The Adventures of Tiny Tim

Les Lawry-Johns

The Awakening

IT was Tiny Tim's turn to get up first. So he rubbed the sleep from his little eyes, tumbled out of bed and set about making breakfast for the dog, his wife and himself, leaving the cat till later as she doesn't like Tiny Tim feeding her. He's often bad tempered in the morning, and has been known to kick her.

The Breakfast

He put the crumpets under the grill, filled the kettle and plugged it in, then prepared the scrambled eggs the way the dog likes them. Beat up the eggs, add a little milk, grate in some cheddar cheese and add vinegar, salt and pepper to taste. Slice a couple of tomatoes and put under the grill with the crumpets. Turn the crumpets and stir the scrambled eggs in their little saucepan.

Take out crumpets and butter them. Spread with cheese spread and return under the grill to brown. Make the tea and wonder what the day will bring. Look at headlines in the morning paper and realise that the scrambled eggs are burning. This didn't upset Tiny Tim since it gave them a nice nutty flavour which the dog liked.

Out with the crumpets, all sizzling on their plates. Cover with tomatoes scraped from their skins. Cut into sections so the dog can eat them better, and cover with scrambled egg. Leave the dog's to cool, pour out tea, take wife's breakfast upstairs and return to find letters on the mat. Tiny Tim gave the dog his breakfast whilst opening the letters and sipping his tea. About to start eating when there's this knock on the door.

The Intruders

"We're not open yet" bawled Tiny Tim.

"I know, but I'm on my way to work and can't call later."

So Tiny Tim opened the shop door and a man struggled in with a 26in. Philips G11. "Buttons won't stay in mate."

As he was going out, a lady pushed her way in holding an old Morphy Richards iron with two inches of lead coming from it. In her other hand she held about a metre of unsuitable cable.

"I'm going down town shopping so I'll leave this with you. Just put this lead on the iron and I'll collect it on the way back."

Now Tiny Tim is normally a very obliging fellow. But as the cat will tell you he's often nasty first thing in the morning, especially if he hasn't had his breakfast.

It wouldn't be right to tell you what Tiny Tim told the lady to do with her iron, but she left in a high old huff to spend the rest of her days spreading evil rumours about Tiny Tim and his rotten little shop.

The Walk

So Tiny Tim locked the door and returned to his kitchen. The crumpet was cold and if there was one thing he didn't like it was cold crumpet.

It was then time to take the dog out for his walk. The cat was outside, waiting for them to go so that she could jump in through the window and scream her orders at Mrs. Tim who was already on her way down having been thoroughly upset at Tiny's outburst at the poor innocent woman who would never darken their door again. She was in time to see Tiny Tim over on the green, chasing after the dog who was being chased by a cat he'd accidentally disturbed, being short sighted as he was.

The cat eventually gave up as he wasn't a good runner – he seemed to throw his legs out sort of sideways, scattering along rather than running, as most Siamese cats are in the habit of doing.

Tiny Tim and the dog resumed their normal walk and took a sniff around the large block of flats at the rear of which stood a row of parked cars. One caught Tiny's eye. A Hillman Hunter that appeared to have a list to starboard.

The rear off-side leaf spring's going thought Tiny, with his habit of getting everything wrong. Still gawping at the car he walked straight into a rain filled pot-hole he'd been carefully avoiding for months. "Oh dear" cried Tiny. "Why don't I look where I'm going?" His little feet felt most uncomfortable for the rest of his walk home, where there was a lot more work waiting for him than had been there ten minutes before.

The Letters

First Tiny browsed through the letters that had been delivered earlier. One was from the insurance company that had paid for the front window smashed a couple of weeks previously. They thought the cost of the replacement window had been excessive and wanted an estimate for the entire shop front. Probably so that they could put up his premiums Tim thought gloomily. He worked out what he'd paid over the last few years and thought what a handsome profit they still had. But the fact remained that they'd asked for this estimate.

So Tiny went round to the nearby builders and had a chat with them. They didn't know and talked about brick work as well as windows. This made Tiny think about a bloody great big lorry rushing into his shop front out of control, demolishing the shop and all those inside. Tiny Tim shivered and made his way back, feeling worse than ever.

The Estimate

An old boy came in and asked for a battery. He'd worked for the builders years before so Tiny asked him how much house bricks were. "Ninepence each" the old boy remembered. Later Tim went out front and counted the bricks in twelves. He'd two reasons for doing this. First he couldn't bring himself to say the number that follows twelve. Secondly twelve ninepences make nine shillings, making his calculations easier since all he then had to do was add the cost of a bag of cement and some sand which he could get from the beach at Ramsgate in the summer.

With the figure for brickwork worked out, Tiny added

the cost of the window and half again for the smaller one. This gave him the estimate the insurance company wanted. He carefully sent this off in an envelope and hasn't heard a word since. He could now tackle the jobs.

The G11

First the G11 which he'd forgotten about. After thinking for a bit he remembered that the complaint had been about buttons that wouldn't stay in. Tiny took out the selector unit and stripped it down. The spring that tensions the clicker plate was broken and Tiny Tim didn't have one. What was Tiny to do? He decided to make a replacement out of one of the loose coil springs Bush tuners used to have behind the buttons. It took Tiny an awfully long time to do this simple job, but then it always does. It worked however and Tiny Tim was quite pleased with the result. Except that the picture had bowed-in sides which the man hadn't mentioned. Shining his torch on the line output panel, Tiny looked and looked for ten minutes before he saw it – the dry joint. It was in the most obvious position and looked like the top of a volcano.

The Cassette Recorder

A lady then came in with a mains/battery tape recorder which she said didn't work. Tiny Tim plugged it into the multiway socket and pushed down the play button. Nothing happened so he thought he'd start at the beginning and check the continuity of the mains transformer primary winding etc. by connecting his ohmmeter across the pins of the mains plug. He removed the plug from the multiway socket and put the test prods across it. There was no reading at all, so the fuse, lead and connections would all have to be carefully checked. First he stripped the plug to test the fuse and leads. He thought there was something familiar about the plug, but then one plug looks pretty much like another so Tiny persevered.

The fuse was intact and the connections good, so Tiny whipped the back off the recorder and proceeded to check from the input socket to the transformer, which proved to have continuity after all. Tiny Tim frowned and this made him look old. He caught sight of himself in the bench mirror so he stopped frowning quickly. He would now have to check the lead and socket. So he pulled on the lead and up came his Weller soldering iron, which of course had continuity only when the trigger was pressed. No wonder the plug had looked familiar!

Tim was really cross with himself over this. No wonder all those remote control TVs confuse him when he keeps doing such silly things. Having identified the correct plug, Tiny found a lead disconnected. So he put the back on the recorder and checked with a tape in it. The machine worked all right and as it had a radio section Tiny tried this just to be sure. It didn't work. Oh dear.

With the machine still switched to radio Tiny pressed the play button. On came the radio. This made Tiny Tim even angrier, and he swore as he once again removed the rear cover. It took a long time to trace the supply leads, as there was no voltage at the radio switch. Tim was patient however and traced them down to another little switch marked "sleep". When this was operated the radio worked normally without the play button pressed, and Tiny remembered how he had demonstrated this sleep facility to a lady only the other day – so that she could lay in bed and doze off safe in the knowledge that the radio would switch itself off when the cassette came to an end.

Once again Tim had been caught out by a silly thing. "Coffee" he bawled in a loud voice as he put the cassette recorder back together again for the second time, reflecting on how much time he'd wasted. His New Year's resolution must be to be more sensible and to think more logically. But how was he to do this?

Perhaps he could buy a book like the one called Thinking to Some Purpose he'd read years before but never understood. The trouble was that he now didn't seem to be able to understand anything the least bit complicated. Look at his performance the other day when he delivered a new TV set to a customer and demonstrated it. The other lady in the house said she couldn't get channel 4 on her set, so Tiny had volunteered to tune it in for her.

The Grundig Portable

The set turned out to be a 16in. Grundig colour portable that Tiny had never seen before. There were no friendly knobs for him to twiddle. He asked if the instructions were available, but when Tim looked at them he couldn't make head nor tail of the words despite their being in English and designed for customer use. He eventually found a flap on the front. This concealed a little switch which when it was up pointed to three buttons with arrows on them and when it was down pointed to another three, one marked M. The arrows seemed to indicate some sort of search, so Tiny presumed that when the switch was up you could search one way or the other through the channels. Whilst he was pondering upon this a small boy came in.

The Small Boy

"What's up auntie?"

"The man is trying to tune in channel 4 for us, but he can't quite understand it."

The small boy picked up the remote control unit which Tim hadn't noticed over on the armchair. He pressed a button, then went over to the set and pressed search. BBC-2 came on and went. Channel 4 hove into sight and the little horror pressed the M button.

"O.K. auntie. It'll be all right now. Can I have an apple?"

Tim slunk away and wondered what all his years had done for him and how little boys could understand at a glance how complicated things worked. I bet he couldn't handle a T20 thought Tim viciously.

Mr. Styles' New Set

Mr. Styles is a nice man who lives at the top of Telegraph Hill. This means that he has superb reception. He popped in last week to buy a clock radio and to say that he would be back for a 26in. colour set later in the week. When he came back we had a nice new Pye 26in. set ready for him.

We showed him how it worked and how to change channels to take advantage of his position. He took it off whilst we completed the four year insurance etc. A few days later he returned to say that his reception was terrible. We checked the set and came to the conclusion that the U321 tuner was responsible. So we fitted a new one and everything was fine. When we opened up the faulty tuner we found that it had received previous attention. In a new set!???

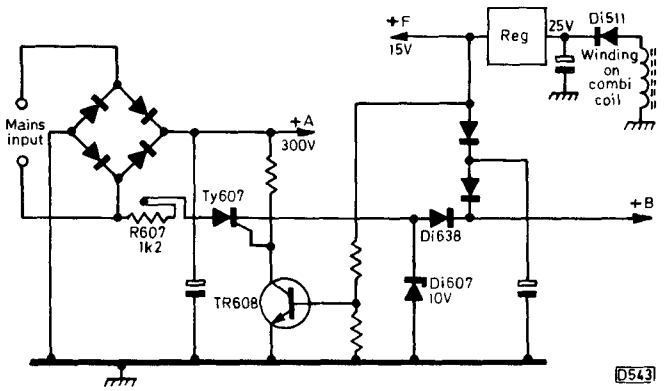

Fig. 3: Start-up circuit used in the Grundig GSC100 chassis. When the line output stage comes into operation the +F supply is developed and TR608 conducts, shorting the gate of the start-up thyristor Ty607 which thus switches off.

6415, etc.) the start-up feed for the line generator comes from the mains bridge rectifier via the fusible resistor R607, the kick-start thyristor Ty607 and Di638 (see Fig. 3). This supplies the +B line until rectifier Di511, which is fed from a tertiary winding on the combi coil, starts working. The isolating diode Di638 is then reverse biased. If R607 is found to have sprung, check Di511 for being either short-circuit *or* open-circuit – either condition will delete the +F supply and cause a sustained current flow in R607.

Intermittent Operation

A word on the nasty habits of some thyristors. We've had several cases of sets with thyristor line output stages shutting down intermittently, accompanied where relevant by the demise of a start-up resistor. It's happened to us several times with the Ferguson 3787 and the Grundig GCS100, and on odd occasions with other similar chassis. In each case the cause of the trouble has been traced to an intermittently open-circuit gate-cathode junction in the flyback thyristor – each time the type involved was encapsulated in a TO220 plastic pack. The fault is easily diagnosed (once you've gathered your wits) by means of an oscilloscope check, which will show the presence of trigger pulses at the gate of the device but no activity whatsoever at its anode, which sits quietly at 300V.

Gate-controlled Switches

At the risk of being accused of wandering off the point a little, we hesitantly bring up the subject of the gate-controlled switch device used in various (mostly 18in.) Sony colour sets a few years ago. These bore several numbers – SG608, SG613, and the current replacement type SG6533. We don't propose to embark on a description of their tendency to go dead short and almost write off the KV1810UB sets in which they were used, but rather to describe a nasty, if less catastrophic, habit that some specimens used in the line output position (Q901) in the KV1820UB develop.

We've on several occasions encountered a situation just like that described above for flyback thyristors – intermittent shut down due to an open-circuit gate-cathode junction. The tell-tale symptoms are the same – high-amplitude gate pulses are present but the device will not switch on. Beware of this – and of the high price of a replacement SG6533!

My Brother's TV

Les Lawry-Johns

ONCE upon a time I was advised never to do jobs for friends or relatives. I now realise the infinite wisdom of that. Since yesterday as a matter of fact.

I'd sold my brother a new Philips G8 some years ago. The tube went soft after three years, and there were a couple of minor incidents some two years back, but apart from that it's done pretty well. Fortunately the tube problem occurred within the four year insurance period and it was replaced, but the replacement tube did leave something to be desired. We've soldiered on however, with the help of the reactivator and one or two bits and pieces.

A Watery Picture

The other day I had a call to say that the picture was watery. Apparently it was rippled, which is a bit unusual for a G8. So I pondered a while about what to stuff into my little boxes. Tuner unit, plenty of capacitors, transistors etc. As soon as I saw the picture I kicked myself for not bringing a tripler. With the sound turned down I could hear a hissing noise, and removing the rear cover seemed to confirm that the tripler was a bit dicky. Probably because my brother smokes too much.

So I nipped back to the shop for a tripler. I say nipped, but in fact I got caught behind a couple of learner drivers. The first one was loath to drive out on to an empty main road, and appeared to be waiting for something to come along for him to be cautious about. The second one had similar qualms at a roundabout. Once I got back I rushed into the shop and promptly got involved in a repair that was required urgently. So it was some time later that I dashed out again, clutching a tripler.

Once again it took a little while to reach my brother's home, and as I pulled up I pondered upon the reason for my total lack of preparation. When did I ever go out to a G8 without a line output transformer for example? Suddenly my blood froze. I'd been back to the shop and hadn't picked up a line output transformer. What if . . .

Shrimps for Tea

Why was I so mixed up in dealing with my eldest brother? Was I still the same small boy with the same inferiority feelings? Perhaps it's because he has three Christian names while I have only one. He had been named after my father, my grandfather (the ferry boat captain, if you remember) and the lodger, Uncle Tom. On top of all this my mum always peeled his shrimps for him at tea time, while I had to peel my own – and very good at it I am too. So I suppose that's how I got myself into this mess.

The tripler was duly installed, and of course made little difference except that the hissing didn't sound so loud. I still had this fixed idea that the trouble was something to do with the e.h.t. feed, so I blamed the line output

transformer – who wouldn't with a G8? – and like a fool dashed back to the shop to get one. Hurtled back and fitted it in record time. The picture was an smooth as silk and I offered up a prayer of thanks. Back on with the rear cover and fit the aerial lead. Heard my brother making this nasty comment to his wife, so I popped my head over to look at the screen. Looked smooth enough to me.

"It's still not done" he said flatly. "It rippled like buggery while you were hiding away behind it."

So I looked at it for a long time, but it remained smooth. Then I had this urge to run. Never mind the tripler, never mind the transformer, I just wanted to get back to Honey Bunch to tell her what a horrible time I'd been having.

I prepared to leave, suggesting that they try it for a few days to ensure that it was indeed o.k. The expression on my brother's face told me that he didn't think he needed a two-day evaluation, and that in his opinion the fault had not been cleared, just papered over so that I could get away.

Two Days Later

A couple of days later Joyce (his wife) phoned to say that the set was as bad as ever, and that Albert was ill and in bed. So I nipped over and collected the set before he got up. As it had a stand this had to be removed first, but before you could say knife I had it on the bench and was subjecting it to my cool, icy-calm reasoning.

It's not the tripler, so back goes the old yellowed one. Not the transformer either so back in with the old one. Switch on and there's a hell of a sparking, with the picture doing all sorts of things. I looked at the transformer and could see the overwinding lead arcing to the output nipple where it had broken away. Clean lead and solder it to the base of the nipple. All was now quiet and I couldn't see any ripple at all. Next try a vibration test. This meant that I gave it several sharp blows. The ripple returned for a second or two. Move the e.h.t. lead and it rippled again. I noted however that moving the lead also moved the leads and plug to the top (blue) convergence socket. Move the leads and it hissed at me. This was it then, a simple poor connection at the socket. In no time all was secure and the contacts firm.

All that was left was the fact that the blue gun was a little low on emission. They's said they were going to get a new set within a few weeks, so I thought a slight reactivation would be all that was required to keep them happy. This proved to be a little more difficult than I first supposed, but it finally came up after I remembered to switch on the reactivator.

Funny Colours

Back it went, and I stood it on its end to put on the stand. When I switched on the purity was terrible. I thought that the jolting in the car might have moved the purity rings, so I spent some time getting a pure red raster and then going through the whole convergence procedure. At last it looked good, so after asking about Albert's health I departed.

As soon as I got outside I realised that turning the set up on its end had moved the shadowmask, and that this would revert to its original position within a short time. Instead of adjusting everything to suit the shadowmask's new position, I should have given the cabinet a sharp tap to return it to normal. But I hadn't. I thought of phoning Joyce to tell her that the colours would change and that I'd have to go back yet again, but I didn't want the phone to disturb Albert so I left it for a while and then forgot all about it.

The next day Joyce phoned again to say that the colours had gone funny, and that Albert was better and would be around when I called. He was. I could read his mind as I reset the purity and convergence. "Always knew he was hopeless. Should never have let him loose on the poor old set. How could my young brother be any good at anything?"

However, there it was. A perfect picture. Until the plug on the convergence unit started playing about . . .

I got through a bottle of scotch that night, saying "good old Stan" and "happy new year Stan" every time I poured a nip into my glass. H.B. said Stan should never have given me the bottle, because when I paid for it myself I never got through more than half a bottle. Next day I'd a dose of the runs, but I was sure it was a touch of the flu and of course I needed scotch to ward it off. She said cold water would be better for it, but I couldn't believe that.

Highland TV

Had a very nice letter from Mr. A.J. Bullock the other day. He lives in a very remote part of the Western Highlands some fifty miles and a ferry from the nearest town. How he can cope with all he's expected to do, including the doctor's E.C.G. machine and building preamps to keep the local (extreme fringe) reception going, completely defeats me. Anyway congratulations A.J., and keep up the good work. Scotch is a great helpmate when the going gets rough. An article on your adventures would make interesting reading.

Doing our best

Les Lawry-Johns

WE haven't been at our best lately. As a matter of fact we often wonder if we'll ever be our cheerful, nothing too much trouble, delve a little deeper selves again.

Look at the trouble we had with Mrs. Groaner's set. We'd sold her this nice Philips 20in. set with the KT3 chassis some eighteen months previously – we've sold many others and haven't had the slightest trouble with any of them. But here was Mrs. Groaner on the phone, moaning her head off because she thought she'd be without it for a few hours and perhaps miss the evening programmes in colour (she had a monochrome portable, but said that wasn't the same). So we nipped up in the afternoon and had a quick look.

There was plenty of h.t. up to the BUW84 chopper transistor but no 129V regulated output. So either the BUW84 was out of order or it was not being switched on for some reason. A quick meter check proved that the BUW84 was capable of working, so there was a fault farther down the line. We whipped the set off its frame and assured Mrs. Groaner that it would be back before the evening's viewing got under way. That didn't suit her. She told me to be quick as she wanted to see Blue Peter. So I rushed.

Back on the bench we decided to start by making a few quick checks before switching on. We scored a bull's eye first time: the upper right line output transistor was short-circuit and a new BU205 was fitted in no time at all. We then switched on and there was a nasty flash and bang which frightened the life out of me. The dog ran for his life and Honey Bunch appeared.

"What are you doing to Mrs. Groaner's set? Blowing it to bits isn't going to get it back to her by five o'clock like you promised."

I scowled and kicked the dog, who'd come back to find out whether the fireworks were over.

I withdrew the rectifier panel and examined it closely. The 2A mains fuse was shattered and a check revealed that the 4·7Ω surge limiter resistor R6191 had blown open. "Something must have done that" I diagnosed accurately. But what? Checking the supply line showed no shorts at all, so I assumed there'd been some sort of flashover that wasn't going to reveal itself easily. A new fuse was fitted, and a new 4·7Ω wirewound. I called out to H.B. "you watch the back of the set and see where the flash occurs", averting my eyes so as not to be frightened again. I switched on and there was another nasty flash and bang.

"It came from here" she said, apparently unperturbed by the explosion. She was pointing to the base of the panel.

So I checked carefully between the panel pins and the socket, but found no signs of a flashover. There followed a good half hour of pure farce, during which time several more fuses and resistors were sacrificed. Finally I started to disconnect various items to make a more thorough check. I eventually discovered that there was a fairly high reverse resistance reading through the BUW84, enough to justify removing it completely. All was then revealed. The plastic envelope was blackened and partially decomposed. Here was the source of the flashover that had alarmed the dog so much. It was a good job that one of us had kept cool and remained unruffled.

Mrs. Groaner got her set back before five o'clock, and advanced her own theories about the cause of the trouble. It had to be the aerial or the mains lead as the set itself was so new. We managed to escape without too much aggravation, and made our way back hoping that the next few jobs would be a little easier on our nerves. What a hope!

A Rank T22A

There on the bench was a Rank T22A, with a note saying that it made a funny noise but didn't do anything else. So we accused the tripler and unhitched it from the line output transformer. Bull's eye! The set started up and the tube heaters glowed. So we fitted a new tripler and confidently switched on. The channel indicator said 7 instead of 1, and a BBC-2 programme appeared. It also appeared whichever selector was touched, and we wondered about that for a while.

We reasoned with ourselves. There'd been no mention of tuning troubles, so this must have happened during or after the tripler trouble. Immediately after, if after. So we made sure we had the tripler connected properly from an earth and diode point of view. The chassis connection is made via R13, so we measured the voltage across this resistor. As its value is 330Ω, the voltage across it should not have been too high. It was heavily negative, because R13 was open-circuit. The correct reading was obtained when a new resistor was fitted, but the tuner was still keen on BBC-2 and nothing else.

Over to the touch tuning circuit to make some voltage readings. The two chips (SAS580 and SAS590) receive a stabilised 33V supply at pin 16, but the reading we got was only 10V. Since it was the easiest thing to do, we removed the SAS590 from its holder. The 33V line returned to normal and we could now select channels 1-4 via the SAS580, though without the SAS590 channels 5-8 were unobtainable. We were winning however. We didn't have the required chip, but a frantic phone round produced one from Raymondo who was busy stocking up at the time. Whilst waiting for the chip we had a look at the circuit and noted that the 33V supply is obtained in a rather curious way, from −50V pulses which come from the line output transformer (see Fig. 1). This all seemed to prove that the faulty tripler had had something to do with it.

With the new SAS590 in, all channels could be obtained and we felt quite pleased with our efforts. For a while. A very short while.

Mr. Croaky and the ITTs

I groaned when I saw who was bringing the next set in. We'd seen Mr. Croaky's ITT CVC9 before. Several times before. The last time had been only a week or so ago. It wasn't the set that worried me, it was Mr. Croaky himself.

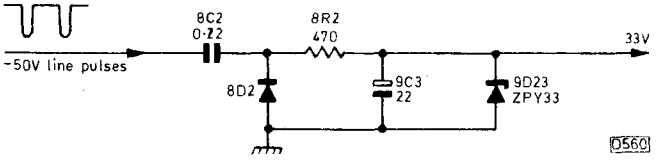

Fig. 1: Circuit used in the Rank T22 chassis to obtain a 33V supply for pin 16 of the touch tuning i.c.s. There's a separate 33V supply for the tuning potentiometers.

Whatever was wrong with the world, Mr. Croaky knew how to put it right. Whatever you did was wrong, and Mr. Croaky knew what you should have done. In short, the sooner you got rid of him the better your nerves would be.

He said that last time there'd been a large gap at the top and bottom of the screen. I'd checked the voltages in the field timebase and found them all in order, and after resoldering all the connections around the PCL805 the height had been restored and no amount of tapping around in this area would make the fault reappear.

Now here he was again, with the same fault. I again checked around the PCL805. Everything was in order. So I tried tapping around at the bottom of the right side line output panel, and found that the fault would come and go almost at will. Making the taps lighter and lighter brought us to the print side of the scan-correction transductor, and resoldering the connections to this produced a lasting cure.

"That's just what I thought it would turn out to be" said Mr. Croaky. "You and your wife should stop smoking you know." He's right but we still do it. We also do a fair bit of drinking, but we didn't tell him about that. How else can you forget about the Mr. Croakies of this world?

We also had a CVC20 that gave us a bad time. Intermittent colour. One tap, it's gone. Another tap and it's back. Whatever part of the decoder panel was touched would either promote the fault or clear it. We eventually gave up trying proper test procedures and resorted to resoldering every joint in the vicinity of the centre section of the panel. It worked and we've had no trouble since.

My Brother's TV

You may recall that we mentioned a spot of bother with my brother's G8. The convergence panel continued to give trouble and he now has a nice new K30 with a 22in. tube and full remote control. It was the only way I could get some peace. I can sleep whilst he plays with the buttons. Just to make sure, I put an alkaline PP3 in the remote control handset. That'll put off his next visit for an extra year or so. Brotherly love they call it.

A Final Moan

A great deal of our working day seems to consist of acting as an unpaid technical adviser. Although my favourite phrase is "I don't know", this strategy seems to have flaws.

As an example, this chap comes in and wants to buy a switch. You ask him what for and he says he wants to run an extra pair of speakers or maybe he wants to fit a master switch to switch off locally his multibank mains supply for his audio separates. You show him a suitable switch, priced at say 50p. How do I fit it? So you draw a diagram for him and he raises all sorts of reasons why his system requires a different layout. You try to accommodate him with a revised drawing. By now about half an hour has elapsed, and you've forgotten the masterstroke you were about to make on the music centre you were half way through repairing.

I know what you'll say. You shouldn't be servicing in the sales area. I've tried the remote approach, secluded in a separate workshop, but the result was even worse. "Les, would you come and explain something to this gentleman. Oh, I forgot you weren't there . . ."

So we continue to sort out odd nuts and bolts to suit queer cartridges, draw pretty diagrams for people who won't follow them anyway, and then find at the end of the day that there's precious little on the till roll.

VCR Clinic

Reports from Steve Beeching, T.Eng. (C.E.I.), Derek Snelling and Michael J. Cousins, T.Eng. (C.E.I.)

Ferguson 3V31

We've noticed that not all 3V31s produce a good still picture without any tracking noise. Some batches are very good, others are not so good. If the tracking noise wanders up and down the screen with the VCR in the slow-motion mode, the drum guides need slight adjustment – the drum exit guide possibly about a quarter of a turn clockwise. If the tracking noise remains in the same position, adjustment of the still picture and slow-motion pulses should be carried out in accordance with the instructions in the manual – except that the noise pulse can be extended from 8msec to 11msec. Another check is to select still picture and see where the noise bar is. If it's at the bottom of the screen, rotate the pinch roller gently a few degrees anticlockwise. This should move the bar down the screen. If further noise is then seen at the top the trouble is due to excessive loss of f.m. carrier during the crossover between the heads. This means that the drum should be replaced as it's out of specification on head tip heights. **S.B.**

JVC HR7200

An Irish tinker came along with this JVC HR7200 (3V29 to those of you who deal with Ferguson machines). "It won't work son" (me "son"?). "Can you fix it – it's worth a drink." Hmmm.

The head drum didn't rotate and the servo output amplifier chip was getting hotter and hotter. The drum trembled a bit if you pushed it, indicating that some power was being applied though not enough to rotate it – or that the power was being applied to rotate the motor in opposite directions at the same time. These machines use direct drive motors, which have two sections, each covering 180° of rotation. There are two sets of drive coils mounted at 90° and two Hall effect switches to control the switching of the drive coils via the motor drive amplifier.

The most common cause of such a fault is failure of the motor drive output stages, in this particular machine a power i.c. So the chip was changed. Wrong again! A scope was then attached to the motor and it was persuaded to rotate, albeit slowly. Both coil drive waveforms were present and in antiphase, though one was of low level. Outputs were also present from the Hall effect switches, but again one was low and distorted. Unfortunately the only course of action now open was to replace the drum motor, which is of course the lower drum assembly, and then go through the tape path alignment checks. All that for a drink, and these days I don't . . . **S.B.**

Colour drop out – Toshiba TVs

This one is about TV sets rather than VCRs, though the problem shows up when the set is used with a VCR. The

up their energy to form electron-hole pairs as before. There's an important difference between the SDA tube and the SIT however: in the basic SDA tube one light photon falling on the target creates one electron-hole pair, whilst in the SIT one light photon falling on the photocathode liberates one electron which after acceleration has enough energy to generate up to 2,000 electron-hole pairs at the target. Hence the enormous increase in sensitivity.

Gain of the SIT Tube

Since the energy given to the image electrons is determined by the accelerating voltage, the intensifier's gain can be altered by varying this voltage. A typical range is 4-9kV, the upper limit being determined by the risk of electrostatic breakdown around the faceplate and the lower limit by the amount of energy needed to overcome the inevitable energy loss at the target. Although the voltage required is high, the current requirement is very low and the photocathode voltage is normally generated by a flyback system driven from the camera's line timebase. This synchronises the power supply with the scanning, so that any interference arising from the supply will appear stationary on the picture. The smoothing of an asynchronous supply has to be much better as intererence from it will drift through the picture, which is a much more objectionable condition.

The low voltage supply used to power the e.h.t. generator can be varied to control the output voltage. This is easy to do electronically, and by combining the gain control electronics with the iris position servo circuit the tube's sensitivity can be adjusted to cater automatically for a wide range of illumination levels. A double servo loop is used, set up so that the photocathode voltage is kept constant at about 6·5kV while the lens iris is away from either of its end stops. This keeps the tube's signal-to-noise ratio at its optimum condition. Once the lens iris looses control (i.e. fully open or closed) the intensifier voltage is varied to increase the range over which the tube can be used. With a suitable lens, the tube can be used from midday to deep dusk without attention.

To anyone used to more conventional CCTV cameras, the sensitivity of the SIT camera comes as a surprise. Setting up the camera at the extreme end of its sensitivity range must be done in a darkened room, and sometimes the light from the monitor screen can overload it. Perhaps unexpectedly, the sharpness of the picture improves (within limits of course) as the light level drops. The reason for this is that at high light levels the e.h.t. is at minimum with the result that there is slight defocusing.

Because of their high sensitivity, SIT tubes are often used for surveillance applications. Another important application is for use in underwater cameras.

Intensified Intensifier Tube

A further version of the SIT tube, the intensified intensifier target tube or ISIT, uses a two-stage intensifier to increase the sensitivity down to almost the ultimate limits determined by photon noise. The increased sensitivity is obtained at the cost of increased noise on the picture and increased camera complexity – two high voltage supplies and their control circuits are required instead of one. Needless to say the tubes are much more expensive.

Alternatives

Despite its drawbacks the basic vidicon is still widely used since it's cheap. The CCD semiconductor type of image sensing device has been under development for many years now but remains expensive and has low sensitivity. An intensified version using an image intensifier of the type descibed above is also under development – the whole thing would be only a few inches in length. It will be interesting to see how long it takes for solid-state imaging devices to reach the performance standards attained by thermionic camera tubes.

Now and Then

Les Lawry-Johns

I WAS sitting at the typewriter wondering what I could say about that letter of mine in the February issue when this chap walked in. What about the letter? Well it was supposed to be a gentle leg pull of sorts. H.B. had had a brief chat with E.T. – the earthly one from the south coast who writes regularly in these pages. Advice had been obtained and in view of the E.T. mania recently – I'm talking about the other E.T. this time – we thought we'd sort of dress it up. It seems that some readers took it all seriously however, so apologies to anyone who may have been offended.

The Chap

Now what about the chap who walked in? Well he apparently wanted a used stereo record player complete with speakers – and they had to be good speakers at that. I just happened to have exactly what he wanted, and as it had been around for quite a while I offered it to him for twenty pounds. He though that was rather too much. "Take it off your hands for ten" said he.

I don't bargain with anyone, so I showed him the door and off he went. After he'd gone I got to thinking about it. We really are on the losing end in this trade. Twenty years ago that type of unit would have fetched twenty pounds or more, second hand, with no bother at all. Since then wages have multiplied by ten times or so, but you can still buy a new stereo record player for something like fifty pounds, which makes a used unit seem (to some) dear at twenty.

Economics

It's the same with repairs. Would the average person be prepared to pay ten times more than they did twenty years ago? Look at it another way. Thirty years ago if we fitted a new 12in. tube in a TV set it would cost the owner roughly twenty pounds. What was his weekly wage then? About ten pounds per week? Now we fit a 24in. monochrome tube in a set for roughly thirty pounds, and what is his weekly wage now? The reason of course is that new

electrical goods are so cheap that to repair them is just not economic, though we still do it. Thus we are poor compared to what we were twenty years ago, and we are likely to remain so. End of moan.

The Rank T20

Mr. Grumpy's T20 was a nightmare. We'd fitted a new BU208A line output transistor, and as nothing else had showed up during checks and a soak test Mr. Grumpy had taken it home. We saw his car pull up outside and had an attack of the heart sinks. "It lasted only four hours" said Mr. Grumpy.

So we attacked it again. As the BU208A was once more short-circuit we again checked everything but could find no cause. Sure enough everything worked fine when another BU208A was fitted. We kept it on soak test for eight hours this time and it worked faultlessly. So Mr. Grumpy took if off again. And brought it back again.

This time we changed both EW modulator diodes, also the 0·91μF scan coil coupling capacitor, and fitted a new line output transformer. Another BU208A was installed and the set given a two-day soak test. Mr. Grumpy complained about the cost of the transformer and asked whether it was really necessary? So we suggested that he try it for a few days and if it went again we'd refit the old one. It did, and we did. There was no difference though, and this time the BU208A wasn't short-circuit.

The timebase wouldn't start until we shunted the line oscillator's start-up capacitor 4C19 with a 5kΩ resistor. Then it started working, and continued when the 5kΩ resistor was removed. The set was left looking into a mirror so that we could keep an eye on it.

After an hour or so we noticed that it was loosing width, and before we could do anything it had gone off – leaving some 200V on the BU208A's collector to show that it wasn't short-circuit. We had to start it up again with the 5kΩ resistor, so as the 910Ω resistor 4R16 in the 12V regulator circuit is notorious for messing about we changed it. The one taken out read perfectly all right, and we still had to start the set by hand as it were. This time it lost width and line hold after a couple of hours, so we changed the TBA950 line oscillator chip. It then worked fine for a long time before line hold was again lost and the set cut out. I cried but Honey Bunch summed it up in flash.

The Dry-joint

"Dry-joint" said she.

"All right, but where?"

"How should I know? I didn't ask you to sort out the knitting pattern last night, did I?"

So I stared at the right side line output panel, having stared at the timebase panel for some time. And suddenly I saw it. On the line driver transformer. It was just a thin line round one the base leadouts. Like a flash it was resoldered, together with every other connection in sight. The set came on straight away, and has remained all right since. I still have bad drams about Mr. Grumpy coming back, but he hasn't.

The Music Centre

Mrs. Earlybird brought in her music centre complete with one loudspeaker. It was a Ferguson Studio 20. Apparently her husband had repaired (?) the loudspeaker, and after trying it in both output sockets both amplifiers had packed up. I opened up the speaker and found that both leads were plugged on to the same speaker tag. It was thus a complete short-circuit, and after he'd plugged it into one output and killed that amplifier he'd done the same with the other one.

We removed the bottom screws and lifted the top off (record deck and cassette). All four 1Ω resistors in the ouput stages looked distressed. So we changed them and the four transistors for good measure and tested the unit before putting the top back on. It worked perfectly on both channels. So we put the carboard cover back on top of the ouput transistors and refitted the top unit. It still worked so we put the bottom screws back in and made a final check. One side worked, one side didn't. Smoke came out.

Out came the bottom screws and off came the top cover. The two 1Ω resistors on one side had burnt out. No, only one of them. Funny. I checked the current drawn and it was normal. Fitted another resistor and it kept its cool. Refit the carboard card and replace the top – after a tussle with the radio panel. Everything was o.k. so I refitted the bottom screws and tried again. One side o.k., smoke. By this time it was getting late and I called it a day.

The Dream

During the night I dreamt that I was a brave knight and fought everybody in a place called Camelot. I was called to the King's chambers and he was fixing a music centre. He unscrewed the transit screws to bed the deck down. Then he looked at me and bowed. "Look you" he said, "when you do this you bed down the record deck and the metal speed selector touches the top of the output transistor heatsinks or one of them and shorts it to earth, doesn't it?"

"Yes sire. It does to be sure, but there's a cardboard cover to stop it touching and I keep putting the cover back. I do really."

"Listen. Listen while I talk to you. There's a right way and a wrong way of doing everything. Now go."

So I went, and woke up. I stirred restlessly until I woke H.B.

"There's a right way and a wrong way of doing everything" I told her.

"Have you just found that out?" she growled sleepily.

"The King just told me, look you."

"Look you moron, there may be two ways but as sure as fate you'll always choose the wrong way first. Now go to sleep."

In the Morning

And so it was that the first job in the morning was to reverse the cardboard cover to prevent the speed selector touching the heatsink when the screws were tightened – after replacing the 1Ω resistor again of course.

If the transit screws had been left to let the deck float it wouldn't have happened.

I then took Ben for his morning walk. The Hillman Hunter still has a list to starboard, but now there's a bloody great CB aerial stuck in the centre of the boot. Not looking where I was going I felt unfamiliar ground under my feet. The council have filled in the pot-hole and tarmacked it over. Thank you council. And thank you readers for hoping I wasn't going to get my feet wet yet again.

The Further Adventures of Tiny Tim

Les Lawry-Johns

Tiny Tim woke up early in the morning and started to think his usual gloomy thoughts. What was wrong with the world was that there were too many people in it, most of them wanting him to do things that he didn't want to do for them. He killed off a million people mentally. Still too many. So he killed off another million and too many remained. Wouldn't it be nice if there were no people at all?

The animals would be able to go about doing whatever it is that animals do, and the forests would grow nice and big. There would be great big forest fires with no one to put them out. All the animals would be burnt. Oh dear, that wouldn't do. His cat Spock would catch cat flue and die because she wouldn't have had her jab from the vet. Oh dear. Perhaps firemen and vets could live then? Except the vet who was going to bring in his car radio-cassette. This frightened Tim because it was a Philips machine and he had a job to get the cassette drive belt back on when it bounced off as it had a habit of doing. So one vet would have to go and another would have to be found to give Spock her jab to ward off cat flue.

Pinnacle of Despair

As he lay there he thought of the nasty letter he'd had from one of the wholesalers. If he didn't pay their account they would do nasty things to him. He always paid his accounts on time, but he wasn't going to pay this one because it was daft. He'd ordered six video cassettes for his wife to play with and they'd sent sixty one. As eight were loose he'd decided to keep these and send the rest (53) back. He'd phoned the firm and the girls who'd answered the phone had laughed and said the rep who'd taken the order must have had a shaky hand. So they'd laughed some more. He'd put the phone down but nothing was done about it. The cassettes were collected by a well known firm of carriers who signed the collection note.

Tiny Tim had again phoned the wholsesalers to let them know that the cassettes were on their way back to them, but the man at the other end said he didn't know what it was all about. Tim was eventually promised a credit note, but it never came despite several more phone calls. One person had said that they hadn't got back the number specified. This had made Tim angry, and he'd said nasty things that his wife had said he should have been ashamed of saying. So the statement had come in, along with a nasty letter which Tim had returned with a comment to the effect that the liaison between their departments was deplorable. This was much nicer than what he'd said on the phone. So he dug in his tiny heels and waited for the nasty things to happen.

Daylight

As it was beginning to get light, Tim decided it was time that someone should get up and make the breakfast. So he stirred around enough to wake up his wife and then snored to pretend he was asleep. His wife looked at the clock and heaved a sigh.

"He lays awake all night thinking stupid things and when it's time to get up he goes to sleep. God how I suffer."

Tim snored loudly to ensure that his wife wouldn't go back to sleep, and eventually she got up. Tim smiled at the picture of the tiger on the wall. "We each of us have our own ways of getting our food" he told the tiger.

His wife brought up his breakfast, and Tim noticed that she couldn't burn the scrambled eggs like he did to give them a nutty flavour, but he thought it best not to complain. Something about not tampering with your luck.

He ate his breakfast and drank his tea, then laid back and sort of slipped off to sleep. He was rudely awakened by his wife talking to customers in the shop.

"I'm sorry but he's out with the dog at the moment."

Which was a bit shaky since Ben had been standing with the lead in his mouth for the last half hour or so.

Tim waited for the customers to leave, then crept down the stairs.

"Mr. Crankcase wants a new colour set delivered by ten o'clock. He wants a 22in. without remote control or any trimmings. No later because he's off to America and wants to see it and settle before he goes. So you'd better put your skates on."

"I'll just take the dog for his walk, then I'll get cracking" said Tim.

"Oh excellent" said his wife. "Mr. Crankcase lives at Birling, which is a long way away. You haven't unpacked the set yet and it's now nine fifteen."

"Oh dear" said Tim. "Why didn't I get up earlier? Why did you let me nod off again? I must fly." So he flew, but went in the wrong direction because he'd fogotten where Birling was. He ended up feeling very confused, driving along the M20 towards Maidstone. It all ended happily however, because Mr. Crankcase had delayed his departure.

But Ben was rather peeved. He stopped at a post but missed it, contriving to hit Tim's leg instead. This re-minded Tim of the time he'd been standing at the top of Windmill Hill looking out over the river and a big black dog had come and stood beside him. Tim had patted the dog's head, thinking how good he was with dogs, but had suddenly become asware that his leg was soaking wet. It was a very large dog.

Tiny Tim made his way back to the shop, talking to Ben and telling him that in addition to getting rid of all the people in the world the dogs would have to go as well, leaving just a few bitches – they don't cock their legs at every tree, post and leg that happens to be near.

Trying TVs

When they got back, quite a few jobs were waiting to be done. The first was a GEC set fitted with the 20AX tube (Model C2233H). A note on it said "no results". The right side fuse (on the switch-mode power supply panel) had blown, so Tim looked askance at the BU126 chopper transistor. It was short-circuit. As he fitted a new one Tim was thinking. He'd had this trouble a year or so ago and the new one had died very quickly indeed. Then there was

a note on the same subject in a recent Fault Report item in *Television*. The driver transistor is biased by a nasty 150kΩ resistor. Now where was it? Ah, just there, R515. Take it out and measure it. Reading about 4MΩ.

Tim didn't have a 1W, 150kΩ resistor, so he was a devil and used a 220kΩ one instead. It worked well enough, so he logged this information in that magnificent computer he has atop his shoulders – another one not to be forgotten.

The next set was an ITT CVC9 that belonged to one of Tim's old school chums (which makes him very old). It had been in several times of late, suffering from loss of colour which seemed to be restored permanently each time Tim did almost anything around the decoder, only to fail again several days later.

Tim had first found that when the base of the 4·43MHz reference oscillator transistor T38 was touched with the test prod the colour returned and couldn't be made to go off again. So he'd changed T38. On the next occasion it had seemed that the crystal was faulty, so Tim had fitted a new one. He'd thought that this was unusual in an ITT set, but concluded that as he was very rarely right about anything it must be the case since the colour stayed and stayed. Here it was again however.

He put the probe on the base of T38 and the colour appeared. He looked at the board and the blue 470pF capacitor (C228) in the oscillator circuit (base-emitter feedback) caught his colour prejudiced eye. He doesn't like blue things. So he changed it and the set has been all right ever since.

The Music Centre

A Fidelity 440 music centre sat there waiting its turn. Its owner, a nice man by the name of Les Woolends, came in just as Tim was about to perform.

"Thought I'd pop in to tell you what's wrong with it. It won't record on one channel."

Tiny Tim scowled at him. "It's a pity you didn't take it back where you bought it."

"I bought it here."

"Just testing, just testing." Tiny Tim was aware of his wife's eyes boring into his back.

Without further ado Tim removed the bottom of the music centre and squirted a jet of Servisol into the record/playback switchbank. Much to his surprise, it now worked on both channels.

Putting on his 'leave it to the master' air, Tim replaced the bottom cover and chatted away to Mr. Woolends about cats and things.

Night-time

That night Tiny Tim had a nasty dream about being eaten by a great big cat. He awoke bathed in perspiration and decided to have a nice wash to freshen himself up a bit. So down to the bathroom he went, and gave himself a good wash down. He dried off and looked for his talcum powder. It was some distance away, at the far end of the bath, so he decided to use some of his wife's instead. But no matter how hard he shook the pink tube nothing would come out. So he tried the green one which had two nice big holes at the top. He shook the powder all over his private places and rubbed it in, noting that it seemed rather coarse for his little body. He tumbled back into bed, thereby waking up his wife.

"Now what are you up to?"

"Just been to the bathroom for a wash. What's the talc in the green tub?"

"That's not talc, you fool. It's shake 'n vac carpet cleaner."

"Oh dear" said Tiny Tim.

VCR Clinic

Mike Phelan, Richard Roscoe and Michael J. Cousins, T.Eng. (C.E.I.)

Ferguson 3V23

The fault with a Ferguson 3V23 was noticeable only on a stationary picture. It looked as though there was a slight ripple on the verticals – but only on about the centre third of the picture, the top and bottom being o.k. As the fault was also present on still frame we had a look around the drum motor drive circuit. This is a brushless, direct drive motor, so the pole switching is done by Hall sensors and a magnetic ring (instead of a commutator and brushes).

The sensors drive many transistors, culminating in two power stages which supply current to the two sets of poles. When the head is running we should have an equal sinewave on each pole, but in this case one was missing. As a result, the drive was varying. One very discoloured power transistor gave itself away, but while we were measuring voltages we noticed that the supply to the motor was about 22V instead of 12V – the regulator transistor in the power supply had gone short-circuit. It's surprising that anything worked at all! **M.P.**

Ferguson 3V00

"We've fitted a new head, but can't get the tape guide rollers adjusted" they said. We connected the scope to TP7 to monitor the video f.m. envelope, and found that while we could get rid of the dip at either end of one channel it was then transferred to the other channel. Now in theory each head follows the same path, so the condition we had shouldn't be – unless the heads were not following the same path, due possibly to the spindle being bent. We removed the head and there is was – a piece of something indescribable, compressed to a few thou and stuck to the mounting flange with the result that the drum tilted fractionally. **M.P.**

Ferguson 3V00

The fault with a Ferguson 3V00 was severe herringbone patterning on the chroma on its own recordings only – prerecorded tapes played back o.k. The chroma record current control R2 on the pre-rec board was set too high. **M.P.**

Ferguson 3V29

There was no capstan servo action with this Ferguson 3V29, and a check showed that there were no off-tape control pulses at TP2 (adjacent to IC2) even with a

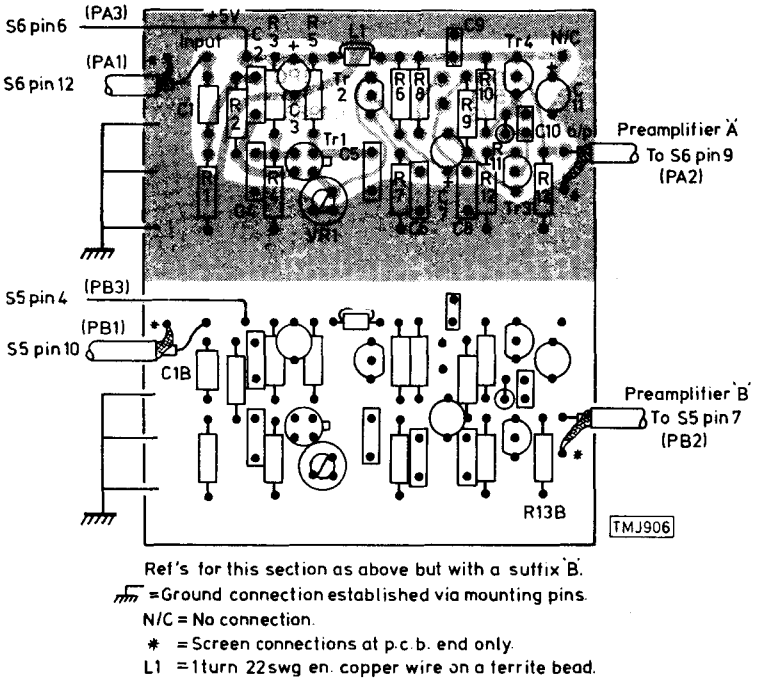

Fig. 12: Preamplifier component layout.

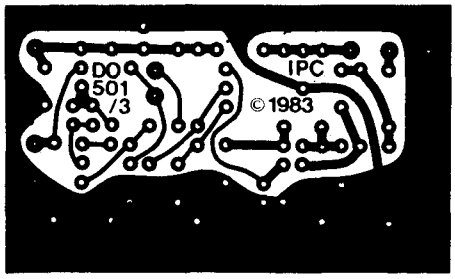

Fig. 13: Preamplifier board pattern.

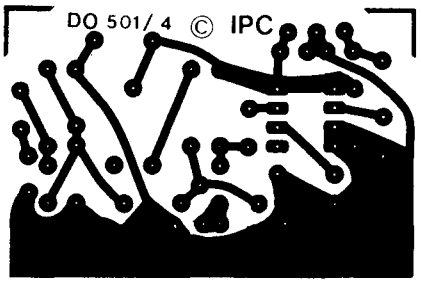

Fig. 14: Prescaler 1 board pattern.

bought fully built and tested for £190·49. Both prices are inclusive of postage, packing and VAT. The main board DO501/1 is available from Readers' PCB Service at £15 while the other boards are available at £1 each. In both cases the address is Fleet House, Welbeck Street, Whitwell, Worksop, Notts.

Lords of the Morning Air

Les Lawry-Johns

MANY years ago, more than I care to admit, I was an avid reader of science fiction magazines. My favourite, if I remember correctly, was *Astounding Stories*. There were some good yarns in it, and the title of one sticks in my mind – it was Lords of the Morning Air and was about some superior beings that came to visit earth. They looked like us but were far superior of course, with long fair hair and blue and gold robes to prove the point. Kind they were too, not like us louts.

Anyway it was a bright and sunny morning, and as I took Ben for his stroll we first waved at the drivers of the cars – the ones that came up the road and honked at us – and then went round the back of the flats (two large blocks opposite the shop), continuing to wave at all the occupants who waved at us. One old boy opened his window and bawled out that he'd "let us look at his TV set later". "Thank you, thank you very much" I bawled back, without much conviction in my voice. What he really meant was that I was to be allowed to cart a load of equipment over to the flats, lugging it through the corridors, then performing a miracle on his old set before carting the lot back again. Anyway, we dismissed this diversion from our minds and continued our walk in the morning air, still waving to all and sundry and wishing we didn't have too because our arms were aching. Now we know how royalty feels. Royalty, that's what we were, Lords of the Morning . . . until we got back to the shop, when we became surfs once more.

Who should be waiting for us but Mr. Piddlewell – he who'd threatened to cut off our milk supply last time. He didn't even give me time to get the lead off my neck.

"We were watching that science fiction film last night when the picture went off and someone started talking in a foreign language – lots of other voices chattered away too."

"What do you expect if you put the volume full up?" I snarled.

"Well it shouldn't chatter away in a foreign language, should it?"

"It might if it doesn't feel well. It was probably delirious" I replied, looking on the shelf for an MC1330 chip.

"What's that?" demanded Mr. Piddlewell. "It doesn't look much."

"That there does a very difficult job" I explained. "When it stops doing it the set jabbers away in lots of foreign languages and you don't get a picture either."

"Oh" said Mr. P. "How do you know it's that?"

"Because I can feel it in my water" I explained, not wishing to go into detail about previous tests with prods at the input and prods at the output.

So we opened the signals panel of Mr. P's Thorn 8000 chassis, took out the MC1330 from the left-hand side, and fitted the new one. Just for fun I applied the meter's test prod to the chip's output pin and switched the set on. There was an air-splitting garble of voices from the speaker, and Mr. P's eyes widened.

"It's still doing it" he bawled.

"No it ain't" I said, removing the test prod and plugging an aerial in. Soft music accompanied the BBC-2 test pattern.

"You're having a go at me. I know you are."

"Not at all, Mr. P. I was just demonstrating that when the chip goes open-circuit it acts like an aerial for the reception of 6MHz signals and the harmonics thereof" I said, laying it on a bit thick.

"Oh, very genital" said Mr. P, reverting to his coarse upbringing.

"Well pay up, look big and sod off" I advised him, reverting likewise.

Another Lord

Stripe me pink if Mr. Lord didn't walk in carrying a large Philips radio cassette. It was Mr. Lord my accountant.

"What do you want? you robber" I greeted him warmly.

He looked pained. "We don't rob you Les. It's not our fault if you don't charge enough for your services. At least we're realistic."

"I'll start charging realistic fees right now Mr. Lord" I said.

"Don't be impetuous. Rome wasn't built in a day."

"It would never have been built at all if the contractors had charged your fees" I replied, warming to my task.

Mr. Lord crossed his fingers and said "Faye Knights". That put an end to it of course.

"Sorry Mr. Lord. Well now, perhaps I can help you in some way?"

"It's just the cassette section of this thing Les. The pinch wheel is flopping about."

So he left it for me to fiddle with whilst he returned to his office to do his fiddling. I hope he had better luck than I did.

Due to my lack of observation I mucked about with it for ages. Having stripped it down and removed the cassette section I couldn't find any sign of the pinch wheel spring. So I thought I'd try to make one, which I did, having to remove the wheel to fit it. When I refitted the wheel and anchored the free end of the spring the wheel did what it was supposed to do and fitted tightly against the capstan. A little too tightly I thought, but blundered on.

To test the machine the panels had to be reassembled, so I thought I might just as well put the whole thing together anyway, just leaving the rear cover off. I switched on and pressed play. The capstan rotated nicely but the spool carrier didn't move. I tried again but it stayed still and refused to rotate. So I took the panels out again and got the screws thoroughly mixed up whereas I'd previously had them organised for proper replacement.

I stared at the cassette section and pushed down the play button. The plastic carrier went down but when I rotated the flywheel the take-up spool carrier didn't rotate. It would spin freely, but didn't engage with the sprocket which should have driven it. The sprocket is pushed into position by the plastic carrier which didn't seem to be travelling far enough. Perhaps it was because I'd anchored the spring to the carrier? So I took the pinch wheel off and tried again. The sprocket engaged, and the take-up spool carrier rotated with the flywheel.

At this point the cat walked across the bench and sat looking at the rear cover. Something was attracting her attention. It also attracted mine because it was a nice bronze spring caught up in the leads which connect the rear cover to the main unit. "Thank you Spock" I said gratefully as I shoved her off the bench.

So I put the right spring on and checked it carefully. The pinch wheel fitted tightly against the capstan and the take-up carrier didn't rotate. I felt peeved about this, and once again removed the pinch wheel. The carrier then rotated. I stared at the assembly and then saw what I should have seen earlier. There's a plastic obtrusion just above the pinch wheel assembly, and I'd put the assembly back to ride below it, which was why it fitted too tightly against the capstan. Assembled so that it rode above the obtrusion, the plastic carrier could ride fully down and the sprocket would engage.

What would have taken any sensible person a few minutes had taken me over an hour, and I was not pleased with myself. No wonder I can't pluck up enough courage to tackle these videos. Just imagine what a mess I'd make. Mind you, some of these audio stack systems seem to be just as inaccessible, with the whole works up front and acres of nothing in the rest of the cabinet. Come back music centres, all is forgiven.

It wasn't my fault that my accountants had advised me to increase my service charges. Sorry Mr. Lord.

More Royalty

What a funny thing. If you get one type of set in you can bet that a whole row of them will follow. In this case it was names however. Next along comes Mr. Knight who wanted his G8 repaired. He also announced that he intended to buy a new set for the lounge, keeping the G8 for the bedroom.

I didn't go along with this idea, and suggested that it would be more convenient to leave the G8 where it was and invest in a 14in. colour portable for the bedroom, with remote control so that if anyone was confined to bed they could change channels, control the volume and switch the set off with the small handset. In addition there would be a considerable saving because a portable was a lot cheaper than a 22in. set. As his wife was with him I added that a portable could easily be moved to the kitchen for the reception of breakfast TV, the set having its own aerial.

Mrs. Knight was immediately convinced and informed her husband that he'd be a fool to buy another large set.

So I showed them a Fidelity CTV14S, and they were most impressed with my demonstration of mirror reflected channel changing, though I couldn't quite see the value of this if you're watching the set anyway and holding the remote unit.

Mr. Knight announced his decision. If I could repair the G8, he'd take the portable. So we checked the G8 and found that there was lack of red. The red BF337 output transistor was o.k., but there was precious little turn on bias at its base. The driver load resistor R7326 (39kΩ) was accused of being high and proved to be so. I looked in vain for a 39kΩ resistor but the nearest I could find was 47kΩ, 2W. Fitting this restored normal operation without any need for adjustment, so we wrapped up the G8 and piled it and the Fidelity portable into the Knight's car, while Mr. Knight wrote out the cheque which was for a lot less than he'd expected when he first arrived.

What an honest chap I am. We haven't been able to get any 22in. remotes for some time . . .

Note on the G11

Finally a note on the h.t. reservoir capacitor (C4029) in the Philips G11 chassis – it came up in the letters column recently. Green ones are just as bad as the red ones – blue or black are o.k.

Laura's Dead Decca

Les Lawry-Johns

I'm sure you all remember Laura Lovitt, last reported as tampering with Titch the telephone man and giving me the old heave ho when she thought she was going to be busy one afternoon, and me going back to the shop to find another telephone chappie buggering about in the bedroom. Well, every dog has his day, he who laughs last, and all that.

The phone rang and it was Laura to say that her legs had at last given way and the Decca was now a damaged Decca. Could I call this afternoon?

"Are you sure your telephone's not tapped?" I asked.

Laura gave a gurgle. "He was only showing me how to fill in a football coupon. Very patient he was too."

"All right then. I'll be down this afternoon."

How to Oblige

And down I went to give the legs a close inspection before examining the Decca. The frame's woodwork had given way as though the legs had been asked to support an extra offset weight (perhaps the set had been shoved from the side?). I could see from the front of the Decca that the tube had lost is vacuum, and this was confirmed by the sight of the bowler hat on the rear cover. It was cracked and bowed in, the tube base was in pieces, and the tube's neck was beyond recall. I shook my head sadly. "Sorry Laura. It's right buggered."

"I know it's buggered" said Laura with no trace of sadness, "but it's also insured and I've been wanting a new set for a long time. Now I'm going to get it."

We discussed just what she wanted for some time, and as the bedroom was only a sliding door away I suggested that perhaps a smaller set with remote control would fill the bill, so that she could watch the late night programmes in bed, change channels and switch the thing off without getting up, then wheel it back into the lounge in the morning. This idea seemed to appeal to her, so I nipped back to the shop for a 20in. remote control model and had it installed and working in no time.

She said the picture was good and she liked the remote control but the front presented a sort of blank, black appearance. Would she like to come back to the shop to see some others then? No. They don't look the same in the shop. So she wouldn't really be able to tell.

To cut a long story short, I had to do quite a bit of running around before she finally liked the Pye 3262 with full remote control, and of course she had to be sure that everything worked as she lay on the bed (it's not easy trying to satisfy some people . . .). She said she'd let me have the cheque when the insurance had been settled. I'm still waiting.

Les the Bodger

I was asked to do a very quick job the other day. We'd had to write off Mr. Toolong's old 26in. Thorn 3500 as a dead loss. Until he bought a new set he was having to rely on his Philips 16in. portable (KT3 chassis, with remote control). This was in urgent demand by the family therefore, but had "gone funny".

The "funny" bit was that the colour was at maximum and couldn't be turned down. The controls consist of plus and minus buttons, but the colour couldn't be turned down no matter how many times the minus button was pressed. I rather suspected i.c. failure, and the first suspect (to me) was the SAF1032P remote control decoder i.c. (IC807), but there wasn't one in stock. The relevant bit of circuitry is shown in Fig. 1. Voltage checks confirmed that the control voltage at the emitter of transistor TS840 was over 4V and remained at this level instead of varying between 2V and 4V. This meant that TS840 was being turned on excessively because its base voltage was high. The voltage at the collector of TS836 was in turn high because there was lack of turn-on bias at its base. This suggested that either IC807 or R832 was faulty. R832 was in order – as were both transistors – so our suspicion of IC807 deepened. Frantic phone calls were made. "Sorry Les." "Sorry Uncle Les." "I'll have to send for one Mr. Toolong."

"But we want it today. Now!"

I looked at the preset R838. It didn't vary the voltage at all, but could be made to do so by wiring a little resistor across C839. Try 22kΩ. Not really. Try 15kΩ. Nice variation as the preset was turned.

"Well now Mr. Toolong, this control here is the ideal colour preset, and once I set it to your liking that's it."

He was quite pleased with this bodge up, and carried the set away smiling.

I was relieved too. It didn't have to be that particular i.c., because it gets its input from IC761, and there are various other complications.

Minimatic, Big Wallop!

Here's a warning – be careful of those small Yugoslavian Minimatics. I was trying to sort out the print side position of a transistor and reached over to locate just where it was with my right hand. I must have jumped a couple of feet in the air (well, say two metres) or more. Whilst the e.h.t. stick is fully shrouded, the e.h.t. connection isn't – it's just a solder blob exposed to all and sundry, including me. You may say that it serves me right for not looking where I put my hands. Quite so. But I wouldn't like you to get the same.

Fun with Fidelity

We've sold quite a few of these Fidelity CTV14R (and S) sets during the past year or so. Some have required attention recently.

The weak link appears to be the line output transformer, though this is not immediately obvious. The symptoms are that the h.t. builds up after switching on and then collapses with a tick, the process repeating. This

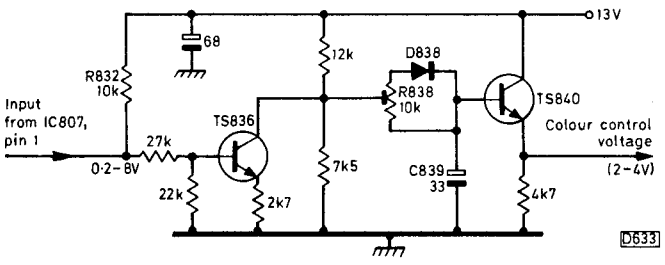

Fig. 1: Preset colour control circuit, Philips KT3 chassis (remote control version).

could of course be due to various overload possibilities or to the TDA2581 chopper control i.c. playing about. When the set is switched off, you may find that e.h.t. is present under the e.h.t. connector cap. This tends to suggest that the line output transformer is working correctly. When a replacement is fitted however the set works normally (for us, so far).

Removal of the transformer in the earlier model is quite easy – unsolder the tags, turn the tag round for exit, and remove the two screws at the top frame. In later models there's an extra strut on the frame. This covers the tag and means that the panel screws have to be removed to allow the panel to be raised from the frame.

Another frequent fault is failure of the chopper transistor TR13 (type BUX84 or BUV46). The transistor tends to go short-circuit, as a result of which the h.t. rises and the set shuts down.

The front control panel is also a bit flimsy and can develop cracked print, dry-joints and the like.

Intermittent operation, with all the channel LEDs coming on for a brief second, is often due to a dry-joint on one of the two long wirewounds at the rear left side. A moment spent resoldering these connections can be very rewarding.

Bette's G8

Bette Hind is a lady with a lot of gusto. It's like a hurricane hitting the place when she comes in. "Hallo Les Luv. Will you get my set out of the car for me only I'm on double yellow lines and can't get away with it now they're all women."

"I can" I smirked. "You've only to rub them all over with soft soap."

Anyway, I got Bette's 20in. Philips G8 out of the car and on to the bench, and caught sight of the worried look on her normally alive with laughter face.

"I think it's had it this time Les. The picture went and there was a hell of a stink, then the lot went off, puff, just like that."

"Don't worry Bette. In five minutes it'll be as good as new."

So I took off the rear cover (a screw in each corner instead of the usual G8 struggle fit). Over on the right side I could see the transductor looking sick, so I removed plug H (the red one) to stop that nonsense and plugged the set in. Nothing. There was voltage at the bottom end of the top section of the "dropper", but nothing at the top. I switched off and decided to short the dropper tag to earth to get rid of the charge on the reservoir capacitor. Bang it went, because I'd not bothered to use a resistor, risking the screwdriver blade instead.

Bette jumped two metres in the air, just as I'd done earlier. "I told you the bloody thing was finished" she bawled. "It'll kill us all. Mrs. Seer said she saw it in the cards the night before last."

"Shut up for Gawd's sake" I snapped. "The thing's nearly done now."

"Done in more like it" she moaned.

I put in the new dropper and checked the fuses. The lower one on the left side (800mA) had blown. With this replaced the set was switched on and a good picture appeared. Being a 20in. model, the absence of raster correction (plug H out) was not noticeable.

"That's bloody marvellous" exclaimed Bette. "What about the smell?"

"It's Ben" I explained. "He's been a bit loose lately."

Dotty Daydreams

Les Lawry-Johns

Before I tell you about Dotty, I must first tell you about the visit we had from a well known contributor to *Television*. During a quiet moment one morning the door opened and in walked this tall, handsome fellow, a sort of cross between Howard Keel and Humphrey Bogart.

"Is this Tiny Tim's shop?" he asked.

"Yes sir" I replied, thinking it was the inspector of taxes.

"Keith Cummins, glad to meet you" he announced.

"Well bugger me sideways" I stammered. "What a nice surprise. Come and meet Keith, Honey Bunch."

So we exchanged pleasantries before getting down to the serious business of running down the editor. After a while we agreed that maybe he wasn't quite such a bad bloke really, and after all someone had to think of the readers sometime or another.

During the conversation an assortment of characters wandered in and out, giving us their views on life and death, talking as though their affairs were of great importance and not realising how important were the people to whom they were addressing their trivialities. One was the author Alex Granger, who had just written a book about himself and signed a copy for us. Another was Johnny Moon who is, er, Johnny Moon.

The morning passed pleasantly enough, and in due course Keith had to go, collect his wife, and wend his way back to Southampton. Cheers Keith! Nice to have met you.

Brown Eyes

My dream girl true has eyes of blue,
but I think I could go for brown.
A picture of love, was this turtle dove,
from her head to her feet right down.

H.B. had been to visit her sister, and on her return reported that the HMV radiogram had at last broken down. It had been agreed that I would pay a visit to repair it. Which is how I came to be ringing her door bell that morning.

Dorothy answered and gave me a welcoming smile. When Dorothy smiles you know you're being smiled at. I've never really got used to those enormous brown eyes, those generous lips and perfect white teeth. She always seems to have a look of surprise on her face, and very nice it is too, except that is when she's addressing her son Fraser. A state of war has existed between them for several years, and there seems little likelihood of a truce at this late stage.

"Come in Les. Try not to tread on Tiny (the small dog) and steer clear of Gillie – she's been playing with the hedgehogs again and is full of fleas." Gillie is another small dog, though not as tiny as Tiny. "Keep away from Fraser too. He's smothered his face with his father's after shave again and stinks of the muck. Can't think why the girls keep phoning up for him. Queer taste some people have. Can't think what they see or smell in him."

"Henry Cooper says it works" growled Fraser.

Sensing that a battle was about to begin, I decided it was time to start on the radiogram. Switching on produced a click and an audio hum, so the trouble was probably in the i.f. stages and with a bit of luck it would have AF117s in it. Easy to deal with – with a bit of luck. I removed the long rear cover.

"What do you think it is Les?" asked Fraser. "A bit of AF117 trouble?"

I looked at him amazed. "What makes you think that?"

"It said it was likely in that daft little book you wrote called questions and answers. You've probably forgotten and I don't blame you. I just looked in the back and saw some transistors that looked like them."

I couldn't agree with him of course. "No Fraser, it's probably the double diode triode's load resistor that's gone high in value."

Fraser looked at me for a long time. He's got a nice line in repartee. "Bullshit" he said.

The battle between Dorothy and Fraser then flared up briefly before Fraser got the message and went off on his bike. Meanwhile I'd crept behind the radiogram and carefully snipped the screen leads of the AF117s. The radio them boomed to life. In case you're wondering about this, the screen connection tends to short internally to the collector.

"I do apologise for Fraser" said Dorothy. "Don't know where he gets it from. Even his dad's a gentleman compared to that horror. He argues with his father about motor bikes. It never seems to stop. I can't bear it much longer. I've asked the doctor for some drop dead pills, but I'll probably end up by taking them myself . . ."

I packed my bag as quickly as I could. "I'll be off now Dot. Just in case Fraser comes back."

I told Honey Bunch about Fraser when I got back. She cheered me up no end. "Fraser starts work next week. At the builders on the corner." Fraser working, thirty yards away . . .

Another Disaster

Another Wally. When Walter came in carrying his Thorn 9600 I knew I was in for trouble. Not from the set I hoped. It's his way of rambling on about the old days. At the outbreak of war, before we both joined the Fleet Air Arm (that answers a few questions, doesn't it?). Wally said that the sides of the picture were bowed in, so naturally I thought of the BY298 in the EW modulator circuit. It does lead a hard life. So I turned the set on its side, slapped a BYX71 across it on the print side, and snipped the supect from the top.

I turned the set upright and switched on. There was still slight bowing, but this was easily corrected by the presets on the small correction panel. The upsetting thing was that everything on the left side of the screen appeared in the wrong colours. People on the left-hand side had blue faces and didn't become normal until they moved to the centre of the screen. I questioned Wally about this, but he maintained that everything had been fine until I'd upended the set. I was not inclined to suspect the decoder, but did have fears about the shadowmask. If it had slipped, would it go back or did it need help? I turned the set up on the opposite end and gave it a sharp slap.

"Oh charming" said Wally. "I bring my set in for repair and you bash it to bits."

On the level the picture remained the same. With blue faces on the left. I didn't know what to do. So I muttered something about leaving it to bed itself in for a while.

This gave Wally the opportunity to tell H.B. about the time when we were both operators (projectionists) at the Majestic cinema (now ABC 1, 2 and 3) at the beginning of 1940. I'd been there only a couple of days and hadn't had a chance to get to know where everything was. It was the chief's day off, and as the second was having his tea break I was in charge. It was the organ interlude. Up came the mighty Crompton, with Tom Linn playing it. Wally showed the slides so that people could sing, and I kept Tom in the spotlight. The final slide was shown and it was time for the organ to descend again into the depths from which it has sprung some ten minutes before. Nothing happened and Tom looked around and up at us. People began to laugh as they realised that the organ was there to stay. It was up to me to do something however. After all I was in charge. "Close the tabs Wally" I bawled, "I'll nip down and see what's wrong." Or words to that effect.

So I rushed down the ten thousand stairs, knocking over the ice cream girl (complete with tray) on the way. Down into the stalls, through to back stage, down into the organ room. Still strangely empty. I looked around at all the fuse boxes and my heart sank. Too many. But something had to be done and done quickly. I pressed the buttons near the motor, but nothing happened. No juice to the motor. Then I saw a handle on a clip at the rear of the motor. There was a clip to engage a gear for manual operation.

Quick as a flash I inserted the handle and engaged the gear. I turned as fast as I could but it was a pretty low gear. I turned and turned and the organ came down an inch or so. Couldn't turn any faster and all of a sudden my hand slipped. The handle whizzed round and the organ gathered speed on its descent. Faster and faster it came. What if? The organ was by now out of sight of the audience, and again I had to do something. Stupidly I tried to grab the spinning handle. Incredibly it stopped – it must have been a very low gear. And so I was able to wind Tom down the last few inches, while Wally'd got the news on the screen. By this time I was flaked out across the motor.

The next day the chief informed me that it was only a fuse that had failed, and that I should have checked them first. Willy Stagg was his name.

When Wally had completed the tale the blue faces on the left of the screen didn't look so blue, so with a certain amount of trepidation I told him to take it away as it would find its own level. It did.

Servicing the Philips TX Chassis

John Coombes

The Philips TX monochrome portable chassis has been in production for several years and large numbers have been sold in the Philips and Pye model ranges. There have been several versions, with 12 and 14in. tubes, and with/without remote control. There have also been a number of modifications – most of these are of little significance from the servicing point of view, though it's worth noting that a simplified field generator stage is used in later production.

Power Supply Circuit

As with any set, the power supply is the key to what goes on. The circuit of the TX's power supply, which consists basically of a transformer-fed mains bridge rectifier followed by a series regulator, is shown in Fig. 5. This is conventional though there are one or two points worth noting. First, one of the diodes in the bridge rectifier circuit, D110, also serves as the reverse polarity protection diode on battery operation. Switch SK2 is part of the battery input socket. This can cause problems, as we shall see. Secondly the error detector/amplifier transistor TS112 is operated from the line output stage derived 26V boost rail. This provides protection against excessive voltages in the line output stage, since excessive boost voltage will cut off TS112 and in turn TS111 and TS110.

In the event of line output stage failure, TS112, TS111 and TS110 will again be cut off. The result could be excess voltage on the 10·8V line which will also be unstabilised, i.e. fed via R110 only. This would damage the tube, whose heater is connected across the 10·8V rail. To avoid this situation, diodes D115 and D116 conduct when the line output stage is not working, thus reducing the voltage on the 10·8V line. These diodes were not fitted in early production sets.

The fourth transistor TS113 provides the tuner with a stabilized 11·3V supply. The tuning voltage is stabilized by a TAA550 in the usual way.

Line Timebase

The line generator circuit (Fig. 6) is rather unusual. The first transistor TS380 provides the flywheel sync action: a line-frequency sawtooth is applied to its emitter while the line sync pulses are applied to its base. Following the flywheel sync filter, TS392 sets the voltage conditions in the line hold control network. The oscillator itself consists of TS390 and TS391 which are connected in an emitter-coupled astable multivibrator configuration.

The driver and output stages (Fig. 7) follow normal practice. D450 is the efficiency diode, D451 the boost diode, C451 the boost reservoir capacitor and C450 the flyback tuning capacitor. The output stage provides 9·5kV e.h.t. for the tube, a 350V supply for the tube's first anode, a 95V supply for the video output stage and the tuning system, and the 26V boost line.

No Sound or Raster

If there's no sound or raster, check the voltage at the emitter of TS110. If there's no voltage here, check the fuses – VL100 (on the mains transformer), VL110 and VL111. If VL100 or VL110 is open-circuit, check the bridge rectifier diodes D110/111/113/114 and the protection capacitors C116-9 for shorts and if necessary the mains transformer T110 for shorted turns. If VL111 is open-circuit, the l.t. reservoir capacitor C112 could be leaky. Alternatively there could be a short-circuit in the line or sound output stage. Check the output transistor TS450, then D450, C450 and the scan coupling capacitor C455 in the line output stage. Check the smoothing

The Passing Over of Tiny Tim

Les Lawry-Johns

Tim lay awake in his little bed, wide awake, while his wife Tinker Bell slept soundly beside him. He couldn't sleep and had no idea what time it was. Then he did. The first blackbird started up the dawn chorus and chirped away, calling all the others to wake up and stop Tim from sleeping. It wasn't even dawn.

"That blackbird's got his clock wrong again" thought Tim angrily. He now knew what time it was. It was 3.40 a.m. What a time to start singing and soon to start work. Those birds must be daft. It always seems to be the same in June. Birds awake half way through the night.

Tinker Bell stirred, murmured sleepily, and promptly dropped back to sleep. Tim couldn't sleep though. It was June and the television had said last night that Clive Sinclair had been awarded a knighthood in the Queen's Birthday Honours list. What would Tim get? An OBE at least. Perhaps a peerage. You never know what the Queen might decide. After all, Tim had been a good boy for a long time, a very long time. Tim drifted into a troubled sleep, thinking about the times he'd been bad, very bad.

He woke to find his wife standing by the bed with his breakfast and the morning paper. Tim grabbed this eagerly. Pausing only to shovel some scrambled egg and toast into his mouth, he scanned the columns of names of those who were to receive honours. Lots of familiar names, some perhaps who deserved honours, but nowhere did he find mention of Tiny Tim.

Overlooked

At last he had to admit that he'd been overlooked for another half year. What could the Queen have been thinking about to overlook him yet again? As her father had thirty years earlier.

Tim sulked. He'd waged a thirty year war single-handed against inflation and this was his reward. Thirty years ago he had charged three pounds to repair the average telly. Then it was half the peasant's weekly wage. Now what did he get? He still charged them much the same, perhaps a little more here and there, but not a lot more. What if he charged them half their weekly wage now? He wouldn't get any work, that was for sure.

He lay in his bed fretting, while the rest of the working world went about its business. He heard the shop door open, and the sounds of a TV set being brought in. He panicked out of bed, pulled on his clothes, combed his little locks and strolled downstairs, trying to look as though he'd been about for hours.

Mr. Pedalcar's Bush

Mr. Pedalcar stood there patting his Bush T20. Before Tim could bid him good morning, Mr. Pedalcar launched into a tirade. "You put what you called a tripler in this set last month and ever since we've had white streaks coming from anything that's at all light. I'm going to take you before the race relations board. Ha, ha, ha."

Tim smiled weakly and put the set up on the bench. It was as Mr. Pedalcar said. Everything light had a thin white streak shooting over to the right. Something stirred in Tim's little mind, but it wouldn't come through.

"Only since you put that thing in" Mr. Pedalcar repeated.

So Tiny Tim fitted another tripler just to show him that it didn't make any difference. He then checked the 330Ω resistor connected to the tripler to ensure that it was the right value. It was.

"Call back later, Sir. I'll get at it as soon as I've taken the dog for a walk and had a think."

Left alone Tim thought awfully hard, but nothing happened. He tried this, that and the other, but the streaks remained. He then called his friend Geoff, who knows all about T20s and other funny things. "Buggered if I know" said Geoff helpfully. "Whenever I get trouble on a T20 signals board it always turns out to be a chip."

Tim was ever so grateful, and something stirred again in his wonky memory. He stared at the signals board and especially at the TCA800 demodulator/matrixing chip. He removed the suspect and found a replacement lurking in the i.c. cabinet. This was fitted in a trice, and Tim switched on confidently. "If the Queen could see me now" he thought.

On came the picture, completely free of nasty streaks as Tim knew (hoped) it would be. Then he remembered. He'd read in *Television* (Tim reads most of the articles in *Television,* apart from those that are too complicated for him) just this fault described, along with the advice to change several items including the chip. Funny how he can never remember before the agony, only afterwards. Tim swore an oath to read it more carefully in future, if he could.

Another Bush

The next one wasn't a confusing T20, merely an older A823. As everyone knows, these are no trouble at all to anyone with a grain of common sense. The owner described the symptoms and asked for an immediate diagnosis, which he got. Apparently at odd times the width would decrease, with curved edges and a bright kink (undulating) down the centre.

"It's going into overdrive" explained Tim. "With a possible loss of smoothing."

"Ah" said the owner, impressed with this display of expertise.

"Call back later" said Tim. "It'll be ready by five o'clock."

Left alone Tim fretted and sulked a bit, because he'd no idea what could cause the trouble so intermittently. He switched on and watched the picture appear with a foldover down the centre, just as he'd been told. Then the picture corrected itself and remained good until Tim changed channels. The fault then returned for a few seconds.

He clipped smoothers across smoothers, then decouplers across decouplers. Still the same. He remembered his first diagnosis (going into overdrive) and his eyes narrowed. If the damping components across the primary winding of the line driver transformer were to become open-circuit intermittently, the drive to the line output transistors would be distorted. This was it. The resistor seemed o.k. on test, but Tim noticed that the capacitor in

series with it leaned against the resistor, which normally runs hot. Ah, ha. He replaced the capacitor with a flourish and beamed at his expertise. There was no change. He crept into the corner and cried. Tinker Bell found him there and gave him a cuddle.

Feeling better, he had another try. What rules had he forgotten to follow? Ah yes, the colour prejudice rule. If capacitors are red or green and big, suspect them. If they are smaller and black, replace them. Tim looked and found a small, black 10μF electrolytic that decouples the emitter of the line oscillator transistor 5VT6. He whipped it out and checked it. As it didn't seem to feel well he fitted a replacement which was also black. He applies the rule only when it's convenient you see. The picture stayed steady for an hour. So the job was deemed done and the set was collected and carried away.

It was carted back the next morning. Lacking moral courage, Tim changed the complete panel. This cured the problem and he resolved to have another go at the faulty one another time when he felt better. So far he's felt groggy every day, so he still doesn't know what caused it to go into overdrive.

Ups and Downs

Tim had been reading his *Reader's Digest*. He'd come across a snippet reprinted from the *Daily Telegraph* — sent in by a Mr. J. W. Reid. It made Tim think, which is something he's not used to doing. So he thought he'd have a go at Tinker Bell.

"After you've washed down the breakfast things, you can go out and wash up the car." T.B. gazed at Tim for a long time.

"You've got that wrong dear. After you've washed up the breakfast things, you can go out and wash down the car."

Tim sulked a bit after this, then had another go.

"The cat hasn't eaten down her food." Tinker Bell joined in the confusion. "I think you're getting a little mixed down love." Tim saw that it was game down and gave . . . "And don't forget to fill down the form that came yesterday."

The World's End

If you take your dog for a walk to the top of Windmill Hill and look across the river to Tilbury, you can see The World's End just to the right. Tiny Tim was talking to his dog. "In that pub over there, there's a dog even more queer looking than you."

Ben wagged his tail and Tim continued. "It's a cross between a Jack Russell and a Labrador. Since his father was the Jack Russell, the queerness doesn't stop at the dog's appearance. How could a little . . . ? Ben wagged on. He clearly knew the answer but wasn't saying anything. Tim rebuked his dog sternly.

"How can you look so knowing? When we tried to mate you with a very pretty Collie at the very height of her hotness, all you did was run around cocking your leg up everywhere until a dirty old mongrel jumped over the fence. We got a right old rollicking from the owner when the puppies were born."

Ben lowered his head and walked home on his own. Tim followed, saying how sorry he was, afraid that Ben would tell Tinker Bell who would no doubt put her hands on her hips and comment "he's a fine one to talk . . ."

cathode of the field output valve by replacing its 270Ω, 2W bias resistor with the circuit shown in Fig. 3.

I haven't bothered to extract an audio signal, finding it easier to take this from the audio output socket of a 625-line portable receiver tuned to the same network. A suitable signal should be available across the set's volume control however.

Playback

Having recorded our 405-line video, we next have the problem of playing it back. Those wishing to demonstrate vintage TV receivers will need to use a modulator to the system A standard.

The u.h.f. output signal from the VCR will be to the system I standard but with 405-line scanning. Many dual-standard receivers have their timebase and i.f. switching on separate panels, and it's fairly easy to separate the switching so that only the timebase is switched to 405. I use this technique with the V849 and the photos show the excellent off-tape results. As a 405-line signal requires a bandwidth of only 3MHz, the VCR's reduced bandwidth is not so detrimental as with a 625-line signal — the subjective definition with off-tape 405 is actually better than with off-tape 625.

Drop-outs

There is one problem however. The drop-out compensator consists of a 64μsec (one line at 625) delay line arranged so that if a drop-out is detected the information from the previous line is switched in to replace it. Obviously if a line is 98μsec long, as with 405, the wrong information will replace drop-outs. This is clearly shown in the second picture, where a drop-out to the left and right of the I has been replaced with information from the 1 and 0 on the previous line. Apologies for the ghosting on the picture — Band III is like that in this area.

Tiny Tim's Long Hot Summer

Les Lawry-Johns

It was the month of July and Tim's magic thing said 30. He tried to work this out, at something like 90° in the shade, and felt even hotter. As he sat there behind his little counter, trying to avoid doing anything that might raise his temperature even higher, a young couple came in – carrying a GEC colour set.

The GEC C2233H

Tim noted the set (Model C2233H) and noted the young man. His eyes then became glued to the girl. A sort of Farah Fawcett lookalike, wearing high heeled sandles and the shortest of short skirts. Her eyes were sparkling and she smiled, showing her perfectly white teeth, as she became aware of Tim's rude scrutiny.

Tim smiled back and revealed his yellow tusks. The girl's smile froze and she shivered. So tim turned his mind to other things.

The set was one of those fitted with the 20AX tube. The ones in which the BU126 chopper transistor gets ruined when the 150kΩ chopper driver bias resistor goes high in value. "Is it dead?" he asked the young man. "Oh no" was the disappointing answer, "it's just that there's a blank white screen."

Tim whipped the back off and surveyed the unfamiliar RGB output section on the upper left side. "Complementary-symmetry output stages" he muttered, as though he knew what he was talking about. The tube's cathode voltages were very low, but there was full h.t. at the emitters of the top transistors, so Tim's tiny mind thought that these transistors were not being turned on. He looked at the circuit and noted that R281 (Mk.II decoder) is common to all three stages as part of the bias network. Snip, snip he went with his little cutters, and slapped the meter across the prostrate resistor. Infinity – bullseye! He looked and looked hard but couldn't seem to find a robust 82kΩ resistor, so he put in two 47kΩ ones in series.

The picture was a joy to behold, and he sneaked a glance at Miss Fawcett. Her previous look of disdain had been replaced by a look of admiration and the white teeth glistened at him once more. "How did you do that?" she gurgled. "It just comes natural to me" said Tim modestly.

"It's no good getting old if you don't get crafty" said the young man. "I suppose it's dead easy when you do the same thing day in and day out year after year."

"Why don't you try it if it's so easy?" growled Tim.

"I believe in working for a living" said the young man. "How much do we owe you for that little job?"

"Make it a tenner since you've been so nice to me" replied Tim.

"WHAT!" bawled the girl. "The last place that repaired the set worked on it for a week and charged us only twenty." She now looked ugly instead of alluring, and Tiny Tim felt sad. "Surely it's worth paying for the job to be done on the spot?" he protested.

The young man produced a wad of notes. "Shall I pay him or not?" he asked the girl. Clearly she was the boss, and Tim was glad she didn't belong to him after all. "Pay him and put the set in the car" she ordered. "Let's get out of here." She was still saying something as they carried the set out, and Tim was shocked by the language. Tinker Bell didn't swear. Only when it slipped out. She was lovely and kind to everyone, or nearly everyone, and was pretty with it. Tim was glad he had her to look after him and cuddle him on cold nights. These hot nights were a bit of a curse.

On Heat

"Funny thing heat", mused Tim. People go out in the sun with nothing on and get all burnt up. If they're white. He remembered when he was all brown, sailing his little boat in the bay of Alex, and the girls in No. 17 calling him blondy. Oh well, so much for people. What about sets?

CVC9s blowing their mains filter capacitors all over the place. What a clever boy he was keeping plenty in stock. Tim wondered about his. He always orders lots of bits and pieces so that he can do jobs quickly, and it costs him lots of money. He wished he was clever so that he could earn more, but that requires thought and energy. Thinking is difficult if it's to do any good. As to energy, that was

something Tim only thought about. Doing things puffed him out.

The Thorn 9000

A nice lady then came in with the aid of a walking stick. Would Tim get the TV out of the car? She would call back later to see how he was getting on. So Tim puffed his way into the shop carrying the Thorn 9000 and put it on the bench. The lady went and Tim had to stop thinking his soppy thoughts and concentrate.

When the set was switched on the e.h.t. built up then collapsed, built up again them collapsed. Tim concentrated hard. "Something is making it do that" he thought. He noticed some smoke coming from the tuner panel. "Ah ha!" It was the 12kΩ h.t. feed resistor to the tuning voltage stabiliser. It looked cooked and read only 5kΩ. "Bloody carbon resistors" thought Tim crossly. He put in a 12kΩ wirewound that he kept for the Pye hybrids and switched on confidently. The e.h.t. built up and collapsed, built up and collapsed. A closer inspection was called for.

He checked the fuses and found F4 open-circuit. This is the 1·6A fuse in the 24V line, nothing to do with the cooked resistor. He measured the current across the fuseholder and found it was not excessive. So he checked all the diodes in the syclops circuit with the set turned up and the chassis withdrawn. None were shorted and none were open-circuit. There were no dry-joints. He put the set the right way up and disconnected the tripler, which was a new one he'd fitted a few months earlier. The set still huffed and puffed.

"Bloody thick-film unit" thought Tim. Then he caught sight of a diode he'd not checked. The SKE one in series with the syclops transistor VT701 – bolted to the side of the heatsink. Dead short. Tim was glad he kept lots of them in stock. He fitted a new one and a 1·6A fuse and the set now worked perfectly. Tim wondered about this but found it very trying, so he stopped thinking about it.

When the nice lady came back Tim was upstairs laying on the bed because he was puffed out. When he heard Tinker Bell talking to her however he came down and put the set back in the car. This puffed him out again. "I could have done that instead of you straining yourself" grumbled Tinker Bell. Tim thought this was ever so nice of her and gave her a hug before going upstairs for some more rest. He'd hardly laid his little body on the bed when someone else came in, so down he went again, now convinced that all this running up and down stairs was what was puffing him out rather than carrying the sets about.

Desaturation

"My husband and I put the set in the back of the car before he went to work. I can't possibly get it out. Perhaps you can do it?"

"Certainly madam." Tim went out to the car on the forecourt and looked at the set in the back. It was an ITT CVC2. You know, one of the heavy ones. Tim put one hand under the near end and stretched his little arm over to the far end and heaved. Nothing happened. So he heaved a big heave and managed to get the set out with the far end resting on the seat. He was now able to get at it from the front, which was far more comfortable, and soon had the beast on the bench. Tim took the lady's address so that he could deliver the set when it was done and save them lugging the thing in and out etc.

"If you don't get it done by the time you close, could you let us have a spare colour set so we won't miss Coronation Street tonight?"

"All right" said Tim. "What's wrong with this one?"

"The colour is there some of the time, but when it is there's a strip down the left side without the proper colour."

"Oh dear! I mean right ho," said Tim. "We'll get it back to you as soon as possible." Tim felt dubious. He'd repaired many of these fine sets but had never had to do battle with the decoder.

The lady departed and Tim started – to sweat. Just in case you don't know, the CVC1 and CVC2 were wired sets, with no pretty printed panels and numbers to identify everything, i.e. it ain't easy.

First of all Tim found a layout of the decoder with the items marked, then he turned to the circuit diagram which seemed a bit complicated to his little mind. With the set switched on the colour seemed to be in order except for a desaturated strip down the left-hand side, as the lady had said. He checked the burst signal, which was correct, and the tuning of the ident coils Ld24/5. Altering the position of the core brought a green band down the right side before the colour was lost, so Tim returned it to its original setting. He then tried setting up the reference oscillator, which was already correctly set up. Then he galloped around every adjustment there was, all to no avail. So he checked the transistors and found one that had a rather high base-emitter reading, higher that is than the base-collector, but not much. It was the first burst amplifier transistor TXd13, a BC118. Tim didn't have one of these, so he tried a BC108 which had equal readings.

There was now no colour at all. So he replaced the BC118 and there was still no colour. This made Tim angry, so he shorted out the colour killer and the colour appeared as bands. He set the oscillator and the colour was good, except for the strip down the left-hand side, and Tim started thinking funny things.

One funny thing was the absence of a degaussing buzz when the set was switched on. So he checked the VA8650 posistor and it came to pieces in his hand. He fitted a new one and switched on. The degaussing coils now hummed (the tune sounded like Bang Bang Lulu) and the picture slowly appeared as the valves warmed up. The desaturated band on the left-hand side was still there.

The combination of the July heat (still over 90) and the frustration made Tim somewhat delirious as he vainly tried to mop up the sweat. "Would you like a cold drink?" asked Tinker Bell. "A hot coffee" said Tim, hoping that the hot drink would finish him off and end the suffering.

"Don't forget you put that funny transistor back in" said Tinker Bell. But Tim wasn't listening (he rarely did) because he'd caught sight of some small electrolytics of a type he hated. He disconnected each in turn and tested them. All were in order so in the end he refitted the BC108 in place of the BC118 and the band disappeared.

"I've done it!" he croaked. He removed the short across the colour killer and the colour remained. Until he changed channels, when the colour was lost, even when he reverted to the initial channel. He cheated. He replaced the short across the killer and left it there. He delivered the set and told the lady to turn down the colour control when watching monochrome.

"We always have done" said the lady.

Tim didn't feel so guilty as he left the house, wiping the sweat from his little brow.

confusing, then replace as necessary. In the edition II version of the KT3 R1456 becomes R1587.

Poor HF Resolution

If the picture is not as sharp as it could be, a fractional adjustment of the tuner's i.f. output coil is required – never more than a quarter of a turn. No problems have been experienced with the i.f. module to date.

Tuner

The U321 tuner unit should be replaced if the fault is low gain, cross modulation, etc.

365 Days Shalt Thou Labour

Les Lawry-Johns

That's not quite true of course. We don't exactly labour, because things have been quiet for some considerable time. During the working week that is. Today's sets are far more reliable than those of yore, so there are fewer repairs. Sales are at such a low ebb that when they do occur the wisdom (and ability) of buying replacement stock comes into question, the current account being constantly eroded by rates, taxes, water charges and all the other overheads.

So when a relative of a friend phoned on a Saturday to ask if he could bring his Philips colour set over on Sunday morning, since he lived some twenty miles away and this was the only chance he's get, I agreed. "After ten and collect it well before twelve" I told him. Thinking it would be a G8 or a G11, I didn't see any problems.

A Fiendish Philips

I had a distinct shock when he arrived at ten fifteen with a large set in the back of his car. It was a 26in. set of Swedish manufacture. Fitted with the K80 chassis.

My peace of mind was shattered when he said there were quite a few things wrong. Lack of width (no trouble I thought), no control over the brightness (oh dear), contrast control not working and colour funny (bloody 'ell). "I'll be back at eleven fifteen, Les." Gulp.

I started at the wrong end of course. Let's get the width right first I thought. The circuit of this beast is fearsome – no kidding, it's horrific if you're not familiar with it, and who is? At least I had the manual, but shock followed upon shock as I perused it, which is difficult if your eyes are trembling. I started by changing the two parallel connected PL509 line output valves and the PY500 boost diode. No change. The line drive was, er, odd. So I decided to have a go at the uncontrollable brightness and contrast – in fact there was no contrast, the modulation consisting of chroma only, so that when the colour was turned down all we had was a bright, blank raster. "Fancy that" I thought.

When time is pressing it's not easy to examine the circuit carefully and make the proper checks. But I tried and found the voltages in the video circuit haywire. "Ah ha" thought I. "Why are they haywire? Something's obviously wrong somewhere." With that profound thought I stopped thinking and merely checked voltages. My fruitful search was diverted by seeing that a PCF80 was used in the brightness control circuit. So I fitted another, which made absolutely no difference. I resumed the voltage checks in this area and found that there was no negative supply at R934. This is the −1 (−8·8V) line from the power supply panel, which is bolted on the lower front of the main frame. It's a bit awkward to get at, but checks suggested that there was no positive supply coming from the relevant l.t. bridge rectifier. Removing the panel confirmed this – the BY164 was open-circuit at the positive end.

A new one was quickly fitted and order was restored – full width, control of brightness, full contrast, the lot. Only minor adjustment of the grey scale was required. The trembling subsided and my eyes could focus if I took off my specs. I was free. At only eleven o'clock. But what was this?

Another Mindbender

A car had drawn up outside and a chap was lifting out a G11. No problem thought I. "It's had a new line output transformer, output transistor and several capacitors, but it's still blowing the h.t. fuse and we can't find out why." So off we started again.

A cold check at the h.t. fuse produced a reading of over 5kΩ, so there were no direct shorts. A meter switched to the 500mA range was clipped across the fuse and the set was switched on. Clonk. The line output transistor was unplugged. Try again. Clonk. The edge contacts to the line timebase were removed. Another try and another clonk.

So the trouble must be on the power supply panel. But the only thing after the fuse is C4040, the 47μF h.t. decoupler. The 5kΩ reading was still there, so we removed C4040. I was surprised to find that it appeared to be reversed, i.e. positive to chassis. Surely I must be wrong? On test it read perfectly the right way round, 5kΩ when the leads were reversed. It was put back in correctly. Correct meter reading. Refit the line output panel plugs, plus the output transistor plug. The set now performed perfectly. Fit 1A fuse and everything O.K.

The gentleman left with my curses ringing is his ears. I think the culprit is a reader. Are you listening out there? Only I'm allowed to do things like that, you're not supposed to . . .

Christmas Day in the Workshop

You may say that working on a Sunday morning is no great sweat, and if it doesn't last too long it isn't. But it would be nice to have one day off a year. Not entitled? O.K. What about Christmas Day though, surely . . .

No. At 7 p.m. Fred phoned. "Les. I've got company and the set's gone on the blink. Be a pal and do it for me." Well, we'd sold him the set years earlier, so we told him to bring it along. At 7.30 p.m. he arrived. We whipped the back off, snipped out the mains filter capacitor, fitted another and a new fuse. "O.K. Fred, now off you go."

"Well done Les. Take a pound for your trouble. It's

worth it to me."

"Merry Christmas Fred. Mind how you go. There aren't many left like you."

Come Easter

He phoned again on Easter Sunday. This time his radiogram had gone on the blink and once again he'd got company. "We'd rather listen to records than watch television when we've got company."

He brought it along, upside down, in the back of his estate car. We did the job noting that the spindle was missing, assuming that he'd removed it for the journey. The next day (Easter Monday) we heard from him again. "Les. I didn't phone you yesterday because I didn't think it fair to disturb your holiday, but you've got my record spindle."

"I haven't got your spindle Fred. The set was brought in upside down, so the spindle is probably under the record deck. Lift it up and get it out."

"I don't like to do that. I'd rather you ran over with one and fitted it. After all you're the one who lost it."

"I didn't loose it Fred. You've still got it and as it's an old Philips one I haven't got a replacement."

"What can I do then?"

"Lift up the deck and get the spindle out. If you can't do that, stick a pencil in the hole for now. A short, round one. You can play the records one at a time. I'll nip in and fix it when I'm passing. Cheers Fred."

As it happened I found an old Philips spindle and gave it to Fred when I saw him some time later. Fred phoned: "it won't go in the hole."

I had to make a call in his locality some time later so I popped in. His wife was there. "It's been heaven without those old records of his."

I lifted up the deck and found the spindle. It wouldn't fit in the hole. Fred had rammed a piece of wood down inside and bits of it were still clogging up the bottom. After a struggle I got the pieces out and fitted the spindle. It worked O.K. and his wife wasn't pleased at all.

"I knew you had it" Fred said when I saw him. It's August Bank Holiday this weekend. I wonder . . .

Old Records

A couple of chaps came in and were talking about their very old 45s dating from the fifties. My goodness, they should see some people's collections of 78s. Norman Stevens had such a collection. Remember Norman? The present editor is also reputed to believe that the only proper recording medium is shellac.

My first clear recollection of a record was of the Bing Boys singing "We didn't want to fight but by jingo now we do." This referred to the Crimean War I believe. What do I remember of it?

"The dogs of war have looked for the eagle of the south.

About to throw defiance in the British Lion's mouth.

They're asking for a thrashing, and a thrashing they will get.

Britannia's not prepared to take an insult yet.

We didn't want to fight, but by jingo now we do.

We've got the ships, we've got the men, and we've got the money too."

Well, you asked for it. You can have "The Charge of the Light Brigade" if you want it . . .

Who's Cognizant?

Les Lawry-Johns

I used to be, but it seems I no longer am. This makes even the most simple job long and tedious.

For example I spent a lot of time trying to find the cause of horizontal black lines appearing intermittently across the picture of a Bush set fitted with the T20 chassis. At last I gave up and sent the chap off to Geoff for a second opinion. Within an hour Geoff phoned to ask me if I was all there as he'd put it right in minutes. It was the tube base arcing at the focus pin of course. We all know that one – I keep a dozen tube bases in stock for just this reason, and often lend one out to the simple souls who omit to do so. But I didn't recognise the symptoms myself (cries of "retire, retire!").

No Sound

Then look at last Sunday morning. We are around for only an hour or so while we make up (cook says Mr. Lord) the books and clear up the mess left over from the Saturday madness, before we make ourselves presentable to go and collect the sea food and play our Sunday card game. Just as Honeybunch and I were playing an innocent game of truth or dare however this chap came in with a Thorn 1590 portable (Ferguson Model 3816). He said it had no sound or picture.

Without further ado I whipped off the cover shell and checked the l.t. fuse. It was o.k. So I checked the mains input fuse, which was also o.k. Next I plugged in and switched on. The tube lit up and so did the screen. With an aerial connected it produced a good picture.

"Fancy that" said the chap, but I was already on the track of the no sound condition. Check the speaker and headphone socket. Check the voltages in the audio output stage, then in the bias, driver and audio amplifier stages. I injected an audio signal at the base of the audio amplifier transistor. Loud and clear . . . So I began to think dark thoughts about the preceding chip. Before going further I injected the signal at the centre tag of the volume control. No sound. Turn up the volume control and the sound is loud and clear. "Had to make sure" I explained, "why don't you take it to an expert next time instead of a moron like me?"

The G11

Now everyone knows their G11s. I mean everyone. A lady phoned to say that her Philips CTV had broken down with a white line across the screen and that she couldn't bring it in because it was too heavy. So I arrived with a complete case of G8 and G11 spares. It was a 26in. G11. Now any fool knows that field collapse is due to the TDA2600 i.c., with perhaps the 800mA fuse gone as well, and that the 470μF h.t. reservoir capacitor is possibly responsible for the chip and maybe the BU208A failing.

I whipped open the spares box and rummaged around for a TDA2600. Looked here and there until she picked one up and asked "is this what you're looking for?" Oh dear, but I took it from her gratefully. Next unsolder the heatsink and remove the faulty chip. The solder hadn't been disturbed, so I presumed it was the original one. I was surprised to find one pin folded upon itself: it had obviously made contact, so I fitted the new chip and checked the fuse which was intact. The 470μF reservoir capacitor was a red one and had been sparking at the rivet. In went a new one. "This would have caused you trouble later" said I, "so it's better out than in." "Of course" she agreed. As all seemed to be in order I switched on. The raster came up with incomplete field scan and collapsed, tried to build up again and collapsed. I checked the voltages: the 40V supply was smooth, but the voltages around the chip rose and fell together. Tried this and that to no avail. "I'll pop it back to the shop where I can check it more thoroughly" said I.

Off came the frame and I lugged the set out to the car, trying not to huff and blow. Back on the bench I checked the associated components, having fitted another TDA2600 just in case. Everything checked out o.k., though the voltages were all over the place of course. The new chip then went short-circuit and blew the fuse. I checked the voltages with no chip in: all were as expected and steady. Another chip was fitted and the comedy continued. The evening shadows fell, my spirits with them. At last I gave up.

In a dream I saw someone holding a TDA2600 with one leg folded up, and wondered what this foretold. Next morning I paid a visit to my friends Don and Raymondo. I told them how upset I was and why. "It's the holder" said Don. "It's the holder" said Ray. What wise boys they are. Of course it was the quil to dil chip holder. The folded up leg on the old chip had opened up the clip so that a new, unfolded leg couldn't make proper contact. All was well when a new holder and a new chip were fitted.

I rushed the set back to its owner. She saw me puffing up the path with it and opened the front door. There she stood, making it difficult to enter. I tried to get past but the set, and she, got sort of jammed in such a way that I felt embarrassed. "Awfully sorry" I gasped. "Don't worry about me, just push through." If it had been a bloke I'd have told him to . . off out of the way, but I didn't like to as she was a lady. So I pushed back on her to make way for the set. It was now obvious to me that she was a lady, but I didn't linger long. In went the set, pulling me with it, while she still stood against the door jamb as though nailed there. I think the edge of the frame just ran down her backbone and she was frightened to move in case she broke in half.

So ended another right muck up. Anyone else would have thought about that folded up pin, but all I could do was to dream about it.

A Right Pair

Then look what happened when I went to fix a set that wouldn't tune properly. I got it tuned all right, but when I came to leave she asked me (another lady, who's a friend of ours) how much. Didn't want to charge her at all, but I didn't want to offend her either. So I said a pound. She gave me this, commenting that it was obviously not enough for the call, and went out to the kitchen to get something else for me.

She came back with two large pears and suggested I put them in my box. There wasn't room for a peanut, so I put one in each trouser pocket. I felt a bit uncomfortable whilst driving back, but soldiered on. When I got back and went into the shop both legs were soaking wet and my trousers had changed colour. Ever helpful, Honeybunch

said "couldn't you wait?" "Margaret sent us some pears" I tried to explain, showing her what was left.

Birds

In came this pretty young girl with a radio cassette. So I thought I'd show off a bit and do it whilst she waited. It was used on mains only, so I checked across the plug pins and found that the transformer's primary circuit was intact. Off came the back to check the fuses. Both the mains and the l.t. fuses were intact, so I plugged in to see what we had or didn't have.

There was a.c. from the transformer to the bridge rectifier. There was about 10V d.c. across the reservoir capacitor. A lead went from this point to the mains socket for switching purposes, and there was no output from the switch. "Simple" said I, "got it now." Since battery operation was never used, and indeed there was no sign of a negative lead from the battery compartment, I shorted the switch contacts across, expecting the set to burst into life. It gave a grunt and the 10V reading dropped to zero. "There's probably a short and it's probably blown the fuse" I said, with a sickly smile. The fuse was intact. I removed the screwdriver from the switch contacts and the 10V reappeared across the reservoir. I removed the mains plug and prepared to look for shorts. There were no shorts and the 10V remained across the reservoir. Since the voltage was still present I thought that the bridge had charged the reservoir and that all was well in this department. I again shorted the switch contacts and the 10V fell to zero. "I'll leave it with you then" said the girl, "and call back later. Perhaps you'll have got someone else to see to it in the meantime."

I stared at the set and called it a nasty name, like I call the bird when it goes to bite me. Once again I plugged it in and the 10V appeared at the reservoir. It remained there until I shorted the switch, this time with a permanent soldered connection. There was no voltage at the reservoir capacitor but there was at the output from the bridge rectifier, half a millimetre away. I applied the iron to the seemingly perfect joint and the radio burst into life. How the bridge had charged the reservoir capacitor across a high-resistance gap had once more fooled me.

I mentioned a bird just now. It's taught me the meaning of the term "bird brain" you see. A while ago one of Honeybunch's relatives was posted to Northern Ireland – he's in the army. Anyway, he thought the bird wouldn't be safe, so he gave it to HB who he knew would be crackers about it (true). It's not very old, about six months, so HB says we've got to be patient with it. It's a very handsome cockatiel. HB calls it Crystal and I call in Grumpy, and because of our cat we have to keep him upstairs. So for the best part of the day he's on his own though he gets plenty of attention from six o'clock onwards. HB talks to him continually. "Who's a clever boy then?", "there's a pretty boy" and all that sort of thing. He's yellow and white with orange patches on his cheeks. I add my terms of endearment – "who's a made up ponce then?"

In spite of all this loving attention he remains wary, suspicious and downright spiteful. He pecks through his millet at a great rate then squawks for more. When HB tries to give him more he attempts to bite her. I've told her to put him on iron rations for a week to teach him to be grateful but she'll have none of it.

All right, so he's mentally disturbed. Something nasty must have happened to him when he was younger. Yes. He was hatched.