

RADIO INFORMATION BULLETIN

NEW ZEALAND POST OFFICE

SEPTEMBER 1963



Volume 13

COVER PHOTOGRAPH

Mr J.C. Greig, Engineer-in-Chief, and Mr E.W. deLisle, Superintending Engineer, Radio, with full scale model of 'Telstar' as constructed in Radio Section by the Radio Technician staff of the radio development workshop.

IN THIS ISSUE

1. From the Radio Section, Wellington East
 - (a) Re-organisation of Radio Section
 - (b) Retirements, Radio Technician Staff
 - (c) Radio Technician Staff: secondment and special leave
 - (d) Development Workshop
 - (e) Land Mobile Services Sub-Section
 - (f) Radio Section Laboratory
 - (g) Frequency Registration Sub-Section
 - (h) Radio Mechanics' Training School
2. From the Radio Depot, Auckland
3. From Awarua Radio
4. From the Blenheim Depot, Nelson District
5. From the Christchurch Radio Depot
6. From the Hamilton Radio Depot
7. From the Napier Radio Depot
8. From the Palmerston North Radio Depot
9. From the Radio Depot, Wellington
10. From the Rotorua Radio Depot
11. Next Issue

This bulletin is published by the Radio
Section, Engineer-in-Chief's Office,
General Post Office, Wellington.

1. FROM THE RADIO SECTION, WELLINGTON EAST.

(a) Re-organisation of Radio Section

On 5th August, 1963, the Radio Section gained a second divisional engineer. Mr Emmett on this date released control of about half the sub-section, retaining trunk-line radio services, general services, material and technician services. Mr Cassey took over mobile radio services, technical operation, frequency register and radio inspection.

(b) Retirements, Radio Technician Staff

Before the next issue of the Bulletin becomes available the following retirements will have taken place.

30.9.63	R.T. Allsop, Senior Technician, G.P.O.
24.12.63	E.J. Hancock, Senior Technician-in-Charge, Awarua Radio
31.1.64	W.R. Schdroski, Chief Technician, G.P.O.

Only two previous retirements, George Blake and Jack Hogan, have taken place in the Branch. The three officers now retiring are all old timers from the Telephone Exchange Mechanics Branch, the ranks of which are now becoming quite thin.

Young Andy Smith is, however, good for a year or so yet.

Some parting observations by the Chief Technician who is shortly to retire:-

"The race is divided into two classes - those who go ahead and do something, and those who sit still and inquire, 'Why wasn't it done the other way?'"

O.W. Holmes.

"There is no squabbling so violent as that between people who accepted an idea yesterday and those who will accept the same idea tomorrow."

Christopher Morley.

(c) Radio Technician Staff: secondment and special leave

The number of skilled radio technician staff on secondment and special leave is now eight, and two additional officers (Class IV) have obtained approval for their release on twelve months' special leave. This total of ten represents approximately $7\frac{1}{2}\%$ of all skilled radio technician staff and as all except two are from Wellington, the effect on work in this area is, of course, of noticeable proportions. An additional senior technician on secondment to Justice Department has this year has permanently held by that Department.

(d) Development Workshop

Over the past few months a wide variety of projects has been undertaken with the usual urgency and pressure.

We take this opportunity of congratulating Peter Munro on his selection by the New Zealand Council for Technical Education for study in the United Kingdom and wish him a pleasant and interesting stay in England.

With Peter's departure a further vacancy exists reducing our staffing strength, the total being 13, of whom 8 are 1st and 2nd year juniors.

Mr John 'Tivoli' Moore our recorder for many years was farewelled recently and the position is still vacant. Know of anyone interested?

We congratulate Allan Jones, recently transferred from the region, on being selected as assistant Instructor for the training school.

Of the many projects completed, the manufacture of a full scale replica of 'Telstar' for display in the Post Office stand at the Trades Fair was an unusual and interesting work. Approximately 100 sq. ft. of Ali sheet was used, which was cut to exacting dimensions and the 200 pieces were assembled with 2,000 odd pop rivets. The product is depicted on the cover sheet of this bulletin.

Some of the major works completed or under action are as follows:

1. Repair of Broadcasting T.V. Camera Cables.
2. Manufacture of fifteen 80 Mc/s folded dipole aeri-als.
3. Manufacture of misc. filter racks, heat panels, power panels and aerial harnesses for Land Mobile Installations.
4. Manufacture of three coaxial hybrids.
5. Construction of two Pan & Tilt mechanisms for Trunkline site testing.
6. Assembly of 250 kits of mouldings and parts for modification of B.P.O. 706 telephones for press-to-talk operation.
7. Modification to Lenkurt microwave site testing equipment.
8. Manufacture of twenty talk-back, transistorised probe amplifiers.
9. Manufacture of forty-five 'Pye receiver' test units.
10. Manufacture of eighteen transistorised audio level meters for use in Radio Inspection vehicles.
11. Manufacture of eighteen misc. H.F. aerial wide-band matching transformers using epoxy resin techniques.
12. Manufacture of Scott Base and Rarotonga Radio-telephone terminal equipment.
13. Manufacture of fourteen, 40 Mc/s aeri-als and twenty-two coaxial filters for the transport service.
14. Modification of two G.E.C., 5-channel terminals to low-band operation for the Te Anau-Manapouri toll link.
15. Modify frequency band of HM104 equipment for Napier-Gisborne trunkline system.

In conclusion we congratulate the successful applicants for the Class V positions and look forward to welcoming the new faces to Radio Section.

(e) Land Mobile Services Sub-Section

(i.) Transport Department Service

As you may be aware, the Transport Department has become our largest exclusive-channel user. Since December, 1962, 16 sets of base and fixed-control equipment have been installed and are providing service on either of two 40 Mc/s channels, from eleven base stations. This service now covers a large portion of the North Island, also Canterbury and South Canterbury in the South Island. During the next four months, it is planned to establish a service from a further nine base stations. This will give the Transport Department a service area of almost all of the North Island and the eastern and southern districts of the South Island.

The base frequencies used for this service are:

Channel No. 1 - Transmit 40.325 Mc/s,
receive 42.4 Mc/s.

Channel No. 2 - Transmit 40.275 Mc/s,
receive 42.35 Mc/s.

Channel allocation has been arranged to place adjacent areas on different frequencies, wherever possible. In some instances, however, it has been found necessary after a period of operation either to re-allocate channel numbers or to adopt a system of spaced-operation, in order to minimise mutual interference effects in overlapping coverage areas.

The motor car equipment used by Transport Department can be switched to either of the two channels. To date, approximately 160 cars have been equipped, a larger number of which are already in service. In addition, 60 motor cycles are to be fitted with single-channel equipment when this becomes available from the manufacturer.

The base and fixed-control equipment for the nine additional stations is due to be supplied from the manufacturer by early October. Aerials and coaxial filters of an improved design are at present being manufactured in the Radio Section

Workshop, and it is expected that this equipment will be available by late October. It is planned to have all this equipment installed in time for the coming Xmas period and Royal Tour.

(ii.) Frequency Measuring Equipment

An order has recently been placed overseas for seven frequency meters for use at Radio Depots. The instrument selected is the TELMAX-SOUTHERN Type TD1, a heterodyne type frequency meter which employs frequency synthesis techniques. The accuracy is quoted by the manufacturer as ± 2 parts in 10^6 under normal conditions, with a possible accuracy of ± 4 parts in 10^6 . These figures are of a much higher order of accuracy than any of the other fifty instruments for which quotations were received. The measuring range of the instrument is 0 - 3,000 Mc/s, with a fundamental range of 30 - 93 Mc/s.

Digital display frequency counters were given serious consideration and have some advantages where non-technical or partly-trained personnel are carrying out frequency measurements. However, the high total cost of a counter plus suitable transfer oscillator cannot be justified for Depot use at this stage.

(f) Radio Section Laboratory

Mention was made in the last bulletin of the increasing number of type-approval tests carried out. Citizen band transceivers have formed a substantial part, numerically, of recent type-approval submissions.

It is of interest to note that all these sets have been 100% transistorised and with the exception of one locally made unit, all have been of Japanese origin.

The recent arrival in the Lab, of 14 portable T.V. receivers for the Radio Inspectors has caused considerable eyebrow raising. These 20lb units offer an 8in (diagonal) picture, operation from 230-volt mains, 12-volt D.C. car battery supply, 12-volt internal rechargeable batteries, float charger and main charger.

The internal cells will give reception for about 3 hours and are recharged overnight by plugging the receiver into a mains outlet and operating a charge switch. The whole unit is designed to attain the greatest number of components per unit volume and takes the form of a box arrangement of printed circuit boards. Servicing is not the nightmare it would at first appear. The total power consumed by 37 diodes and transistors, two high voltage valve rectifiers and the picture tube is 14 watts, roughly the same as a car tail-light.

A 4-track, stereo tape-recorder is another very interesting item at present on its way through and demonstrates the very successful combination of printed circuit boards with standard valves and components.

Jobs with adventure always seem to appeal to radio men and the latest to succumb is Tony Horsfield who at the time of writing is training at Ruapehu as a member of the recently selected 1963-64 N.Z. Antarctic party. Tony is no mean bushman and hunter, and happy winter nights spent soaked to the skin in the back-blocks waiting for the dawn and the deer have no doubt hardened him somewhat already.

(g) Frequency Registration Sub Section

Radio Frequencies: Use them or lose them.

At the Administrative Radio Conference Geneva 1959, it was recognised that many countries have unused frequency assignments recorded in the Master International Frequency Register. To assist other countries often desperately seeking assignments in the congested bands between 3 and 27.5 Mc/s, International Radio Regulations 515 and 516 were drafted.

Under these regulations a country seeking an assignment can monitor a channel already recorded for a second country and on finding the channel satisfactorily clear of signals, the first country can then activate its own service. When the first country applies to the International Frequency Registration Board at Geneva for recognition of its rights and says it has operated for 60 days without complaint of interference the IFRB then asks the second country for comments concerning their use of the channel. Frequently the second

country is obliged to admit it is not using the frequency to the maximum extent in accordance with the registered data. The first country is then given international recognition and is able to carry on using the frequency legally.

As far as New Zealand is concerned it is essential that all operating organisations here keep a close watch on harmful interference on their assignments. For example a New Zealand Forest Service assignment lost its international night-time protection in favour of an American circuit in the North Pacific. This was because the N.Z.F.S. were unable to satisfactorily identify the U.S. station and also because the N.Z.F.S. use of the channel at night was very limited. We are letting the N.Z.F.S. retain the New Zealand rights to the assignment, both day and night, but can no longer claim protection against night-time interference.

It is obvious, that the vagaries of propagation, including changing sunspot conditions in particular, will very much affect the application of RR515 and RR516. However, after operation through a complete sunspot cycle a review can be claimed to regain international protection for the assignments.

(h) Radio Mechanics' Training School

The radio mechanics' training school continues to work at high pressure and since the last bulletin was issued in May, two 1st, two 2nd and one 3rd stage school have been held. Trainees gaining top marks in the 1st and 2nd stage schools were Garth Christensen and Bruce Callander. The position regarding the two recent schools is still indeterminate.

Kávin Watson recently returned to the Wellington Region after a year in the school as assistant instructor. Trainees of the future may well have quite a lot to say about Kelvin as he has largely been responsible for the preparation of the proposed 1st stage experiments. He is being replaced by Allan Jones.

The first stage school scheduled for September has been cancelled and Ian Grant will be using this time to develop the training lab which is to be established in the room recently vacated by the Radio Inspectors at

at Rugby Street.

2. FROM THE RADIO DEPOT, AUCKLAND.

- (a) Expansion of V.H.F. services in the Auckland district continues at a steady rate with a grand total of 108 channels. Mt Eden with 80 of these is now using six channels in the 81 - 88 Mc/s low band, some subscribers having been persuaded to vacate the high band (156-174 Mc/s) channels and move to the 25 kc/s area spacing of the lower band.
- (b) Modifications to Pye transmitters to incorporate protective bias on the driver and final stages are proceeding steadily and have already cut down the valve consumption which is a good thing considering the shortage of the QQVO3/10 tubes. The Lister diesel emergency power plant at the receiving station is now installed and working satisfactorily, being able to carry the present station load with something still in hand. It has enabled us to tidy the station by disposing of the networks of power cords previously required to ensure that only the most essential subscribers were connected to the two Onan engines formerly in use. Sightseers visiting the mountain top are now making use of the look-out built on the roof of the receiving station. The days of the type 48/52 V.H.F. sets in Auckland, at least, are coming to an end; Mt Eden only has two sets left on the Police Channel of 77.5 Mc/s and their days are numbered now as the Police are at work changing down to the 40 Mc/s band. Whangarei has six 48/52 type sets and Manurewa has one in use still.
- (c) At Auckland Radio, staff have been occupied with re-cabling and jumpering as a result of the re-routing of all the circuits that previously went to Auckland via the undersea cable to St Heliers being now routed via Tamaki-Ellerslie. The underwater cable to St Heliers is literally on its last legs and will preferably not be repaired again.
- (d) Authority for the reconstruction of Auckland Radio has been obtained and the equipment is to be replaced with modern equipment suitable for unattended operation.

- (e) Asst. Engineer, Colin Shackleton from Wellington, and Auckland Depot staff have been conducting further tests on the Telefunken D.F. set in an attempt to make it usable in the small ships' band. At the time of writing their efforts appear to have not met with success.
- (f) Many technicians throughout the country will have nostalgic memories of their stay at the hostel at Musick Point which is to be closed in October. It is believed that the buildings are to be pulled down as their distance from Auckland, about 15 miles, makes them an unattractive proposition for use by staff employed in the city.
- (g) Depot staff in their spare time are all keen T.V. experimenters now, so much so that at morning tea the conversation is 'did you see so and so last night' instead of the usual subjects. A minor 'flu' epidemic has been raging throughout the depot, almost everyone has had two or three days off with it.
- (h) Winter time in Auckland usually turns out to be field survey season and this past one was no exception. Surveys from the Moirs Hill site near Warkworth were conducted on 40 Mc/s and 105 Mc/s in the usual cold wet conditions that prevail for these jobs. The purpose of these tests was to see if this site would prove better than the Kraaks Hill station several miles north of Warkworth. The 40 Mc/s equipment and aerial were loaned by the Police Department for these tests.
- (i) Auckland Depot staff have provided public address systems for more Post Office and Telephone Exchange foundation stone laying or opening ceremonies than ever before.
- (j) The G.E.C. picture machine installed at the Chief Post Office continues to send and receive pictures with a minimum of trouble considering its age and the amount of service it has seen.

3. FROM AWARUA RADIO

The Invercargill Construction Branch have been active in the Lake Manapouri area preparing the aerial systems for the West Arm to Te Anau V.H.F. radio link. The aerials should be erected by early September when it is hoped to have the equip-

ment buildings in position. The G.E.C. 5-channel equipment modified for operation on the 80 Mc/s band, should be installed by the end of September.

A communications link is proposed between Doubtful Sound and Awarua for the tail-race contractors of the Lake Manapouri Hydro scheme. This link will operate in the 2-5 Mc/s band and at Awarua it is proposed to use an R.C.A., type 351, transmitter and a Philips type 1655 receiver associated with B.P.O. terminal equipment. The terminal at Awarua will be extended to Invercargill by cable where the contractors have established their administrative office. The frequencies allocated have been checked for possible interference on existing services at Awarua, and it was thought that the link would be operational early in September when the contractors moved into Deep Cove.

Communications equipment, Marlin type 75, has been tested recently at Awarua, before being installed at Puysegur Point Lighthouse. The placing in service of this equipment will follow the change-over from 110-volt D.C. to 230-volt A.C. generating plant, which is planned for October. It is possible that the near future will see the replacement of the radio beacon equipment with 230-volt, A.C. type.

It is hoped to have the Telefunken Direction-Finding equipment in service in October. The Invercargill Construction Branch are at present preparing the 100ft spliced pole and mounting base for the aerial system.

A permanent V.H.F. building at Bluff Hill is nearing completion and estimates are in hand for the change-over of equipment into the new building. The 50-watt, Tait equipment recently placed in service on the Police channel will be retained in the old building, which is being taken over by the Police Department.

4. JOTTINGS FROM THE BLENHEIM DEPOT, NELSON DISTRICT

- (a) Our present depot quarters, described by a recent overseas representative as 'a beat-up shack' is our paramount problem and we look forward to a new depot with all facilities in the near future.
- (b) Marconi 48-channel equipment

Two stations are maintained from Blenheim; Seaview, consisting of two terminal systems across Cook Strait; and Weld Cone, a repeater in the Wellington-Christchurch link. The wettest season experienced for many years in Marlborough has affected country roads and has made access a problem, especially to Weld Cone where many slips have occurred. Under these conditions the Land Rover has been indispensable and has been used extensively.

(c) Marine Department, Radio Beacons

The Brothers and Stephens Islands maintenance, originally carried out by Wellington Depot is now performed by this district. Much could be said of the launch journeys and landing facilities involved with these stations and with some of the experiences encountered we would at this stage gladly pass these stations back to Wellington Depot.

Marlin 15-watt, and 75-watt H.F. equipment is being installed at The Brothers Island and Farewell Spit. A 75-watt Marlin recently installed at Stephens Island performs well and is a vast improvement over their original H.F. equipment transmitters type 338 and receiver type I.M.R.

The Isenthal regulator interference is a problem and attempts at suppression have not been successful so far.

Cape Campbell's old faithful, the R.T.E. beacon, is to be replaced with a dual purpose beacon for combined CAA/Marine use. This should occur in October of this year.

(d) Microwave

The microwave site testing party are now regular visitors to this district as testing and road access arrangements progress for the new microwave sites at Jamies Knob and Ward.

(e) V.H.F.

V.H.F. in Nelson include types 48- and 52-base stations covering taxi, Police and public utility services.

Private enterprise development of radio services in this area is rapidly increasing and so far no expansion of Post Office services is evident. Two G.E.C., 5-channel systems from Nelson to Motueka augment the existing toll system.

5. CHRISTCHURCH RADIO DEPOT

Staff are welcoming the start of spring, somewhat delayed this year, and the passing of winter which brought an excess of inclement weather. Maintenance and installation work has been progressing at a steady pace since our last report, plus the usual site-testing expeditions. The Wellington-Christchurch-Dunedin microwave site testing, which relieved us of two or our senior men, has also been under way during this period. Geoff. Sandford, who is on prolonged sick leave is progressing to such an extent that he is at present 'enjoying ill health'. It is possible that he will be back in action about the middle of October and we hope that there will be no recurrence of his illness.

(a) Flood and Snow Breaks

During the winter/spring we were called upon twice to swing into action when flooding and snow threatened to disrupt toll circuits in the 'Main Land'. In the first instance flooding in South Canterbury threatened the south lines and caused some failures. Three technicians went forward to Timaru armed with mobile installations, Landrover and the necessary wet weather comforts to install radio in four of the C.&M. Branch trucks in an effort to expedite repairs and maintain the service.

North Canterbury was the venue for heavy snow falls which caused considerable disruption to north going toll circuits, power circuits likewise suffered. At some stages the Marconi toll radio bearer circuit was carrying all the traffic, the stations at Manuka Bay and Kaikoura were suffering bumps due to power failures. These two stations were manned and after some difficulty due to access road problems the technicians settled down to four days of unpleasantness, due mainly to the lack of heating and cooking facilities during the times the standby was running.

At the same time Mt Alexander Land Mobile V.H.F. Station was without power (there being no standby plant on the station). Access with a mobile engine alternator was impossible. The station was off the air for five days before access was gained and on the sixth day the mains were restored.

Controlling Officers' Conference

Immeasurable benefit was derived from the conference conducted by the Engineer-in-Chief for Senior Technicians held in Wellington. Both District Controlling Officers and Engineer-in-Chief staffs gained first-hand knowledge of each others problems. The amount of discussion taking place during the Conference and the 'shop talk' after hours shows the enthusiasm and the need for such conferences to be held more regularly.

(b) Land Mobile V.H.F.

V.H.F. Mobile Services are still increasing steadily and by the time these notes appear in print some channels will have been transferred from Cashmere and Marleys Hill to the new station at Mt Pleasant. Bruce Campbell was initially on the construction and when he left for the microwave site testing, Kevin Heyward carried on the good work. The station has been ready to receive equipment for some time but delays occurred due to lack of loaded lines and the differences of radiated field strength from aerials at various heights on the 120 ft masts.

Work is proceeding on the installation in the new building at Mt Horrible (Timaru). The target date for operation there, is 1st October.

It is most noticeable that since the gate circuits, on receiver type RR 6001 were modified to real anti-noise gates the tendency of transmitter failures due to the old gates holding has been completely absent.

(c) Microwave Site Testing

Depot staff have recently returned from the field after having tested parts of the path of the proposed Wellington-Christchurch-Dunedin microwave link. As is often the case their testing was carried out during the mid-winter months and as the party moved south so the

extremes of the climate became apparent; flooding, snow-falls, and general low temperatures.

Sites tested were Wrights Hill to Jamies Knob; Mt Alexander to Cashmere; Lowmount to Waitohi.

Accommodation at the sites was provided in caravans, and at two lesser accessible sites tents were used.

Towers erected by Wellington riggers assisted by local staff attained heights of either 54 or 102 feet depending on the 'hop'.

The Marcelli Lenkurt radio equipment operated in the 6 Mc/s band used in conjunction with American test and recording gear proved wholly reliable. The A.C. power supply and regulating accessories caused some concern by their tendency to fail, especially in the early hours of the morning. Vehicles were also prone to failure, varying in degree from blowouts to radiator fans disintegrating.

It is probable that by the time of this publication site testing will be resumed in the Marlborough district following a change of choice of site near Weld Cone.

6. FROM THE HAMILTON RADIO DEPOT.

The permanent V.H.F. building at Sanitorium Hill has been completed and we will shortly be transferring to it the equipment which has been housed for some time in a temporary building. This comprises at the moment, five V.H.F. wide-coverage channels and the 40 Mc/s Transport Department channel which is settling down after a few teething troubles. It had been suggested that the Police Department 40 Mc/s base be housed at Sanitorium Hill also, but as yet this has not been decided. A hill about five miles to the north and 325 feet higher has been site tested by the Police Department as an alternative position for their base. This site was tested during the original investigations into Sanitorium Hill and was found to be unsatisfactory for 100 Mc/s operation.

Construction of the microwave building at Sanitorium Hill is due to commence shortly and a start has already been made on the Kaimai repeater building. Reg Motion paid us a visit recently to investigate the position regarding the

installation of the Lenkurt link terminal and it would appear that little trouble will be experienced in successfully accommodating the equipment in the present microwave screened building and on the present tower.

Dick Cole, our happy Engineer, has left us to take up the position of Supervising Engineer in Wellington and we wish him well in his new post. To his old position we welcome Bob Meyer from Auckland to carry on the good work.

7. FROM THE NAPIER RADIO DEPOT

As the Napier Depot celebrates its second birthday next month, it may be of interest to introduce our staff, and give an indication of the services they maintain.

The original staff of two, Ivan Breayley, and Errol Lilley, has now increased to five, the additions being Colin Smith, John Course and in recent weeks David Crook. Also during the past two years we have been fortunate to have relieving assistance from Terry Frazerhurst, and Brad Smellie. Our regards to those people.

Late in July we took our major step forward and moved into new depot premises. A very welcome change from the previous cramped quarters in Marewa exchange.

Our maintenance area now extends from East Cape to Kahuranaki. So far there has been no Post Office radio development in the southern Hawkes Bay area.

Services maintained are as follows:-

1. Napier/Palmerston North 48-channel V.H.F. trunkline. Placed in service, August 1962.
2. Napier V.H.F. 4 local coverage land mobile V.H.F. channels.
3. Hastings V.H.F. 1 local coverage land mobile V.H.F. channel.
7 trigger base land mobile V.H.F. channels.
4. Kahuranaki V.H.F. 8 triggered wide coverage V.H.F. channels.

5. Gisborne V.H.F. 4 local coverage land mobile V.H.F. channels.
6. Emergency Radio stations at Gisborne, Wairoa and Napier.
7. Marine Department Radio Beacon, and radiotelephone equipment at East Cape and Portland Island.
8. The usual miscellaneous assortment of Radio Inspection, and Construction Branch equipment.

This lot is proving sufficient for the time being.

Our next big addition will be the Gisborne/Napier 48-channel V.H.F. trunkline, programmed for installation next year.

At this stage we offer our thanks to those at Radio Section who have been so helpful during our period of establishment, and also to those at the Christchurch, Wellington, and Palmerston North depots, for assistance so willingly offered in reply to our many queries. We will probably pester you again too.

8. PALMERSTON NORTH RADIO DEPOT

(a) Microwave Link: Intermodulation

Corrosion at some joints in the waveguide runs at stations in the southern section was found to be the cause of intermodulation on the system. This corrosion existed on the flanges of new waveguide and, although cleaned before assembly, it is possible that minute holes or scratches contained moisture which activated further corrosion. Complete drying of the air fed to the waveguide runs is also necessary to prevent trouble.

The fault showed up on the noise meters at the microwave terminal where it was observed that the switching off of one channel - e.g., CH 1 Pm-Urenui caused an increase in noise in channels operating in the opposite direction.

Investigation revealed that a signal resulting from (2A - B) intermodulation could be expected

19 Mc/s from the desired carrier on certain bays and as it was not possible to do this check at S.H.F., it was done at 89 Mc/s, i.e., plus 19 Mc/s from the 70 Mc/s intermediate frequency. For detection purposes an Eddystone receiver was used and the waveguide sections then moved or tapped to locate the faulty joints. This method proved to be very accurate. The suspected joints were recorded and at a time when a traffic outage could be arranged they were inspected, cleaned and re-assembled.

(b) The disappearing shilling

Our two working contributions to a recent school display consisted of an oscilloscope and microphone, to display speech waveforms and an interesting device which came to be known as 'the disappearing shilling'. This latter device consisted of a wooden packing case, suitably covered and serving as a table, displaying on its top a shilling. On the approach of an arm, hand or even finger, the shilling was smartly whipped through a small hole in the box where it would remain until the offending arm was removed. Hand capacity effects on the frequency of the local oscillator of a suitably modified radio were quite sufficient to provide amusement for all.

The display continued to work without our attendance and the shilling was recovered. Who supplied the money? The designer of the device, of course, as no one else shared his confidence and the local Radio Engineer could not be persuaded to part out.

9. RADIO DEPOT, WELLINGTON

With the completion of the new Normandale V.H.F. base station all eyes are now turned towards Pukerua Bay. This work is expected to proceed as soon as authority is received.

Following the Special National Course for Senior Technicians (Radio), many innovations and modifications to all sorts of gear are expected as a result of the gathering together of such a galaxy of talent.

The proposed Wellington - South Island transistORIZED Lenkurt microwave site testing parties have returned to their bases after spending some six weeks or so in the frozen south looking none the worse for their experiences.

It was gratifying to learn that when storm and snow caused cable failures lately, the trunkline radio links maintained circuits under extreme conditions and without interruption apart from a few 'bumps' caused by mains failures.

The reconstruction of Islands Telegraph services in Room 107A at the G.P.O. is well under way and it is expected that much-improved facilities and operating conditions will be provided for the traffic staff.

Finally, "Are you Micro-Minded"?

If you should see upon the street,
A man equipped with dipole feet,
With a family of curves trailing behind,
He's a Radio Techn. with a micro-mind.

His eyes take on a neon gleam,
His ears extend to a Yagi beam,
His mouth becomes another pulse gate,
His heart pumps blood at a video rate.

With micro seconds and micro waves,
And micro volts he fills his days,
And thereby in the course of time,
He develops a micro mind.

This Radio Techn. with the passing years,
Attained infinite impedance between his ears,
And finally succumbed to a heavy jolt,
From what he thought was a microvolt.

The Doc. looked up from his microscope,
Turned to his colleagues and softly spoke,
"No trace of a brain can I find,
He was a Radio Techn. with a micro-mind."

ANON.

10. ROTORUA RADIO DEPOT

Since our last appearance in the bulletin we have established a new V.H.F. base station at Mt Kopukairoa approximately six miles airline south east of Tauranga at an elevation of 870 ft A.S.L. From there we have two V.H.F. urban mobile channels operating, one controlled by a 48-set at Otumoetai, and the Eastern Bay of Plenty Transport Department equipment, also controlled by a station at Otumoetai.

The Transport network here is on Channel 1 minus 4 kc/s and the Eastern Bay of Plenty station on Channel 1 plus 4 kc/s and this appears to be working satisfactorily. Originally Rotorua was on Channel 2 but with the better propagation at the 40 Mc/s frequencies we experienced interference with the Hamilton system, hence the change to Channel 1.

The building in use at the Mt Kopukairoa site is of a very temporary nature and the roading is only Land Rover access, but even this is impassable after rain. However, we have hopes of improvement as the site is giving good coverage. It would make an excellent site for ship-to-short V.H.F. communication if this ever comes into being, as situated where it is in the centre of the Bay of Plenty, it would give a V.H.F. coverage of some 30 miles radius at least.

Whilst I am writing this I can hear Auckland traffic on our Rotorua car receiver about strength 3. What will the future hold in store as 40 Mc/s propagation improves in the next few years?

Our total staff of four is still housed in a building of two rooms approximately 260 sq. ft. of which 72 sq.ft is office space and as a consequence our recruitment programme has been limited. Some temporary accommodation may soon become available which would give us approximately 120 sq. ft. extra in an adjacent building.

Plans are under way for new depot accommodation at the Pereriha St. line yard but will probably take 3 or 4 years to eventuate. This new accommodation will really be appreciated as it is expected we may have to walk 100 yards to the toilets and canteen through a muddy yard.

The microwave development programme is under way, a screened room has been constructed at Mt Ngongotaha, Rotorua, and the coaxial cable laying will have commenced by the time this bulletin comes out. The installation of the Lenkurt system will be eagerly awaited and we can foresee some interesting work coming off.

In conclusion we would like to take the opportunity to express our deepest sympathy to the friends and relatives of the late Peter Gallagher who was killed in a car accident earlier this year whilst en route to the Kawerau auto exchange. Also to the friends and relatives of the late John Luxton, who was relieving at Rotorua, and who assisted us with V.H.F. surveys at Mt. Maraonui and Mt Tauhara in 1961. It was indeed a tragic loss to lose both of these engineers so early in their careers.

11. NEXT ISSUE

It is planned to have the next issue of the Radio Information Bulletin published and distributed during April, 1964 and further issues printed in July and November of the same year.