P5

SEPTEMBER 1991

NEWSLETTER
OF THE
SEVERNSIDE
TELEVISION GROUP
EDITED BY
SHAUN O'SULLIVAN
G8VPG

IN THIS ISSUE

From our Chairperson ...

A big thank you is due to all of you who renewed your membership so promptly, having to send out reminders uses Group funds which could be better spent on the improvements to GB3ZZ which the engineering team are working on at the moment.
The Summerfun contest went quite well considering ... we had rain water in the control cables, and a rotator controller with the indicator needle going around like the second hand of a clock !. This was soon fixed by Steve G8KUW with a part robbed from Ivor G1IXF's 10 GHz transmitter. I am not quite sure who decided to call it the "Summerfun" contest, they have certainly never lived in the South West, for the past few years the weather conditions have been very poor. However, we did manage some DX into France, with pictures being exchanged each way. Our next contest is the most important of the year, the International, which takes place on Saturday 14th September (1800 GMT, 7 pm local) until Sunday 15th September (1200 GMT, 1 pm local). A reminder to some of the newer members that they are welcome to visit us at the contest site, which is near to the Castle of Comfort public house on the Mendip Hills. Members wishing to operate, help or stay for the weekend in your tent or caravan will be made most welcome. A call on 144.750 MHz as you approach will enable us to give you the exact location. The contest team start at about 5 pm on the Friday evening, before adjourning to the HQ to discuss tactics (HQ = Castle of Comfort !). We need all the points that we can get for this contest, so please try your best to send us a picture, it will be most appreciated.
The Bristol Radio Rally also takes place on Sunday 15th September, at the Brunel Train Shed, Temple Meads, Bristol, opening time 1030 am. We will be running a live 24 cm TV station at the rally, giving a demonstration of GB3ZZ. If you are unable to attend the rally, please try and put a picture through for the spectators to watch, test cards can become a bit boring !.
To enable us to run the contest for 2 days and put on the demo. at the Bristol Radio Rally, **THE COMMITTEE NEED YOUR HELP.** There is just too much to be done for the committee to be able to cope by itself. If you can spare some time, even if its only for an hour, please contact me or Shaun .
Also on Sunday October 6th at Elm Park, our Autumn Social takes place at 7.30 pm. Family and friends are welcome, please bring a bottle and some food. A demonstration of 10 GHz TV will be on show.
We look forward to hearing from you.

Bye for now, Viv G1IXE, Chairperson.

NEXT SOCIAL EVENING
7.30 pm SUNDAY 6th OCTOBER 1991
ELM PARK PARISH PAVILION
ALL MEMBERS AND GUESTS WELCOME
DON'T FORGET TO BRING SOME REFRESHMENT !

Video Basics Part 2
Cathode Ray Tubes

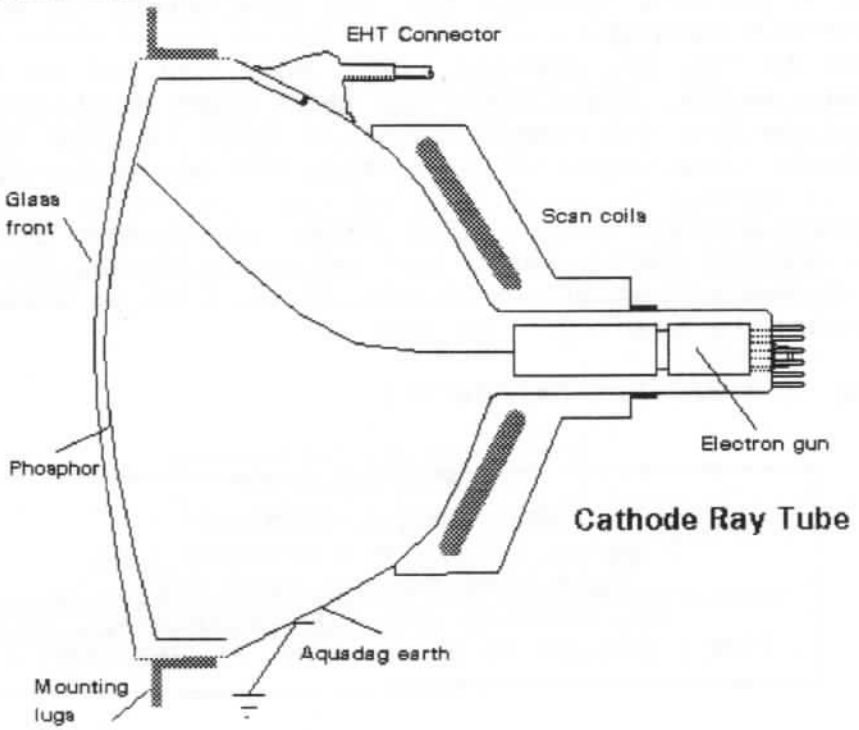
This is the second in a short series of articles for P5 dealing with some basic topics of interest to Amateur Television enthusiasts.

This part explains the theory of the most common display device in use, the Cathode Ray Tube. The device, as in the Vidicon met in part 1, is a thermionic one, that is, electron emission by means of heating. The CRT electron gun is modulated with a voltage corresponding to the required brightness level. The light is emitted when the electrons from the gun strike the phosphor coating on the inside of the glass faceplate. Phosphor is not a good electrical inductor so aluminium is vaporised behind the phosphor layer to allow the very high voltage (EHT) to be present on all parts of the phosphor.Electromagnetic scan coils scan the beam across the phosphor to create the image, focussing is almost always electrostatic.

Electrons will not flow if there is any air or gas inside the CRT, so the whole of the inside of the glass envelope is evacuated of air. On the outside of the CRT envelope a layer of conductive graphite paint or Aquadag is sprayed and earthed, this together with the vaporised aluminium layer on the inside, form the plates of a very large (1nF) capacitor, the dielectric is the glass. This capacitor smoothes the EHT voltage so ensuring a stable image. The charge stored in the capacitor must be discharged before handling the CRT, otherwise you will get a nasty shock, whilst probably not in itself life threatening, may cause you to drop the CRT and consequent injury. Also remember that because glass is not a perfect dielectric, energy is absorbed into the glass that will cause the charge to reform and build up a new voltage shortly after the first discharge. Therefore always discharge twice before handling the CRT.

A common problem with older types of CRT is Cathode poisoning, this is caused by impurities in the metal of the cathode leaching into the chemical that emits the electrons that coats the cathode. After some time, the coating becomes so polluted by the impurities that it becomes much less efficient at emitting electrons. The effect is noticable as a dull, out of focus image on the CRT, often made worse if the beam current is increased by turning up the brightness.

Steve Walsh G8KUW 1991



Cathode Ray Tube

A Guide to 23 cm Television
by Shaun O'Sullivan G8VPG.

In this issue, the all important subject of receivers is covered in the continuing serialisation of "A Guide to 23 cm Television".

4. RECEIVERS

4.1 INTRODUCTION - The purpose of this chapter is to review the various methods of receiving 23 cm ATV pictures. As always there are variety of methods for achieving this objective, but first of all lets consider some of the fundamentals which are needed in any receive system.

4.2 FUNDAMENTALS - Firstly, the receiver should be able to cover the whole of the band from 1240 to 1325 MHz. This is because you are likely to want to receive signals over most of this range. The most common repeater output channel is 1318.5 MHz at the top end of the band, whereas most simplex activity is around 1255 MHz, towards the bottom end. The most common repeater input channel is 1249 MHz, and it is a requirement of the UK Amateur Radio licence conditions that you are able to receive on all frequencies that you use for signal transmission. In any case, it is essential once you start to transmit your own pictures that you can monitor your own signal, and that of other operators on the repeater input channel.

The receiver you use should also be sensitive enough to be able to pick up and handle weak signals. An indication of the receivers ability to do this is the noise figure. Noise figures are a very complex matter beyond the scope of this book, but in simple terms you should look for a front end noise figure as low as possible. The best currently available GaAsFET's (Gallium Arsenide Field Effect Transistor) on the Amateur market produce noise figures in the region of 1 dB. Lower performance devices yield typical figures of 2-3 dB, with very poor receivers producing figures in the range 6-8 dB. Unless you are only interested in receiving very strong local signals, you should aim for a maximum noise figure of about 2.5 dB.

The receiver should also possess good selectivity, so that it can receive the wanted signal whilst rejecting other nearby signals. Related to this is its strong signal handling ability and cross modulation performance. This is its ability to successfully receive a weak ATV signal with other much stronger signals on nearby frequencies. Whilst 23 cm is not particularly densely occupied at present, one other user of the band does cause severe interference in various parts of the country. These are radar transmissions used by airports to track the movements of airborne craft. These signals produce a very characteristic form of interference, which consists of a set of white streaks moving across the picture. They usually last for about 1 or 2 seconds every 6 seconds or so, which corresponds to the scanning action of the radar set. Because these signals are so powerful and wide in bandwidth, they are very difficult to eradicate and ATVers often have to simply learn to live with them. Selectivity is quite difficult to provide in a receiver which has to track over a wide range of about 85 Mhz, and is used to receive signals which are themselves about 17 Mhz wide.

4.3 RECEIVER OUTPUT MODE - Finally, it is important to consider in what form the receivers output is produced. There are two basic choices here. Most receivers produce a composite video signal, the standard for which is 1 V peak to peak when terminated with an impedance of 75 Ohms. To view this signal, it is necessary to have either a video monitor or a TV set with a video input. Many of the better modern TV sets do have this facility, which is very useful for use with home computers or satellite TV reception equipment. An

alternative is to use the video input socket of a video recorder. Virtually all video recorders feature this facility.
The corresponding audio signal is usually termed a Line Audio output, the standards for which seem to vary somewhat from one manufacturer to another. They are usually in the range 0.3 to 1 V peak to peak when terminated into an impedance of 600 Ohms. Such a signal needs further amplification before it could drive a loudspeaker. This signal could be fed into a separate amplifier (The Tape or Auxiliary input of a domestic hifi amplifier would be suitable) or more conveniently into the Line Audio input of a TV set or video recorder. Equipment with video input facilities usually has the corresponding audio inputs aswell.
The alternative to using baseband video and audio signals is to produce a modulated RF signal. This is similar to that produced by a video recorder or home computer, and is fed directly into the RF or aerial input socket of a TV set. The TV set is then tuned to the appropriate frequency, which is usually around UHF Channel 36. The disadvantage with this approach is that the resulting picture is often of lower quality than that obtained with direct video/audio inputs. This is because the signal passes through more stages of handling, and hence is subject to more distortion and corruption. The baseband video/audio signals are modulated up to Channel 36 and then the reverse process is carried out by the TV sets tuner and IF stages. The use of direct video/audio inputs bypasses all this circuitry and the result is clearer pictures and sound.
4.4 BUILDING BLOCKS - The first stage of any receiver is one or more RF amplifiers, which boost the level of the incoming signal. These amplification stages can be built into the receiver, or be external to it, when they are then usually termed pre-amplifiers. There are a number of commercial pre-amps on the market, and these will be considered later. Following amplification, the signal is then passed to a mixer stage, where it is combined with an internally generated signal from the Local Oscillator (LO for short) to produce a lower frequency signal, which forms the first Intermediate Frequency (or IF for short). These three items of amplification, mixer and LO form a basic frequency down convertor. The first 23 cm ATV down convertors produced a first IF somewhere in the UHF TV band in the region of 700 MHz. This signal can be tuned on a standard UHF TV set, or on a TV tuner module which is part of a complete receiver. However one disadvantage of converting down to this frequency range is the possibility of IF break through from Broadcast TV signals which use these frequencies for transmission. This can be minimised by careful attention to screening, appropriate RF filtering in the front end of the receiver and in the event of persistent trouble, adjustment of the LO frequency to shift your tuning range away from the offending UHF signal. The Solent Scientific range of ATV equipment used such a down convertor. This range was originally designed and developed by Alan Latham G8CMQ, but it is now only available from the Worthing & District Video Repeater Group. The proceeds of the Groups trading are applied to the Brighton TV Repeater GB3VR. The Down Convertor is only sold as a kit, which may be off putting for people who are not familiar with the careful construction techniques required at 23 cm frequencies. However, in many parts of the country there are local groups with members experienced and willing to construct these items for newcomers. The down convertor works well, but will benefit from the addition of a good pre-amp to lower the overall system noise figure.
Having produced the first IF signal at UHF, the question now arises what to do with it. Most ATV activity uses FM modulation, whereas domestic TV uses a form of AM called Vestigial Side Band (VSB), where one sideband is considerably reduced. This has the effect of

conserving bandwidth, and thus enabling more TV channels to be fitted into a given part of spectrum. Whilst it is possible to resolve an FM modulated signal on a standard TV set by a method called slope detection, the results are not always very satisfactory, particularly with weaker signals. The method involves carefully tuning through the signal to find a spot on the IF response curve where the signal is best demodulated.

4.5 FM DEMODULATORS - In the earlier days of 23 cm ATV, a big debate raged between those advocating FM and AM video modulation. AM was supposed to perform better over weak signal paths, and it was simpler to receive because a standard TV set could resolve an AM signal. There are still two repeaters which transmit AM signals, but the overwhelming strength of opinion has gone in favour of FM. The receive difficulties envisaged have been largely overcome by the widespread availability of inexpensive FM video demodulators. The adoption of FM by the satellite TV broadcasters has given another big fillip to the mode, and of course it has always been easier to generate and amplify an FM transmit signal.

So, to properly demodulate an FM TV signal, a dedicated video IF strip is needed. The demodulator chips most commonly used, such as the NE564 operate at frequencies in the region 35 to 50 MHz. More recently, chips have been produced by Plessey which operate in the 600 MHz region, but these do not seem to have filtered through to the Amateur market yet. Hence our UHF signal from the down convertor needs to be converted down once more to about 50 MHz. A standard TV tuner module produces an IF output at 37 MHz, which is in the right region. Hence it is possible to replace the AM IF strip of a standard TV set with an FM one, although I suspect that many Amateurs may be reluctant to do this with the main household set !. The other alternative is to use a separate TV tuner module, which are available from any TV parts supplier for about £10.00. The IF output can be fed to the FM video demodulator directly.

Suitable FM demodulators are the design produced by the BATC, for which they sell a PCB, or the Wood & Douglas VIDIF unit, which is available as a kit or an assembled and tested PCB. Both of these boards use the NE564 demodulator chip. Just launched onto the market is a new video IF board from Camtech Electronics, which uses a different technique altogether. It is too new for any independent tests to have been carried out, but the claimed specification looks very promising. The IF output will be a composite video signal which can be fed directly to a video monitor or via an RF modulator to a standard TV set. If you use the W&D VIDIF unit, you will also need to add an FM de-emphasis unit on the video output, since this is not contained in the IF strip like the BATC and Camtech boards. This is essential, since all repeaters and most Amateur simplex 23 cm FM TV transmissions use pre-emphasised video. Pre-emphasis is a very effective system of noise reduction, which has a very marked effect on FM TV signals. Before transmission, the video is filtered to boost the high frequency elements of the signal. After demodulation in the receiver, a filter of opposite and complimentary characteristic restores the video. Watching a pre-emphasised signal without de-emphasis (or watching a signal without pre-emphasis with de-emphasis) will produce a characteristically distorted picture.

The sound component of the ATV signal is recovered by a separate sound demodulator, which for most UK transmissions operates at 6 MHz. This takes a feed from the raw video output of the demodulator chip, and using a sound demodulator chip like those used in the IF of a standard broadcast FM radio receiver (the CA3089 or 3189 is typical) produces an Audio Frequency (AF) signal which is then amplified to drive either a loudspeaker or the Line Audio input of a TV set or hifi amplifier. Wood & Douglas produce a suitable sound demodulator board (

the SCR-2) which can be used with the VIDIF board, or any other similar FM IF strip. The Camtech board has a sound demodulator and 1 W audio amplifier built in.
The down convertors that we have so far considered are block down convertors, that is they move the entire band down in frequency, and the particular signal desired is then tuned at the first IF frequency. Another approach is that adopted by Wood & Douglas in their 1250DC50 tunable down convertor. This produces a fixed IF output at 50 MHz, which can be fed direct to the FM IF strip. It achieves this by tuning the desired frequency directly, by means of a 10 turn potentiometer which acts as tuning control. The unit covers the whole band with some overlap at either end, and features a low noise GaAsFET front end. It is only available in ready assembled form, built into a small aluminium case which needs only the addition of a few control wires to make it operational. The GaAsFET used in the front end (an MGF 1100) has been improved upon in recent years, and a first class pre-amp such as the AZTEX device will show some improvement. Never the less, the W&D 1250DC50 still turns in a very creditable performance, and despite having been on the market since the early 1980's, no one has come up with a better alternative. Infact, although there are a variety of 23 cm ATV transmitters on the market, the receive side of things seems to have been neglected by most companies. However this seems set to change with the launch of the new EMC (Valves) Ltd. 23 cm TV receiver. This is a fully built ready to use receiver which tunes the whole band, and includes switchable 5.5 or 6 MHz sound channels. The principle internal building blocks of Down Convertor (70 MHz IF) and FM Demodulator (35 to 70 MHz IF) are available separately as assembled modules for incorporation into your own equipment. I know that one or two other companies are looking at receivers for 23 cm ATV, so the prospects for more activity seem good.
4.6 SATELLITE RECEIVERS - The final alternative for 23 cm FM TV reception is the use of a satellite TV receiver. In the past couple of years, this market has been expanding at very fast rate, boosted by the launch of higher power satellites such as ASTRA. To understand how we can use a satellite receiver, it is first necessary to know how a basic satellite system works. The satellite transmits signals in the region of 11 GHz. At these very high frequencies, it is necessary to down convert these signals at the focal point of the dish, since conveying them elsewhere would incur too much loss. Hence an LNB is positioned on the dish feedhorn. An LNB is a Low Noise Block downconvertor which amplifies the incoming signal and block down converts it to an IF in the range 950 to 1750 MHz. A cable conveys this signal inside to a set top satellite receiver which tunes across this range to select the desired satellite channel. It should by now be obvious to you that our 23 cm band is right in the middle of the satellite IF frequency, and hence a satellite receiver can be used without the LNB and dish to tune an FM ATV signal directly. This also means that there is some potential for TVI when you transmit. However very few cases have been reported, and many ATVers with satellite TV reception equipment watch them whilst transmitting 23 cm ATV with no ill effects. It seems that the screening and constructional details of satellite equipment is better than most UHF TV sets.
However, it is usually necessary to make one small modification to the satellite receiver to enable it to operate with a 23 cm aerial. Most aerial designs on the market feature some variation of a folded dipole as the driven element, and these act as a short circuit to a DC signal path. A satellite receiver puts out a DC voltage in the range of 18 V on the centre pin of its input socket, which powers the LNB. This must be disconnected before the receiver is connected to an aerial, or else you may well damage the receiver. Alternatively this voltage feed could be used to power a mast head mounted pre-amp. The AZTEX pre-amp

can be supplied suitable for powering by this means. You will need to consult the satellite receiver circuit diagram (or your local club friendly expert !) to find out how to disconnect the 18 V feed if this is necessary.
There are a wide variety of receivers now on the market, and most can be used for FM ATV reception. Because the satellite receiver has a built in FM IF, it cannot be used for AM reception. Most satellite receivers have video/audio aswell as a modulated RF output. I would be inclined to go for one of the simpler receivers with a conventional rotary tuning control in place of digital tuning with memories and scanning features. These complex features are suitable for use with fixed frequency satellite channels, but in ATV use you will often find the need to "tweak" the tuning for best results on each signal. This can be difficult to achieve with push button digital controls. Most receivers have a variable sound tuning control which can be adjusted to the usual ATV sound channel of 6 MHz above the vision carrier frequency.
Satellite receivers are designed to operate with slightly wider signal deviation than amateurs use (28 MHz as opposed to about 17), but their FM demodulators usually give very good results, often better than the NE564 based FM IF's used by many Amateurs. They do have one snag however, and this is the high noise figure of their front end devices. This is often in the range of 7-8 dB, which will restrict its use to fairly strong local signals. Of course in the application for which they are designed, this is unimportant since it is the LNB that is the front end for the satellite signals. This disadvantage is easily overcome by the addition of a good quality pre-amp between the receiver and the aerial.
4.7 PRE-AMPLIFIERS - This leads us in to the subject of pre-amps nicely, since many 23 cm ATVers find the use of a pre-amp most beneficial. It is really essential with a satellite receiver, and all the designs of receiver discussed so far will benefit to a greater or lesser extent. As mentioned earlier, a pre-amp is simply one or more stages of RF signal amplification, mounted externally to the main receiver. The most benefit is obtained if the pre-amp is mounted next to the aerial at the masthead. In this way, the losses in the feeder cable will not be added to the pre-amps noise figure, and the result will be greater sensitivity. However this does entail additional complications if you also intend to transmit using the same aerial. Passing any sort of transmit signal through the pre-amp would damage it, and hence a set of relays must be used to pass the transmit signal around the pre-amp when it is not in use. To minimise losses, these must be RF co-axial relays, which are not cheap. The whole of the resulting assembly must then be enclosed in a weathertight box, since any ingress of water would cause damage. It is possible to get away with only one RF relay, at the expense of running two separate feeder cables up to the masthead, one for the transmit signal and the other for the pre-amps output. The cable for the pre-amp output can be a reduced specification, since it is behind the pre-amp and its loss will not now be added to the system noise figure.
All of this is made very easy by the pre-amps produced by the German company SSB Electronics, which are available in the UK from Piper Communications of Didcot. A complete pre-amp assembly including change over relays and weatherproof box is available in ready built form. The performance of these units is very good, and depending on the depth of your pocket, a very high performance version with a noise figure of 0.6 dB is available. The high quality of these German made products is reflected in the cost, but these would not daunt the enthusiastic and committed ATVer.
A much lower cost, but none the less very high performance pre-amp is produced by the new British company of AZTEX Electronics of Bristol.

The ULNA23-24 features an Avantek ATF 10135 GaAsFET which is used in a very carefully designed front end circuit that provides good matching over all the 23 cm band, and some degree of rejection for out of band signals. The pre-amp yields a noise figure of about 1 dB with a gain of 17 dB, and independent tests in various magazines have given it a very good report. It is produced in a fully built form in a small die cast aluminium box, with N connectors as standard. As mentioned before it can be supplied suitable for powering up the centre conductor of the output cable if required, although the standard form is through feed through capacitors mounted on the side of the box. In conclusion, this is thoroughly recommended and is also good value for money.

Another well known pre-amp is produced by Camtech Electronics of Suffolk. This is available in a variety of forms, as a kit, an assembled PCB or a fully built and cased unit. It is a good solid performer which will produce a noticeable improvement to a satellite receiver. However, unlike the other devices mentioned here, it uses a bipolar rather than a GaAsFET front end transistor, and its noise figure of about 2.5 dB cannot approach that of the AZTEX or SSB Electronics products. Used in conjunction with say a Wood & Douglas 1250DC50, it will not produce any significant improvement unless mounted at the mast head.

A browse through the Amateur Radio press will reveal a number of other suppliers of 23 cm pre-amps, although many of these are intended for the 1296 MHz narrow band modes part of the band. Like aerials, many pre-amps are not capable of satisfactorily covering the entire band without retuning. Since this is not an easy task, it is worth making sure that your chosen device will cover the frequencies that you will be using. The AZTEX pre-amp does feature a particularly flat response across the whole band, and this does make it a prime choice for 23 cm ATV use.

Just a note to give our thanks
for help with JOTA last weekend;
For all the effort and the pranks
I know we drove you round the bend.

Thanks young Jean for being there,
for spending time with us and scout;
And for chatting on the air,
well that's what it's about.

Thanks for pictures on T.V.
and for spending all that time;
At least you got P5 of me
and the shack, with mugs in line.

Thanks to Brian who gave up time,
with girlfriend he could have spent;
As QSL card and a rhyme
and pictures of himself he sent.

Thanks to Ivor and to Viv,
for carting over all your gear;
As we supplied you coffee with,
can you come back again next year.

Our grateful thanks to all of you for the time and effort spent helping us with JOTA this year.

73's Tony
G6WLX

NEWSBRIEFS from the Editor.

* **CONTEST RESULTS** ... We have not yet heard the results of this years Summerfun contest, but I can tell you that we have claimed the following number of points ; 24 cms, 2129 points, 25 contacts ; 70 cms, 4457 points, 25 contacts. This is slightly down on previous years, no doubt the result of a reduction in the number of portable stations who participate in these events. With the way the weather was, I can't altogether blame them, it was more like April than June. Lets hope that things look up for the big one of the year, the International on 14/15th September.

* **TALKS TO CLUBS** ... Group members have been out and about talking to clubs recently. In July, a talk was given to Thornbury & DARC on the use of test equipment, with the aid of the Bristol RSGB Groups equipment that is available for loan. Thanks go the Club for the donation of £5.00. Shortly after, we paid a visit to the Hereford ARS, and gave them a beginners introduction to ATV and using GB3ZZ. There are a number of stations in the Hereford area who are interested in 24 cm ATV operation, and I hope that the talk may have stimulated some of these into actually having a go. There was even mention of a group of Amateurs from the nearby Madley Satellite Earth Station ARG building a repeater. Lets hope that the Group can generate enough interest to achieve this ambition. They are organising a Radio & Electronics Car Boot Sale on Sunday 8th September, which by all accounts is quite a good event. Further details from David Butler G4ASR, tel. 087 387 679. Thanks go to the Hereford club for the generous donation of £20, which was most appreciated.

If your club would like a talk from the Group, please give Viv or myself a ring. We have several different presentations about ATV, illustrated with some amateur video footage, and I also have one or two talks about non-ATV subjects which may interest your members.

REPEATER TECHNICAL NEWS

* WEATHER SATELLITE PICTURES ON GB3ZZ !

* 10 GHz ATV REPEATER FOR BRISTOL ?

There are two items of news to tell you about in this issue. Hopefully by the time that you read this issue, you will be able to dial #60* into GB3ZZ, and see 2 minutes of the latest weather picture, live from Meteosat. Meteosat is a European geostationery satellite, which means that it is sited over the equator about 22,000 miles out into space. It can see about a third of the worlds surface, which you in turn can now look at via GB3ZZ. The satellite takes the picture, and sends it down to an earth station in Germany. Here it is processed, with the northern parts of the globe stretched to compensate for the curvature of the earth, and coast lines electronically etched in. A suitable title is added, and the picture is then sent back to the satellite. The satellite retransmits the picture on two channels (1691 and 1694.5 MHz) and this is the signal that we pick up at GB3ZZ. We use a 39 element quad loop aerial, supplied by the well known G3JVL. This feeds a Dartcom low noise downconvertor, which amplifies and downconverts the signal to 137.5 MHz. We originally were intending to use the Maplin 1691 MHz system, but they seem to have severe difficulties delivering systems. They kept us waiting for several months before saying that they had problems, which is why the

introduction of this facility into the repeater has been delayed. The 137.5 MHz signal is fed into the repeater shack, where a conventional Cirkit receiver produces the audio signal that feeds a YU3UMV framestore. The framestore decodes and stores the picture, scrolling the picture out of the screen as a new picture comes in. The satellite divides the part of the world that it sees into 9 parts, and sends each one every half an hour. During the night, it sends infrared pictures, so there is always something to see. Occasionally it will send a whole earth picture of all 9 segments. We believe that this facility is yet another first for an ATV repeater, and we hope that members will enjoy using it.

The second big news item is that we have aquired a complete 10 GHz ATV repeater. Our good news is bad news for Coventry, since it is GB3RV, the Rugby/Coventry repeater that was located at the home of our good friend Mike Wooding G6IQM. Unfortunately, Mike could not continue with the repeater, and so we were able to buy the entire installation for a reasonable sum. Ted G3JMY has already spent many hours working on it and refurbishing where necessary. It is hoped that it can be co-located with GB3ZZ at Filton, and we have already opened negotiations with the RSGB about the licence. This may take some time to finalise, so keep reading "P5" to see how this exciting new project progresses.

SEVERNSIDE DIARY 1991

SUNDAY **1st SEPTEMBER** "P5" September issue published.
SATURDAY **14th SEPTEMBER**)
SUNDAY **15th SEPTEMBER**) International ATV Contest.
SUNDAY **15th SEPTEMBER** STG stand at Bristol Rally.
SUNDAY **6th OCTOBER** STG Social Evening.
SATURDAY **19th OCTOBER**) Jamboree on the Air 1991.
SUNDAY **20th OCTOBER**) STG doing a demonstration.
SATURDAY **26th OCTOBER** STG at Leicester Amateur Radio Show.
FRIDAY **8th NOVEMBER** Print deadline for December issue of "P5".
SUNDAY **1st DECEMBER** "P5" December issue published.
SUNDAY **8th DECEMBER** STG Christmas Party.

Please advise the Secretary G8VPG of any changes, additions etc.

NEWS JUST RECEIVED

The Severnside Television Group G7ATV/P came 1st on 24cms and 3rd on 70cms in this years Summer fun contest.