areas near the zenith, with one's back to the ground - or more correctly, plenty of insulation - have plenty to show round Ursa Major and for later-night observers, Coma Berenices, following Leo, should be high enough for sweeping for nebulae.

THE SUN Journeys from Sagittarius to Aquarius with sunrise from 08h 10m to 07h 44m. Worth watching for sunspot activity which recently has been fairly strong.

THE MOON Phases Last Quarter 06d 04h 00m First Quarter 22d 05h 33m
New Moon 14d 05h 08m Full Moon 28d 22h 26m

DID YOU KNOW ... That you can look back in time over 2 million years with no instruments at all? This is what you do when you are looking at Nebula M31 in Andromeda. You will need to look reasonably early on a January evening. Most spiral galaxies are much further away than M31.

Occultations	Star	Phase	Mag.	Time
	18	D	6.0	19d 18h 58.2m
D = Disappearance	393	D	6.8	22d 22h 17.6m
R = Reappearance.	401	D	6.3	22d 24h 02.2m
	523	D	6.5	24d 00h 58.1m
Stars listed	643	D	6.7	24d 17h 43.8m
according to	668	D	3.6	24d 21h 52.5m
Zodiacal	817	D	4.8	25d 20h 46.9m
Catalog (ZC)	851	D	6.3	26d 02h 01.1m
numbers.	976	R	3.2	26d 16h 51.5m
	1702	D	4.2	31d 21h 41.1m
	1702	R	4.2	31d 22h 39.0m

Times listed are those for the latitude and longitude of Greenwich.

THE PLANETS

Mercury is a hard evening object, really visible only during the first few days of the month as it is at inferior conjunction on the 16th, mag. 0.0. Its diameter changes from 10" arc on the 1st to 8" on 31st.

Venus is also an evening object, but unlike Mercury, is moving slowly out from the Sun, and easier to find at mag. -3.3, although still in twilight. Venus is 2° south of Mercury on 7th, which might help find Mercury. Venus is not far from the Moon on 15th. Venus' diameter increases from 10" arc to 11" during January.

Mars Rather low in the south-west, at mag +1.4, visible for a short while after sunset. Diameter decreasing from 5" arc to 4".

Jupiter, a morning object at mag. -1.4, is visible by about 05h. Equatorial diameter 31" arc. On the 10th, Jupiter will be 0.2o south of beta Scorpii (mag. 2.9).

Saturn can be seen in Virgo, after about 01h near the end of the month at mag. +0.8. Equatorial diameter 15" arc.

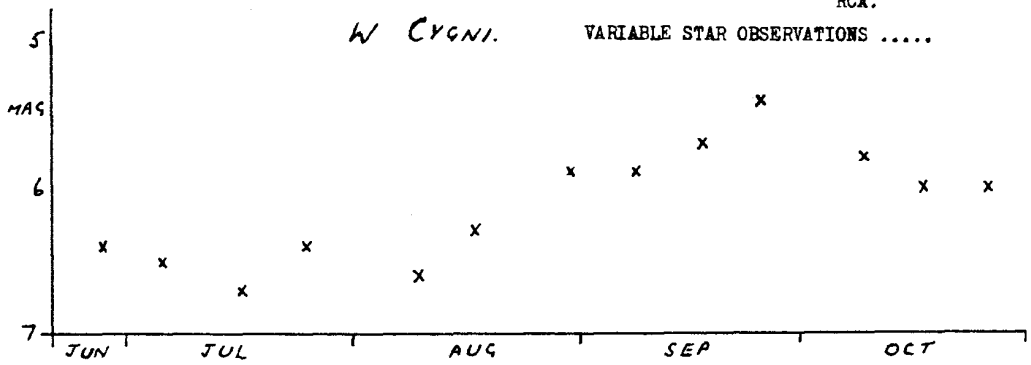
Uranus and Neptune are 'too close to the Sun for observation'.

Source: Whitakers Almanac 1983. All times U.T.

METEOR NOTES FOR JANUARY 1983

If you are interested in meteor-watching, ring David Barnard on Ipswich [redacted]; address, [redacted], Ipswich. Meteor watches are held according to peak times, moonlight influence or other commitments, but often irrespective of weather, near the Levington Ship Public House. The Quadrantids appear between January 2nd and 3rd, R.A. 15h 20m, Dec. 53°N; the Kappa Cygnids come on January 17th, R.A. 19h 40m, Dec. also 53°N. The Kappa Cygnids are generally trained and slow.

RCA.



. . . . . by Mike Nicholls

The light curve shown this month is that of W Cygni from late June to November 1982. This star is a member of the semi-regular class with an average period of 130 days, although in this case the period seems rather shorter than average. This period is said to be superimposed on a longer period of about eight-and-a-half years. A few more years observing are necessary before I will detect that, using my observations alone. The light range is keeping within two magnitudes, which is characteristic of the class.

The comparison stars for W Cygni were given in the August 1982 Journal, so anyone with binoculars can observe it.

TWO NEBULAE IN PERSEUS by D. B. Payne

Perseus is prominent near the zenith during January. Two of the many deep-sky objects in this constellation are M76 and the famous double cluster NGC 884 and NGC 869.

M76 is a planetary nebula sometimes known as the 'Cork Nebula' or the 'Barbell Nebula'. It is considered to be the faintest object in the Messier catalogue and I include it as a challenging object for observers with small telescopes. It is supposed to have an integrated magnitude of 12.2 which ought to mean that a 4-inch to 4.5-inch telescope should be needed to observe it. However, I have managed to detect it fairly easily with a 70mm (2.75-inch) Maksutov telescope using a magnification of 50x (knowing exactly where to look). It was even possible to discern something of the elongated shape with this instrument. I would be very interested in reports from members observing this object with small telescopes. I have not been able to detect it with 10x50 binoculars but when observing with a 10-inch aperture telescope, the elongated, irregular shape is easily seen, also a dusky band, almost dividing the nebula into two parts. As with all the planetary nebulae, it has a very hot but faint central star. In this case the central star is one of the hottest stars known with a surface temperature around 60 000 degrees Kelvin.

The double cluster NGC 884 and NGC 869 is a very conspicuous object compared with M76. It is visible to the naked eye as two small misty patches very close together, lying between the western area of Cassiopeia and the main stars of Perseus. In binoculars the two misty patches are seen to be a pair of galactic clusters containing many bright stars. To view both clusters together in a telescope, a low-power, wide-angle eyepiece is required, giving a field of view at least one degree wide. These clusters are among the best objects in the heavens for small telescopes and are truly spectacular in modest-sized instruments.

The distance of these clusters is estimated to be between 7 000 and 8 000 light-years. At this distance, the Sun would be a 16th- to 17th-magnitude star! This is well out of range of usual telescopes owned by amateurs, yet these clusters contain several stars between mag. 6 and mag. 8 indicating a significant number of very luminous supergiant stars. The brightest of these would have luminosities 60 000 times that of the Sun, putting them among the brightest stars known.

The positions of these objects are shown on the map on the next page. I hope you will be able to find M76!

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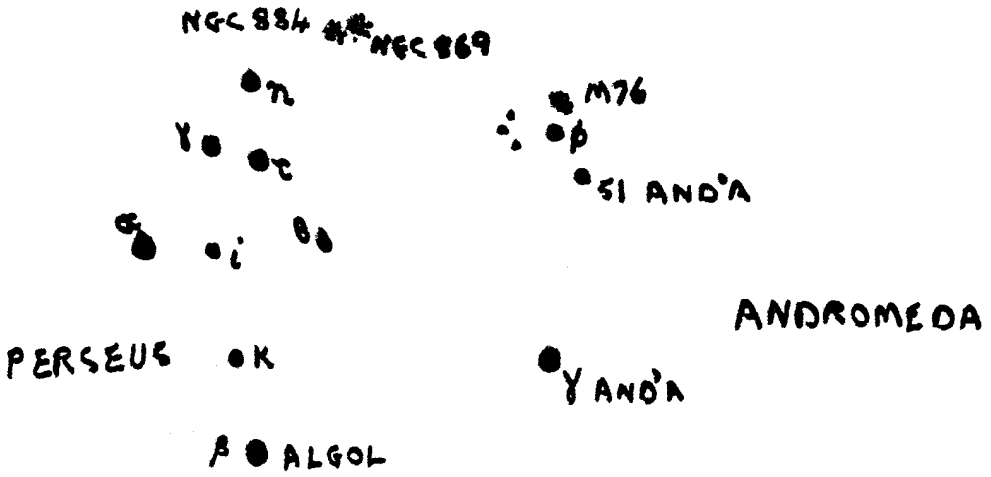
(So do I, David! Star 'Motorway' map, WHERE ARE YOU?!)
(RCA)

NOV



SOCIETY NEWS

REMINDERS FOR JANUARY

ANNUAL GENERAL MEETING. The Annual General Meeting of the Society will be held in the Library of Orwell Park School, Nacton (not the Clubroom library) on Saturday, January 8th, 1983, starting at 8 pm. Please come along.

MEMBERSHIP SUBSCRIPTIONS All membership subscriptions to our Society are due on January 1st. If you would like to renew your membership, please send your cheque or similar payment to Mr. M. Barriskill, Membership Secretary, Orwell Astronomical Society (Ipswich), [redacted], Ipswich, Suffolk. Subscription rates are:

Junior membership		£3.00
Adult	"	£4.50
Family	"	£5.50

This, of course, is for the whole year.

The monthly Journal will be posted direct to you at an additional cost of £1.50, otherwise your Journal can be collected from the Observatory.

CHANGE OF ADDRESS: Just in case you missed it in last month's Journal, Mr. R. M. Cheesman has moved to [redacted], Chelmsford, Essex CM1 4DF.

DEADLINE FOR FEBRUARY'S JOURNAL All items for inclusion in the February Journal should be sent to Mr. R. M. Cheesman at the above address, to arrive please by no later than Friday, 14th January.

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AN 'EARLY' MECCANO MOUNTING FOR A SMALL TELESCOPE (Part IV) by Roy Adams

As I have since realized, this mounting was a very useful learning instrument, not only for observation, but for hints on how to construct a similar mounting using similar but larger-girth slotted angle or plain metal section. To give some idea of the Meccano mounting's rigidity, I was able to split epsilon 2 Lyrae (2.2" arc separation) with the 40mm terrestrial telescope mentioned and shown in previous articles.

The mounting took me a good many hours to design, but having the fair choice of

ready-made parts offered by the No. 10 and other Meccano sets helped, although one does, of course, have to accept certain limitations. Once one can decide on a general shape and knows what one has to fit-in in regard to gears and so on, one can also use trial and error, or design-as-you-build techniques, so avoiding a lot of paperwork. As progress is made, however, one has to have an eye for the quantity of each part used or one ends up not having enough of some to complete the job. It is no fun taking apart sections already made because later sections need certain parts more than work already done!

In all, the mounting took five solid weeks to build. In the latter part of the building stint, I got myself in a rather tense state - something to be avoided. My father politely called this state, 'being obsessed'. I think I have managed to avoid this state of mind and body since and I mention this for those unwary of the 'bug' which attacks anyone seriously intent on making anything reasonably complicated - if you let it. The lesson is that taking a change of interest for a few hours, or a day or so, can allow a series of fresh onslaughts on the job to be just as effective as one long, concerted effort, but a more tiring and less efficient one.

Anyway, I left the lot alone for at least a fortnight after completion apart from the clock, deciding a motor would do, and that later. In fact, I found the mount quite happily usable without mechanized drive.

Another lesson learned with this mounting was one about RUST. To lick this insidious evil, you need paint - at least three coats of good quality stuff - and a prior clean surface EVERYWHERE. After a length of time according as how much dampness gets on your equipment, get in there first with another coat. I regret not taking ehough attention of this sort with the Meccano mounting. I put oil in various places but the nuts and bolts not being painted at all, rusted badly in a few years in spite of the mount being kept inside when not in use, or even used from inside through a window. Meccano has its own colours and at the time I was reluctant to cover this heraldry. But even the old-fashioned Meccano paint gradually suffered. One can these days get slotted and plain steel section with already-applied protective finishes, plating included, but immediately it is cut or scraped, there are local places with no protection unless one applies afterfinish. My own feeling is that choosing aluminium is not a way out - this also can oxidize in normal present-day grades very readily, has a high coefficient of expansion, and is much weaker than steel. It resists journeys to scrapyards much less than slotted steel and so is not available secondhand in any reasonable condition cheaply, as steel can sometimes be. Aluminium is particularly prone to twist failure in slotted angle. But with adequate cross-section, doubling-up or box-sections, suitable grades and design, with availability aluminium or its alloys could give a very lightweight mount. It can also be very durable - as I know from a (painted) anemometer cone I made twenty years ago which is also extremely strong.

Another tip, if you ever try making anything for 'outside' with slotted section or strip, is to paint as you make - particularly in between faces before they become joined and hidden. Otherwise moisture will get in the very thin gaps, get trapped and do its dirty work where you can't see it.

If making large round rings of slotted strip (if indeed it is slotted, as strip from some makers contains just round holes partly for extra strength) and you need to use two or more 'layers' or there is a run joint with plates, it can be as well to use more pieces of shorter length rather than attempt coincidence of holes over too long an arc. (This was rather an important point with my Meccano mounting and the provision of ample radials for strengthening also helps.)

In the picture in the October O.A.S.I. Journal, part of a small box over the

ORWELL ASTRONOMICAL SOCIETY (IPSWICH) - PROGRAMME FOR 1983 JANUARY

at the Observatory, Orwell Park School, Nacton, near Ipswich.

TUESDAYS from 8 pm General Observations Section 4th, 11th, 18th and 25th.
Directors: Mr. N. Gage, [redacted], Felixstowe IP11 8ED. Tel: Fel. [redacted].
Mr. R. Hebbs, [redacted], Felixstowe IP11 7BL. Tel: Fel. [redacted].

WEDNESDAYS from 8 pm Nebular and Faint Objects Section 5th, 12th, 19th and 26th.
Directors: Mr. D. Payne, [redacted], Wickham Market, IP13 OSD. Tel: Wickham Market [redacted].
Mr. M. Cook, [redacted], Ipswich IP4 5QA. Tel: Ips. [redacted].

FRIDAYS from 8 pm Variable Stars Section 14th and 28th.
Directors: Mr. M. Nicholls, [redacted], Capel St. Mary, Ipswich IP9 2EX. Tel: Gt. Wenham [redacted].
Mr. R. Gooding, [redacted], Ipswich IP1 6AE.

SUNDAYS from 8 pm General Observations Section Provisional dates 9th and 23rd.
Directors: Mr. M. Barriskill, [redacted], Ipswich IP1 2EZ.
Mr. R. Adams, [redacted], Ipswich IP2 9ST. Tel: Ips. [redacted]

SATURDAY 8 pm ANNUAL GENERAL MEETING (in the Library at Orwell Park School)

IF YOU HAVE ANY IDEAS FOR MEETINGS OR SPECIAL EVENTS PLEASE TELL ANY COMMITTEE MEMBER OR BRING THEM ALONG TO 'COMMITTEE' (OR A.G.M.) OR ANY OBSERVING MEETING. AND TELL YOUR FRIENDS ABOUT THE O.A.S.I. THEN YOU CAN MAKE EVEN MORE FRIENDS!

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MECCANO MOUNTING (and lessons learned) Contd.....

objective can be seen. This was my first venture into solar astronomy. Then, as now, I believed in keeping the Sun's rays out of the telescope as far as possible. But those days were, indeed, early days because I was using only a couple of thicknesses of overexposed negative clamped in the little box. I got rather poor definition as can be expected, but the aim was only to see roughly what was on the Sun in the way of spots, then pop up to the 12.5-inch Midland Institute reflector at Edgbaston, for more serious viewing by projection. Viewing the Sun via dense negatives or similar filters is not really recommended even with small telescopes near sunset, as it is said some harmful radiation can pass through straight into the eye.

Unfortunately my Meccano mounting, already neglected and rusty through my being forced to leave it in store for a period where it became inaccessible, was destroyed in a fire to such an extent that only some blackened steel skeleton, flaking and very pliable, now remains parcelled-up in polythene bags in my attic. The brass simply melted in the heat. But I still have another home-made telescope I used on it, which is very handy and in 'everyday' use for monitoring sunspot activity without a mounting. This I can pick up and take out or use anywhere very quickly and see what is on the Sun just by placing a piece of card on a chair or holding it in my hand. Maybe this low-cost telescope could be the subject of another article later.

On the 60-mm Prinz telescope I converted to equatorial, (the mounting, that is) I used Meccano to make the main drive gear - just over six-inches in diameter - and the electronic drive motor, gearbox and intermediate gearing and clutch supports.

As a footnote, I would like to say that by writing this article I do not wish to be thought to be advocating Meccano alone for any similar work by youngsters or those aged more mature (or both!) The Meccano system has changed in many respects during the past fifteen years or so, not necessarily always for the better. The increased inclusions of plastic can have some advantages but not of rigidity. Set numbers are downgraded and spares are less easy to obtain. They are also, unless one is lucky, rather expensive. But if you or one of your family have some Meccano or similar kit parts, or some of that larger stuff and raw sheeting - why not try making a mount?