

conditions. For this reason, a current path must be provided between screen and earth either by using gas stabilisers or a bleeder resistor. If an electronically regulated supply is used, it must be of the *shunt* type and should be capable of passing 15 mA per screen.

#### POWER SUPPLIES

The circuit of the power supply is shown in Fig. 2 and is quite straightforward, with the possible exception of the cathode follower bias supply. For those who may wish to vary the design to make use of available components, the following pointers may help. Whilst the transformer specified has a centre tapped secondary of 2,200 volts, a 500-0-500 volt type of appropriate power rating could be used and the rectifiers connected in a bridge circuit to give the required output voltage, but if this is done it should be remembered that the p.i.v. rating of the rectifier chain should be greater than 1.4 times the r.m.s. voltage of the whole secondary and that, since the DC power that a given transformer is rated to handle is constant in both configurations, the load current rating should be reduced by 50%. The value to be assigned to the series surge limiting resistors is often quoted as about 15 ohms per diode, but this takes no account of the impedance of the transformer secondary. A convenient figure to use for the centre-tapped secondary, full wave rectifier case is that the value of the surge resistor should be equal to the load resistance (output volts over output current) divided by 100, and in the case being considered, this gives a figure

of approximately 30 ohms. The peak repetitive current is some 3.5 amps and the surge current about 40 amps, both well within the ratings of the BY-100 rectifiers, which are 5 amps and 50 amps respectively. The total p.i.v. across each leg of the rectifier chains can be as high as 1.4 times the total secondary voltage of the transformer (in this case nearly 3,100 volts) and this calls for a minimum of four BY-100's per leg, but a safety margin must be allowed, and for this reason six diodes per leg are specified. The parallel resistors can be anything between 100K and 500K ohms and the capacitors should be non-inductive ceramics of a working voltage greater than the p.i.v. across each diode, and should be matched to within 10%. C1 across the transformer primary should have a value of three times the magnetising current in amps, or 0.2  $\mu$ F in this instance. Since the discharged smoothing capacitors represent a dead short to the rectifiers at the instant of switch-on, there is a limit to the total capacity that can be used with diodes of a given surge rating, and the 50  $\mu$ F specified is a compromise which gives a ripple of just over 1% and good voltage regulation without exceeding the BY-100 surge ratings.

The cathode follower bias supply is a worthwhile device as it provides a ready means of deriving a variable negative voltage at low impedance, such as is required for any linear amplifier. The potentiometer is brought out to the control unit for ease of adjustment.

(To be continued)

## EXPEDITION TO THE ISLE OF MAN

CAMBRIDGE UNIVERSITY

WIRELESS SOCIETY

GD6UW, MARCH 17-24, 1969

M. PRITCHARD (G3VNQ)

THE annual expedition to the Isle of Man by members of C.U.W.S. did not materialise last year when it was found that the Board of Trade would no longer give permission for 24-hour use of their station on top of Snaefell for VHF work, as it was being converted for automatic operation. Because of this, the expedition this year was a purely HF-bands affair, although VHF was not entirely forgotten.

The expedition began on Monday, March 17 when the four expeditioners—G3TPF, G3UEW, G3VNQ and G3WKB—assembled on the pier-head at Liverpool. Our A.40, which has been loaded at Southport on the previous day, was driven on to the boat for the four-hour crossing, and later that afternoon, after a complicated ferrying operation between Douglas and Peel, we arrived at Ballawattleworth Farm, on the outskirts of Peel. We put a 40ft. pole up in one of the fields; this had been brought over in 10ft. sections and we were amazed when the thing went up absolutely straight first

time! As it was fairly late the actual erection was accomplished illuminated by car headlamps. We hauled up the 40m. dipole and went inside to unpack the equipment. One of the attic rooms had been allotted to us for setting up the stations, and after the coax feeder and an earth wire had been brought through the window, the Sommerkamp equipment was plugged in and G3UEW was pounding away on 40m. CW, signing GD6UW.

Next day the "W8JK" aerial for 20m. was erected, as well as a 240 foot wire for the LF bands. We were very fortunate in having a large field available for aerials—in fact, this was the main reason for abandoning the boarding houses in Douglas where previous C.U.W.S. expeditions had stayed.

From then on, we were operational on all the HF bands, since the 40m. dipole could be used on 15m., and a 10m. dipole could also be taken up the pole. GD6UW was mainly active on the DX bands using the recently-acquired Sommerkamp FR-500 and FL-500 which are the property of the Society, and GD3VNQ kept to 160m. and 80m., using the G3VNQ-G2DAF Mk. II transmitter and the EA-12 receiver borrowed from Eddystone. The stations were set up adjacent to one another in the same room and were frequently operating simultaneously. Despite this we did not have too much trouble with interaction between the two rigs—in fact, the main difficulty was when both stations were operating phone, as it was then essential for both operators to wear headphones to avoid "crosstalk."

It did not take the rest of the party very long to

discover that G3UEW (who had put the aerials together in Cambridge) had cut them all for resonance at the CW end of each band. Perhaps because of this we found a certain amount of difficulty in working outside Europe on SSB—although we were getting S9 reports from the States on 20m., the European QRM was S9 plus. For this reason, a lot of the DX QSO's in the first few days were made on CW.

### LF-Band QRN

On 160 and 80m. we suffered rather badly from a nearby power line. This line could be heard making frying noises all day long from a distance of about 100 yards, and we learnt from some of the GD locals that they have similar difficulties all over the Island. Nevertheless, GD3VNQ was very popular on 160m. SSB, and on CW during the Grafton contest. G3WKB was on 160m. SSB one night when the chair he was sitting on fell apart in the middle of an over. It says a great deal for his operating skill, that he managed to carry on the QSO while everyone else was trying to stop laughing . . . Despite the noise level, GD6UW succeeded in working ZB2AY on 160m. CW, but a sked with VO1FB on this band unfortunately failed.

On the HF bands the greatest problem was in trying to avoid Europeans in order to work stations further afield. G3TPF, who classifies himself as a "metre-wave man" and normally ignores frequencies below 100 mc, was introduced to the wonders of 20m. Sideband. He proceeded to work hundreds of Europeans all day long—we think the thrill of actually working out of the country went to his head.

### Conditions on Ten

Towards the end of the week, conditions on 10m. improved and this band became the best one for working out of Europe during the afternoon and evening. When GD6UW first appeared on Ten using SSB, a string of W6's, alerted by their 2m. DX net, suddenly appeared and we could probably have continued with them until the band went dead if it were not for the eventual call for dinner.

Although the expedition had no VHF equipment this year, G3TPF had decided to come so that he could make an inspection of possible VHF sites for the next expedition. Thus, on the Friday we decided to have a day off from radio and set off in the A.40 on a tour of some of the highest accessible points on the Island. This was rather hair-raising at times as the Island had just come through a patch of very bad weather and many of the mountain roads had snow piled high on both sides. (Readers may remember that during the week of the expedition the ITA mast at Emley Moor collapsed due to heavy icing.) In fact the road past Snaefell was completely blocked and a detour *via* Laxey was necessary; here we saw the mountain railcar setting off for the summit of Snaefell, probably carrying the Manx Radio engineers whose aerials had also been damaged in the bad weather. Our tour of the Island ended very pleasantly at the home of GD3FBS, who had invited us round for tea.

Our time on the Island came to an end all too soon, and the final QSO was made on the Monday morning, 24th, prior to packing everything away. Next day we



Members of the C.U.W.S. expedition to the Isle of Man this Easter vacation—left to right: Dave Topham, G3WKB; Malcolm Pritchard, G3VNQ; and Brian Pope, G3UEW, while Steve Cripps, G3TPF, took the picture—all members of the University, keeping the G6UW tradition going.

sailed away from the Isle of Man on a glorious sunny morning, giving us a delightful panoramic view of the whole Island, including the snow-capped summit of Snaefell. Until then almost everything had gone according to plan but on the boat calamity struck when we found one of the leads to the A.40's starter had come adrift. This necessitated a "clutch start" by Steve as he drove the car down the ramp off the boat at Liverpool, followed by a drive through the Liverpool traffic in which the car fortunately did not stall.

### Log Record

Looking back over the logs, it is fair to say that we had a reasonably successful expedition this year. GD6UW made 437 contacts of which 163 were with American stations. A total of 53 countries was worked during the week, as well as all W call areas and VE's 1, 2, 3, 6 and 8. Some of the more exotic call signs we came across were XE1TQ (20m. CW); 5A3TK (G3SYA) on 20m. SSB; XW8BP (10m. CW); and MP4BBA, 6W8DY, 9J2RV, HS1AF and SV1AE (Socrates at Athens) all on 10m. SSB. GD3VNQ made 214 contacts mainly on the LF bands.

We would like to express our thanks to the following who have helped the expedition: To Stuart Meyer, W2GHK who is handling the QSL's for GD6UW (cards for GD3VNQ, send *via* G3VNQ); to Eddystone Radio for the loan of an EA-12 receiver which was used mainly on the LF bands where we were very grateful for its excellent CW performance; to G2CUZ, of Ainsdale Radio Club, for the loan of poles and aerial accessories; to the resident amateurs on the Isle of Man for their friendliness and hospitality; and finally to Mrs. Corkish of Ballawattleworth Farm for putting up with four enthusiastic radio amateurs for a whole week.