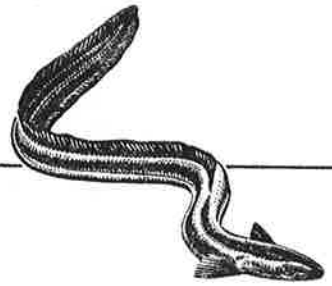

The National Anguilla Club

BULLETIN

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CONTENTS.

EDITORIAL.

It has become almost a tradition that the first words of a Spring Bulletin should belong to the Special Report Issue, more specifically, to Terry Coulson for once again doing a magnificent job on our behalf. As traditions go, of course, this one appears doomed to a short life, and members may feel some regret at the passing of this most splendid documentation of the past summer's results. In reality, the reverse should be true. The fact that we can now replace the single report with smaller items on specific issues is a very real mark of progress, and should be welcomed as such. Now that some of the background has been painted in, a few of the more interesting problems of detail begin to stand out more clearly;- getting the answers will not be easy, but it should prove a fascinating exercise of great importance to our fishing results.

On the subject of results, the Report tells us that after four years of steady progress, the median eel last year reached the staggering proportions of just over 1lb. Only about one eel in four weighed more than 2lb, while only one fish in ten weighed more than 3lb. As food for thought, let us set the tackle used to catch our eels alongside these figures (derived from the results of the rod-questionnaire; NAC. Bull., 7,3. June 1970). On average, we use a rod of about 3lb. test curve armed with a line of about 14lb. breaking strain - probably with a wire trace clamped on the end for good measure.

To an outsider, such figures would be astonishing. No-one would dream of using such gear to catch undersized tench of the same weight range. It is argued - frequently - that we sacrifice sport with the medium sized eels in order to stand some chance with the odd monster we all hope to hook someday. As a confirmed heretic, I would like to explore the logic of this approach a little.

To brief anecdotes may serve to make a first point. The first concerns the famous occasion when I accidentally handlined an eel of 4½lb. ashore on my companion's tackle when fishing a featureless gravel pit. The details of this outrageous event are clouded by the passage of time; it was all to do with crossed lines on a very dark night and nearly ended a fine friendship if I remember correctly. One thing does stand out in my mind, however; without the leverage of the rod to make it seem heavy, that eel came in very easily indeed and I doubt whether a six-pound line would have proved inadequate. As a contrast, when fishing Yorks. rivers for barbel, one occasionally catches bootlaces by mistake (seldom more than one a minute). On one such expedition, the umpteenth bootlace tied itself and my new 7lb. line in a knot around the rod-rest instead of swinging gracefully ashore to the tender mercies of my size ten boots. To my shame, I left it there while a deserved cup of tea was prepared, and to my astonishment, it levered itself around the rod-rest to such good effect that it eventually broke the line and escaped.

In other words, the only point of heavy gear is to try and keep eels from reaching snags where snags exist. To try and design tackle to dislodge even a bootlace from a solid snag should (to my mind) be entered at the top of a list of famous lost causes. Conversely, where snags do not exist, there is some case for lighter tackle. Yet how many of us scaled down when faced with the supreme comfort of Castle Howard?

All this matters not a jot, of course, if the eel is indifferent to the tackle used. No evidence for this exists, however, and there is therefore no logical support for a rigid outlook on eel tackle. Might it not be possible that our heavy gear, while giving some advantage in handling the occasional big fish we do hook, also discourages many more from ever taking the bait?

After all, if one takes a sledgehammer to a walnut, one is liable to do more than crack it, one is liable to destroy it completely.

Alan Hawkins.

A PROPOSED BOOK ON EELS BY ANGUILLA CLUB MEMBERS.

by Brian Crawford.

There is a little pet project which attracts me, this is the idea of a book covering the subject of eels, in the most comprehensive manner, to be the most authorative book anywhere. This is of course to be a Club project, each chapter being written by an individual member or joint effort by two or more.

If such a book was created - published and sold - the proceeds could be split up in three ways, a third to the Anglers Co-operative Association, a third to Liverpool University for further research into eels, and a third to Club funds. The latter could be used for several purposes depending on the amount involved - eg. sponsoring outings to various parts of the country, travel expenses only. We could also have more money at our disposal for more comprehensive printing projects, informative leaflets for general distribution to anglers, and many other such schemes. Any funds left at a time when the Club dissolved, if ever, might go to the A.C.A. or similar organisations.

I guess it's a pretty ambitious idea, but due to the complete lack of any informative work on eels, I'd like the Club to write one, especially as we have the relevant information and people to do it.

A possible layout for the book would be to write it in three parts. Part one could deal with the life cycle and history, split up into several chapters, one or two being written by our friends at Liverpool University. The second part could deal with tackle, methods and specimen hunting techniques etc. Chapters could be devoted to each topic, eg. bite indicators, methods of setting out rods, types of bait and presentation, rods, hooks, lines, traces and so-on. The third part could be constructed as a result of the session reports, ie. eel distribution, habits, weight, length, growth factors, complete with many graphs.

Time is of course on our side in this matter, as I believe the Club is the only body capable of such a book. It could be a standard reference work for many anglers, instructing them on the 'correct' methods for catching eels, and also pointing out the application of such techniques to other species.

Even if such a book only covered the cost of publication, it would satisfy me.

Any members with ideas about this plan or criticisms of it should send them either to me or to the Editor for publication. I have not considered the legal or moral issues involved in such a project, and again I would welcome comprehensive discussion on these matters, either with me personally, or via the Bulletin.

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Comment.

I am sure members will wish to join me in thanking Brian Crawford for raising this interesting subject for consideration. No doubt many of you will want to say something on this subject, and, as Editor, I am naturally keen that comments should be addressed to me; - the Bulletin is a very good medium to discuss such a topic and offers the best chance of getting the feelings of the Club in general set down on paper.

To start the ball rolling, I hope you will excuse me if I sneak in first with a few points that we must bear in mind when thinking about this proposed book. Firstly, we must consider who we are trying to sell this book to. Angling

books by their nature can only have a rather limited appeal, and a specialised book about the relatively unpopular eel may have a very limited potential market indeed. To broaden the scope to include biologists in the market might carry the risk of making the book rather heavy going for the average angler. In other words, there is a danger of falling neatly between two stools. Also, a book as comprehensive as Brian suggests may simply be too expensive.

Still on the subject of the market for the book, we must recognize that there is by no means such a void in the literature about eels as Brian suggests. Apart from chapters in some of the general texts, our proposed book would have to compete with a volume in the 'How to catch them' series by Raymond Perrett. On the scientific front, there is an excellent study entitled 'EELS, A Biological Study', by Leon Bertin, as well as several papers in the zoological literature about various aspects of the life of this fish.

Fortunately, perhaps, Perrett's book is now a bit out of date, while little information on the feeding of eels in freshwater is included in Bertin's text. Nevertheless, to update and improve upon these works would mean that we would have to divulge much of the information that many of us might regard as strictly confidential to the Club. We would have to think very carefully before parting with the results of our session reporting scheme for the price of a book.

Editor.

A TANGENTIAL EEL FISHERMAN.

by David Smith.

Having been a solitary eeler for most of my eeling years, my tackle and techniques are probably different to everybody else by virtue of the fact that I have not been in contact with a sufficient number of of other eelers to prevent me from going off at a tangent. As a result of this, the methods I employ may be frowned upon, laughed at, or even greeted with pleasure by my now fellow members of the NAC.

A brief history of my eeling is as follows. I first became a fanatic when, fishing a canal, I was plagued by little eels, and at that time considered eels to be vermin. My mind was changed that night when I hooked a "Big-un", for that water anyway. It gave me the best fight I ever had and was still fighting on shore. As it wrapped its tail round my arm and constricted, I knew that this was the fish for me. However, my friends did not agree and it was then that I became a "tangential eel fisherman".

I still maintained contact with some of my old associates, those that mixed camping with fishing. While they slept, I hunted the eels, and while they fished, I slept. This generally meant that they had two days fishing while I had only the one night. This continued until I decided to go to college, where, to my amazement there were two other, equally surprised, eelers and it was then that eeling trips became true eeling trips.

During these years, I built my tackle and techniques. At first, my eeling tackle consisted of a 9ft. spinning rod, with which I used a standard fixed-spool reel plus 9lb. line. I was soon to learn about wire traces and from this similarity to sea fishing, I was greatly influenced by sea anglers. A work friend of mine was a keen sea fisherman who believed in having a rod for a specific purpose rather than a single rod for every purpose. Through talking to him, I developed my tackle and techniques.

Firstly, fishing with the reel above the rod. With this, the rod is held in the left hand and the butt is wedged between the elbow and the side of the body. As a result, the rod becomes an extension of the left forearm, and as such better control is exerted on the rod when playing a good fighting fish. This in turn leaves the right hand free. Most people are right-handed, and thus are able to do much more intricate work with respect to line and drag control when reeling in.

Fishing in this way poses a new problem, namely that the standard fixed-spool reel is of little use and a new reel must be obtained. My choice was for a closed-face fixed-spool. I chose this instead of a multiplier because such a reel is best loaded with braided terylene of which the lowest breaking strain is 18lb. and I prefer to use much lighter line than this. Secondly, not having had much experience with multipliers I was reluctant to try my hand with one in the dark (a closed-face is simplicity itself). A distinct advantage of this reel mounted above the rod is that the drag control is mounted upon the handle spindle and not in front of the spool, so that the drag can easily be altered without any relaxation of rod pressure on the fish.

Having read some of Leslie Moncrief's early articles, I was interested in his boat rod (Creel 1:3 Sept. 1963). This has an offset handle so that the line passess in a straight line from the reel to the tip ring. This reduces the angle between the reel and the butt ring, thus reducing line drag. The best substitute I could find was a pistol-grip rod, but reluctant to buy an ABU I decided to try my hand at building one to find out whether it would work. My first effort was, if I might say so, very good, and it is still in use in a mofified form. Apart from reducing line drag it also balances the reel, so that the tendency for the rod to roll around in wet hands is eliminated.

Following my initial success with my prototype, I experimented with several other pistol-grip rods with mixed fortunes. I have found the best formula to be a rod of 8'6" in solid glass having a total handle length of about 24" (this would vary with the length of the individual's forearm), using a Pegley-Davis pistol-grip. I should like to continue this line of development into hollow glass, but I am now thinking of cutting my losses and buying an ABU, to see how it is done by the experts!

Another idea I picked up from my sea-faring friend was the use of a rubby-dubby. I considered that groundbaiting for eels would be superfluous since all manner of other fish would be attracted to the swim, something that the single species hunter tries to avoid. I thus concluded, rightly or wrongly, that a smell trail, rather than a bait trail, to my swim would be more selctive in its attractive nature. Furthermore, I was told by one of those pleasant old gentlemen that always seem to choose me to talk to when they are on their riverside walk that eels forage upstream in rivers (a theory that I have never put to the test) and this persuaded me that a smell trail would be the ideal groundbait. What better smell trail than a rubby-dubby.

Now, how successful is its use? Using a rubby-dubby I have caught eels, but whether or not I would have had the same success without it I cannot say. I have not had the same success without it as I have with, but this might be just coincidence, and the continued use of a rubby-dubby on my part may be no more than what the psychologists call "superstitious behaviour", having no real effect on the eels at all.

Please allow me to continue a little longer on the subject of bait. My first bait for eels was a healthy bunch of lob-worms. I than progressed to dead-bait and found that this was much more selective. (All that I have caught using this, other than eels, is pike and a chub, but I may have been just lucky). However, it came to pass that on one trip I had no worms and "living" dead-bait was not to be found. I was thus reduced to using maggot. During my meal of bacon and beans it occurred to me that I might use bacon as a bait, it certainly

couldn't be any worse than maggot. Bingo! It is now my No.1. reserve bait and if nothing else is getting results, bacon is always there to save the day, or night.

I do not think there are any other peculiarities in my tackle box. The use of buzzers in the eeling world is, I believe, quite universal, so I need not go into details on this subject. The only other thing that might interest people is my choice of hooks. Under the influence of sea-anglers, I use stainless-steel hooks for the following reasons. Firstly, they are stronger than bronzed hooks and less likely to be straightened by an eel desperate to free itself. Secondly, they do not corrode so quickly, which is advantageous for the night fisherman who has his tackle tray exposed to the dew and other extremes of weather. The biggest disadvantage is that they cannot be sharpened to so fine a point as the bronzed hooks, but in my opinion this is offset by the advantages.

This then is the result of having been a solitary eeler (Mr. Hawkins beware!) and not having any fellow eelers around to keep one on the straight and narrow. Have I gone off at a tangent to the rest of you? I should be pleased to hear your comments and criticisms, especially with respect to the use of rubby-dubbies. If anyone is interested in the idea of the pistol-grip rod, I shall be only too plased to share my knowledge of them, meagre as it is, with them.

For those of you who have frowned all the way through this discourse, you will be pleased to know that lately I have built myself a fairly conventional rod. Well, I did have to find a use for my neglected fixed spool reels! This is made of hollow glass and is built up of an S.U. carp rod handle section and a bass rod top section. The two sections were each five feet long, but, to get them to fit together it was necessary to remove three inches from the top of the butt section and three inches from the bottom of the top section. It will be interesting to see how it compares with the performance of my pistol-grops!

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FEEDING MECHANISM OF EELS.

by David Marlborough.

An intereting piece of scientific work on the feeding mechanism of eels (tested along with eight other species) has been published in the Journal of Zoology by R. McN. Alexander (1).

He trained various fish to suck at a bulb, which recorded pressure changes and hence the strength of the 'suck'. He also took cine films as they did so.

The eel did not have a very powerful suck, but it lasted the longest. Alexander ascribes this to the shape of the eel's head and gill cavities. The eel has the gill cavity (with flexible covers) pushed well behind the skull. This separates the skeleton of the pectoral fins from that of the skull.

Alexander found that not only do the bones of the mouth, and the soft gill covers, move - but also the pectoral fin bones when it sucks. In other species the pectoral skeleton moves hardly at all. Could this help in shovelling a big dead fish into the comparatively narrow mouth and throat of the eel?

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HOW FISH FEED.

by Alan Hawkins.

It has been in the back of my mind to try and present a brief account of fish feeding mechanisms ever since I was fortunate enough to hear Professor Alexander speak on this subject about a year ago. When the previous piece arrived my first reaction was of unholy glee that someone else had done my work for me; on reflection, however, it seems to me that members might appreciate a few more details than are given by Dave Marlborough above. Therefore I have put pen to paper after all.

Two distinct feeding mechanisms were described by Alexander in his research. The first is the simple "grab and swallow" technique of, for example, the pike, which seizes its unfortunate prey rather like a crocodile might tackle a night fisherman in Africa.(This is a recurrent nightmare of mine - it all started when I read of an escaped croc. at large in the Gt. Ouse immediately after I had spent a solitary weekend there. What was it you hooked last summer, Geoff?).

The second mechanism, much more common in the piscine world and of greater interest to Prof. Alexander, is far more subtle. The fish does not take the food; the food obligingly swims into the fish. What happens is that the fish sidles up to the food, and, from close range, opens its mouth and sucks hard. Along with a volume of water, the food item moves into the fish at an astonishing speed.

The fish achieves its suck by a complex series of muscular contractions, all of which serve to enlarge the mouth cavity. Typically, the floor of the mouth is lowered, while the sides may move outwards. Clearly, the sudden expansion of the mouth reduces the pressure inside it and water plus food rush in to fill the 'gap'.

Having found out what happens, Alexander set out to measure it. He developed a technique which was both simple and elegant, and as such is well worthy of description. He connected one end of a narrow-bore pipe to a pressure recording device, and dipped the other end into his aquarium. The tube was bent so that the open end in the water was horizontal. He then chopped worms into small pieces and slipped them onto the end of the tubing just as one might push a ring onto one's finger. To get the worm, the fish was obliged to take the pipe into its mouth as it sucked; in consequence, Prof. Alexander obtained a peak on his chart recorder every time the fish felt hungry. Not that the fish were hungry all that often; in fact the patience needed to train even the brightest members of the fishy world could serve as an example to us all. (Eel fishermen are not very patient - they simply go to sleep!).

As a second method, a piece of food of known size and weight was placed on the floor of the aquarium and filmed at very high speed until it was eaten. By counting the number of frames from the time when the food started to move until it vanished into the fish's mouth, it was possible to calculate the speed of movement and hence the force (or suck) exerted by the fish. For reasons given above, this technique was extremely expensive of film.

It is a sobering thought that even fish of only a few inches in length can suck far harder than an adult human being!

What is the significance of these feeding processes in relation to angling? I propose to tackle this question in two stages; firstly I will consider fishing in general for species which normally feed by the 'suck' method, and then focus attention more specifically on the eel.

The first thing to realise about the 'suck' process is that it is incredibly swift - small items of food may be engulfed in a fraction of a second. Also, we

must recognize that the fish can to some extent reverse the process and blow the bait back out again. Since the act of taking the bait is far too fast for the reflexes of even the most accomplished angler, we have to do more than simply fool the fish into picking the bait up. We also have to deceive it into holding on long enough for us to collect our wits and do something about it. The implications in terms of bait presentation are obvious. Further, I am always extremely wary of placing a weight within a few inches of the hook; lest the fish sucks and nothing happens, or, worse still, the bait is sucked clean off the tackle.

With big baits, such as lobworms or lumps of bread, the situation may be rather more complex. The fish may take more than one suck to get it. It may also only take the bait in its lips, and hold it there for some time before either swallowing or rejecting it. (I have seen both chub and tench do this on several occasions; also a bream, but then I struck immediately for fear I might hook it).

When we try to consider the feeding pattern of eels, as usual we are on less certain ground. The fact that eels do have the 'suck' mechanism to a limited degree suggests they may feed as other fish, at least when the food item is small. However, we need little reminding that their behaviour with large food items, especially dead-bait, is entirely different. Our experience suggests that in the majority of cases the eel grabs the bait across the stomach, runs off with it to a considerable distance, stops, swallows the fish and finally moves off again. I personally suspect that the part the 'suck' mechanism plays in this proceedure is relatively small. It is possible that the suck is used to increase the chances of catching a victim as the eel strikes, but I doubt if the suck alone would have much effect on a substantial fish. Furthermore, I suspect David Marlborough is right in suggesting that the biological significance of the movable pectoral skeleton is related to the swallowing of large food items, not with the capture of them.

One of the more interesting features of the complicated ritual the eel goes through every time it takes a dead-bait is the fact that the pike commonly does precisely the same thing. We may ask why this should be so. Unfortunately, it is not possible to give a final answer to this; all that can be done is to advance a few ideas that seem to fit the facts. Therefore, I hope I may be forgiven if I end on a highly speculative, and probably controversial note.

The fact that this behaviour pattern exists at all suggests very strongly that it confers an advantage upon the predators that use it - otherwise it could not have become confirmed in the instinctive behaviour pattern through the process of natural selection. Let us see if we can find any advantages.

For a start, it seems reasonable to suggest that, as in the pike, the majority of fish the eel pouches are alive at the time of capture. At first sight, it might appear that the simplest way to catch a fish would be to grab it by the head; this way the fish could be swallowed with a minimum of fuss. However, a head on attack has several snags attached to it. Firstly, the victim may well see the predator coming and move smartly out the way. Secondly, the head provides a small, awkward, target, and the eel is likely to miss altogether if the food moves slightly in any direction as the lunge is made. An attack from the side has none of these disadvantages; indeed, if if the fish starts to move foreward as the eel strikes it may miss the stomach but still get a hold near the tail.

Having grabbed the victim broadside on, the eel has a problem. It has to turn it round to swallow, and this involves slackening the hold while the manoeuvre is made. Unfortunately, if it lets go, the fish may simply swim away. Therefore it behoves both the eel and the pike to make sure the fish

is dead before trying to swallow it; this it can do in two ways, - the predator can crush the fish,and if it swims off fast enough I suspect the pike or eel may also drown its victim. (A fish can readily be drowned if water is made to flow the wrong way over the gills). Also, the act of moving off smartly may remove the hunter from the embarrasment of hungry competitors that might be sniffing around in the same area.

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HOW TO BUILD AN OSCILLATOR.

by Alan Hawkins.

As a good deal of Bulletin space has been devoted to electric bite-detectors of one form or another over the last few months, there would seem to be a need for me to attempt to justify yet another piece on this subject before going further. The reason is, in fact, quite simple. Having made an oscillator that works quite well from a few radio spares, several members have asked me for details. The most logical way to reply to these enquiries appeared to me to be a short description in the Bulletin - hence the following article.

The advantages of using an electronic oscillator in place of the usual buzzer have already been discussed in some detail (1). As a quick recap, however, one can point to four factors which make an oscillator a much better device to waken the somnolent eel fisherman:

1. It draws less current - the battery lasts longer.
2. It is not so demanding of the correct voltage - you may still get a noise if the sensor contacts do not operate perfectly.
3. It is far more reliable.
4. It is far more versatile - within limits, it can make any noise you wish.

As with more familiar noise-making gadgets, the oscillator can be regarded as a self-contained bit of circuitry that can be fitted into our bite detector system via a positive and negative lead exactly like a buzzer. Several types of circuit in which an oscillator could be used have been illustrated in earlier Bulletins (1, 2, 3). The choice of circuit depends entirely on the type of bite-alarm system one wants to make; for the sake of example, and for the convenience of newer members, I have reproduced one of the more popular layouts in Fig. 1. (below). In this system, there is a single oscillator box which services several rods; a seperate indicator light for each rod is included in the box.

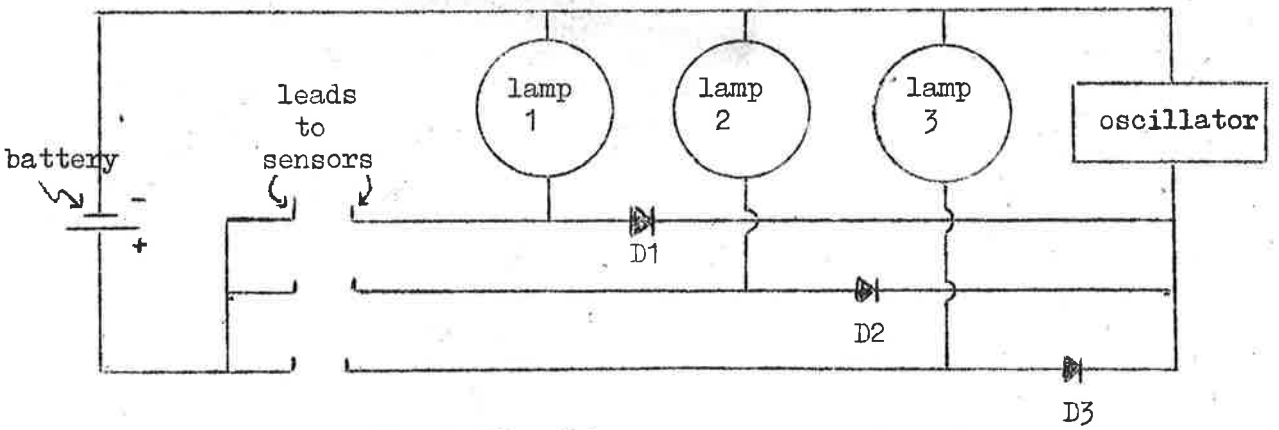
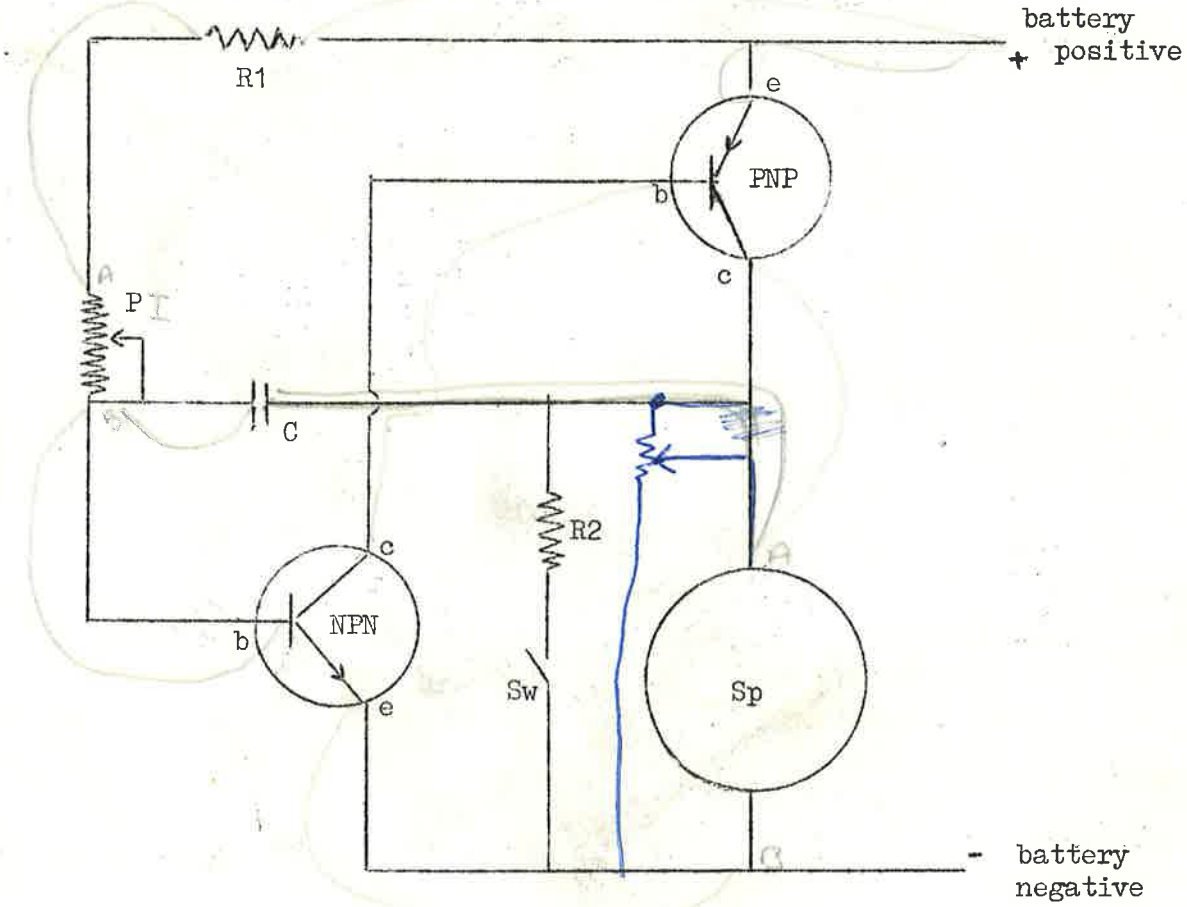


FIGURE 1. Possible oscillator box layout.

For the benefit of the non-electrically minded new member, the objects marked D1-D3 in Fig. 1. are semi-conducting diodes. These are small, easily obtained, components whose important feature is that they allow electricity to flow through them only in one direction; in the circuit illustrated their purpose is to stop the current 'looping back' and lighting all the lamps when a single sensor unit is triggered off. For a fuller description, see ref. (1).

Having looked at the way an oscillator fits into the indicator set-up, we may now turn to the details of its construction. At this point, it is as well to point out that my aim is simply to suggest how an oscillator might be built - I have no intention of trying to explain how it works, nor do I make the least pretence that this is the only possible circuit one could make.

To make the job a little easier, it is proposed to split the description into three parts. We will start with a look at the circuit diagram (Fig. 2, below), progress to a consideration of the individual components and finally give a little thought to putting it all together.



R1 = 70-100 K. Ohm resistor.
R2 = 2-10 Ohm resistor.
C = 0.05 micro-Farad capacitor.
P = 100 K. Ohm potentiometer.
Sw = Switch.
Sp = Speaker (3 or 8 Ohm)
PNP = PNP transistor (Mullard 2G381A)
NPN = NPN transistor (Mullard 2G339A)

FIGURE 2. Oscillator circuit.

In reality, the circuit is by no means as complicated as it may appear on paper. There seems to me to be only one point that ought to be made clear before pressing on with a consideration of the individual parts - this is to offer a brief explanation of the conventions adopted when drawing up such a diagram. All wires are represented by straight lines which intersect at right angles. Where two such lines meet, this means there is a definite electrical connection between the two. Where, however, one line crosses over another by means of a little loop (such as happens immediately to the right of the capacitor, for example), there is no electrical connection between the two.

Let us now move on to look at each component in turn.

Resistors A resistor is simply a poor conductor which reduces the flow of electricity when present in a circuit. Resistors are calibrated in units called Ohms - the higher the Ohm rating, the greater the resistance. When the letter K is present, this should simply be interpreted as meaning a thousand, thus R1 is a resistance of 70-100 thousand Ohms.

In the circuit there are two resistors (R1 and R2) and you will notice that I have not given a precise value for either. The reason for this is that the most suitable Ohm-rating for both depends to some extent on the types of transistor and speaker used. The figures given are thus only a general guide, and one might profitably ask a shopowner for his advice when buying the set of components.

Although R1 is an essential part of the circuit, R2 is something of an optional extra, and therefore needs some explanation. If we left R2 out altogether, it is quite probable that so large a signal would be generated across the terminals of the speaker that the latter would not be able to cope very well. In this situation, one commonly gets an extremely loud low pitched note; this may be useful on some occasions but is normally too much for comfort. If we now imagine that we have closed the switch, so that R2 is in the circuit, a glance at the diagram shows that the current now has a choice of either going through the speaker or through the resistance. In practice, it is divided between the two. Clearly, the fact that the speaker now carries less current means that it makes less noise, and thus R2 in combination with the switch acts as a crude sort of volume control. (It also alters the tone to some extent).

It should be apparent that the lower the resistance of R2, the more current will pass through it instead of the speaker, and the more the volume will be reduced. It is worth experimenting a little, therefore, with a range of low Ohm-rating resistors to achieve the most suitable effect. Fortunately, resistors are extremely cheap, and this will not break the bank.

To look at, a resistor is a small oval object with a wire sticking out at each end. One solders it in by means of these wires, and it does not matter which way round it goes.

Capacitor Nothing need be said about this except that, like a resistor, it has two wire terminals and it does not matter which way round it goes.

Potentiometer. This is the largest component apart from the speaker; one screws a knob onto it and uses it as a tone control. The potentiometer is no more than a variable resistance (in this context) and is therefore calibrated in the same Ohm units. Unlike the previous parts, this object has three terminals, commonly mounted in a row to one side of the main body. To wire it up, take one terminal at the end of the row of three and join it to R1. Solder the other two terminals together and take a common lead off to the capacitor and the base terminal of the NPN transistor. It does not matter which of the two end terminals you connect to R1, the only effect of reversing the wiring is to reverse the direction the knob has to be turned to raise (or lower) the tone.

Transistors. The two transistors are undoubtedly the most troublesome of the oscillator components to wire up correctly. For a start, there are two main types of transistor, known as NPN and PNP respectively, and the circuit requires one of each. Secondly, each transistor has three wire terminals, labelled collector, base and emitter. Thus, not only has one to be careful to put the right transistor in the right place, one also has to be sure to orientate the three terminals correctly.

Unfortunately, the manufacturers are not a great deal of help here - different manufacturers adopting different methods of coding the terminals. The number of types which would work in the circuit above is very large, however, it is advisable to buy the two as a 'balanced pair' - that is a pair which are designed to work together. The most practical advice I can give, therefore,appears to be that you should tell the expert behind the counter exactly what you want the transistors for and make sure he explains the coding for the terminals to you.

Speaker. Little needs to be said about this, almost any 3 or 8-Ohm speaker will do - provided it is not too big, of course! Of the two impedance ratings, however, the 3-Ohm type is the most suitable.

Finally, let us consider how to wire the individual bits and pieces together. The answer is not to string them up on odd lengths of flex and have the whole assemblage flapping around loose in a box! Instead, one should mount the components on a sheet of 'veroboard'. This material consists of a sheet of laminated plastic with parallel copper strips on one side and rows of small holes drilled through it. One uses this board in exactly the same way as if one were assembling a transistor radio on a printed circuit, i.e. the wire terminals of the separate components are pushed through the holes from the plain side and soldered down to the copper strips where they emerge on the other side.

The question now arises, how on earth do you make the correct circuit out of components soldered to parallel rows of copper strips? For a start, it must be recognised that the strips can be broken at any point simply by filing through them; this gives a great deal more flexibility in the layout. Secondly, if one gets stuck, one can always join two distant strips by a short length of fine flex.

Having said this, there are two ways of going about the problem. Firstly, the circuit could be re-drawn as a plan; this would be a diagram of a piece of veroboard with the holes numbered according to the terminals of the components soldered to them. With such a plan, of course, the assembly is made very much easier. Alternatively, if the mind boggles at such an exercise, or if one is simply lazy (like me) it is possible to make up the circuit as one goes along. For example, one could start with the resistor R1 and solder one wire to one copper strip and connect the other wire to a second strip. A glance at the circuit diagram shows that one end of the resistor is connected to the emitter terminal of the PNP transistor; accordingly this terminal is now pushed through a hole in one of the strips to which one end of R1 has already been attached and soldered down. Neither of the other two terminals of the PNP transistor are connected directly to R1 or to each other, therefore they are taken to seperate strips. And so one goes on, working directly from the circuit diagram and being handy with a small file to interrupt strips where necessary.

Lastly, there is a word of caution that should be mentioned. As a breed, radio components object to being overheated, particularly transistors, and great care must therefore be exercised in the use of the soldering iron. A good tip is to grip the component in a pair of pliers when soldering it, the pliers holding the terminal being soldered between the main body of the part and the point where the solder is being applied. In this way, heat passes into the pliers and not into the component.

References (How to build an oscillator)

1. Coulson, T. M., 1970. Electric bite alarms. NAC Bull., 7,3, 51-63.

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LETTERS TO THE EDITOR.

Eel Fishing in Australia. The following is an extract from a letter sent to the Club by a keen eel fisherman is Australia. As mammoth freshwater eels of any type are dear to the hearts of us all, the editorial chopper has been wielded with unusual restraint, its use being almost entirely restricted to a few minor corrections and re-arrangements w where this was felt desirable. Nevertheless, it is as well to remember that Mr. Toop is fishing for an entirely different species of eel (from his location, probably Anguilla reinhardti) and therefore it may not be surprising that he advocates methods rather different to ours. (Editor).

In a recent fishing magazine in Australia a Mr. Gordon Wood, a countryman of yours, wrote a very interesting article on specialisation in fishing. From this article, I was astonished to learn of the existence of the National Anguilla Club in England.

In Australia, eels are prevalent along our eastern seaboard. In common with the European eels, the fish travel to the sea to spawn, for eels inhabiting the east coast the spawning ground is believed to be around the island of New Caledonia.

Unfortunately, the Australian eel is considered a trash fish - an annoying inhabitant of our dams and rivers that is cursed when caught, especially by light tackle Bass fishermen - and is usually cut off the line and released. This opinion is not, however, shared by my family and a few freinds. Country bred, we were introduced to eels as a table fish very early in life.

Mr Wood mentioned that the English record stood at 8½lb. It appears that Australian eels grow to a much larger size, probably due to the warmer climate. In the Brisbane museum there is a preserved specimen of a freshwater eel 22ft long. Unfortunately, no weight is recorded; indeed, in Australian fish records eels don't even warrant a mention. The largest eel I have captured myself weighed 7lb, but I claim a share in a 5ft long 11¾lb. eel which my father and I caught three years ago, In the family album, there is a photograph of an uncle holding an eel which my parents inform me weighed 17lb and was 5½ft. long; I can vouch for the length from the picture, so the weight could well be correct.

As regards tackle, I graduated from handlines to light (9lb. line) bait-casting equipment about seven years ago, and since that time have been forced to acknowledge that the eel, pound for pound, is the best fighting fish in our rivers. I can well appreciate that the eel's notorious habit of escaping during landing has prevented your Club from bettering the existing record; trying to subdue eels on light tackle often seems a hopeless task with the fish breaking the line on the nearest snag or biting through the lead.

Normally, we do not deliberately fish for eels; indeed I suspect that the majority of fish I have taken have been caught by mistake. Commonly, we use worm bait, either on ledger tackle or float-fished in mid water. Looking back over the years, it seems to me that I have caught eels more readily when float fishing than when bottom fishing, and Mr. Wood's article started me thinking about this.

In Australia, at dusk, eels can often be seen chasing about in mid water. I believe now that the eel is more of a predator than a scavenger. Often, schools of perch can be seen behaving like this, any luckless insect or small fish is immediately set upon and engulfed. Is the eel a predator? If it is, it explains the greater success with float lines - the worm baits are more likely to be encountered by marauding eels. Eels encountering bottom baits would do so outside their active hunting period, thus explaining their annoying habit of sucking bottom baits rather than taking them.

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