

Mullard *Outlook*



VOL. 1. No. 2. OCTOBER 1950

Issued by the Mullard Valve Sales Department

MORE FACTS ABOUT THE MULLARD HIGH-SPEED VALVE TESTER

Most Dealers will by this time have heard about the new Mullard Valve Tester. This instrument was demonstrated for the first time at Castle Bromwich, and a short description of it was included in the last issue of the "Outlook". This article gives some facts about the general principles involved.

As mentioned in the last issue, the Mullard High-speed Valve Tester has been designed for testing valves to close limits. For this reason the nature of the tests applied are as similar as possible to the standard production tests to which all valves are submitted in the factory before being passed into stock. The tests are not of course so exhaustive as those carried out during manufacture, but they do ensure that the valve under test is satisfactory in all respects insofar as it is within the approved tolerances of operation.

USE OF PUNCHED CARDS

Arrangement of the test circuit and the selection of the correct test voltages is performed automatically by inserting, in a multiple gate switch, a perforated card which corresponds to the type of valve under test. Three such cards are supplied with each instrument for use when setting up and adjusting the tests. Numbered and punched cards for the actual tests are also available, together with a printed list giving the valve types and the reference numbers of the corresponding test cards. A safety switch prevents damage to the instrument by ensuring that the mains are not switched on unless a card is correctly inserted in the gate.

Selection of the tests in correct sequence is performed by a six-position selector switch, and four push-buttons permit the testing of individual electrodes for insulation, shorts and open circuits.

THREE TEST LIMITS

In place of the conventional moving-coil meter, a cathode ray tube and a vertical coloured scale are employed to indicate the results of the various tests. If the valve is within the specified limits, the spot on the screen of the C.R. Tube is deflected to the green part of the scale. If, on the other hand, the valve fails to meet the test requirements, the spot is deflected to the red part of the scale. A reading in the intermediate

yellow portion of the scale indicates that the valve, although still giving reasonable performance, will probably need early replacement. Assessment of the valve performance in this manner is of particular importance when the instrument is used in the Dealer's shop in the presence of the customer.

CONSTRUCTION

The test apparatus is mounted in a metal case with a sloping panel. All internal components are readily accessible for servicing by removing one or more sections of the case.

The top panel carries a complete range of valve holders to accommodate all current types of valves, and a flying lead for top-cap connections. On the top panel there is also a slot into which must be inserted the perforated card corresponding to the valve under test. The gate switch is operated by depressing the right hand carrying handle. This switch carries 130 pairs of contacts, which are selected by the punched card.

The centre of the sloping panel is occupied by the cathode ray tube face and scale. Beneath it is a pilot lamp which lights up when the gate switch is closed. At the top right hand corner of the panel is situated the switch which selects the tests in sequence, and below it is a rotary switch by means of which fine adjustment of the operating voltage can be made in accordance with the prevailing voltage of the supply mains. To the left of the cathode ray tube are

four push buttons by means of which individual electrodes may be tested for short circuits, insulation and open circuits. The extreme left of the panel carries a diagram giving a key to the valve sockets on the top panel.

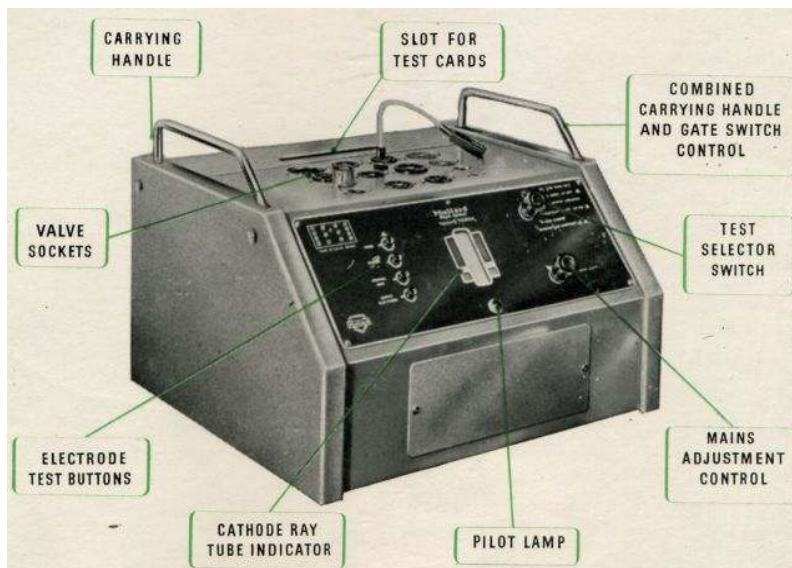
The front panel carries a removable plate behind which are situated the adjustments for zero setting, reject limit setting, brilliance and focus, and for lateral shift of the spot so that, after a long period of service, a fresh part of the screen surface may be used.

MAINS ADJUSTMENT

The instrument has been designed to operate on a 50 c/s A.C. supply of from 180 volts to 260 volts. Adjustment for various voltages is by means of 20-voltappings on the mains transformer located on the control panel, in conjunction with an eleven-position rotary switch operating in 2 volt steps situated on the indicator panel and marked "MAINS ADJUST".

INITIAL AND PERIODICAL CHECK ROUTINE

To ensure that the instrument is functioning correctly, special check cards are available. By means of these cards it is possible to compare the mains voltage against internal standards, and then make any adjustments that may be necessary. Meter sensitivity and the H.T. stabilizer may also be checked.



VALVES ON TEST BEHIND THE SCENES AT WADDON

Once in a weak moment, we asked a dealer if he knew how our Service Department decided whether a returned valve qualified or not for free replacement. "Going by what happens to me", he said, "you toss up for it."

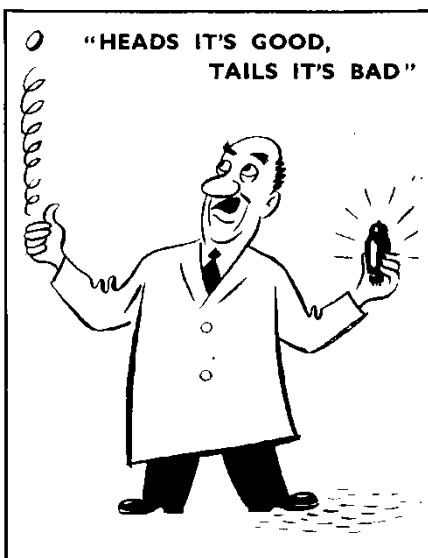
Just in case this view is more widely held than we believe, we have decided to take you behind the scenes and tell all. But first, let us explain that this Service Department of ours plays a very important part in the whole scheme of Mullard valve manufacture. Quite apart from specific testing of valves returned for examination, it feeds back into the factory up-to-the-minute reports of how valves and tubes are performing while at work in a great variety of equipments. But you are only concerned with what happens to YOUR valves, so we will start from the beginning.

PRELIMINARY INSPECTION

After each valve has been unpacked it is given a serial number for identification purposes and the following information is recorded on a "Test Report" form.

1. The Valve type
2. Manufacturing Code Marks
3. The condition of the valve—under such headings as base, pins, marking, metalizing, etc.
4. General remarks, such as whether the bulb is intact, whether the valve was securely packed, etc.

This report is then attached to the B.V.A. application form which, of course, must accompany each valve returned for testing. The valves together with the documents are then placed on trays and passed on to the testing section.



STANDARD STATIC TEST

In the test room there are a number of testing stations using a specially designed test board, which can be set up to provide the electrical conditions laid out in the test specification of every standard type of valve. Here the following tests are made in succession:—

- (a) The filament—test for continuity and consumption
- (b) Insulation
- (c) Vacuum
- (d) Emission
- (e) Characteristics

In checking the characteristics, three points on the static anode current/grid volts curve are established. The conditions set for this test are in general those set for the final factory test, but if a valve which is "out of guarantee" is workable but slightly below test limits, the dealer is informed that although the valve has passed its prime it is still serviceable.

If a valve fails on any one of the static tests, further tests are not taken, and the reason for failure is written on the valve in yellow crayon. If on the other hand the valve is electrically good, it is given a short run in an actual receiver and the results are noted.

It should be mentioned that while the valve is actually on test, it is all the time lightly tapped with a leather-covered hammer in order to reveal any intermittent faults such as those resulting from poor connections.

THE FINAL VALVE REPORT

When the tests have been completed the valve is matched up with its original documents, and the test results are transferred to the Test Report. The valves are then placed in a special store pending completion of the paper work.

The B.V.A. form, together with the Test Report, is now passed to the office where each case is considered on its merits, and a decision is made on the action to be taken. If a valve

is to be replaced free of charge, or if it is considered that no replacement is called for, this is noted on the report sheet, and the Dealer is notified accordingly. If, however, a decision cannot be made immediately or further information is required, the reason is written on the test form and a letter is sent to the Dealer explaining the position. Among the reasons for postponing a decision are the following:—

- (a) Parcel received with insufficient information to identify the sender
- (b) Valves not of Mullard manufacture
- (c) The B.V.A. application form incomplete or illegible
- (d) Insufficient data provided concerning the alleged fault
- (e) Valves apparently broken in transit. In such cases the sender is advised and the carrier is notified, the parcel being retained for inspection
- (f) Valves returned by private user and not through a recognised Dealer

REVIEWING THE TEST DEPARTMENT'S DECISION

It is inevitable that in a certain proportion of cases a Dealer who is told that a valve cannot be replaced free of charge, will appeal against the decision. In such cases the whole matter is reviewed by a special department which had nothing to do with the former decision. If on this review it is found that the first decision should be reversed, appropriate action is taken. Alternatively, the first decision is confirmed.

For example, if a valve is returned with the simple statement that it is "faulty", nothing more can be done than to test it under standard conditions, and if it passes the standard test it is returned as a good valve. But it sometimes happens that a valve which will pass the usual static test may display curious symptoms when operated under specific conditions, and if the customer later on discloses such additional information, the Mullard Service Department is always willing to re-test it in the light of the new information.

MULLARD at the Engineering Centre, Glasgow

The Communications and Industrial Valve Department of Mullard Electronic Products Ltd., are playing a very important part in the development of electronic equipments as applied to Communications, Industry and Research in this country. This is demonstrated in an interesting way by a special display on the Mullard Stand at the Engineering Centre, Glasgow. In this display various groups of valves and electron tubes are linked with important applications in various branches of electronics.

Five separate panels are arranged to show typical uses of Mullard products in the following fields: Research; Industrial Measurement and Control; High-Speed Industrial and Scientific Photography; Communications; and Radio-Frequency Heating Processes. The groups of products displayed range from sub-miniature electrometer valves capable of detecting minute electric currents of the order of one millionth of a million ampere (10-12 amps.) to power valves giving outputs of up to 10,000 watts at 30 Mc/s.

Dealers and Service Engineers in the Glasgow area who are interested in the ever-expanding advances in electronic techniques, would, no doubt, like to see this display. So when you are next in Sauchiehall Street, why not visit the Engineering Centre!



The Mullard Stand at the Engineering Centre, Glasgow.

IMPORTANT SERIES OF LECTURES

During the past six months, members of the staff of the Mullard Electronic Research Laboratories, have been giving a series of lectures on "Industrial Electronics" at the Engineering Centre, Glasgow.

The last of these lectures is to be given by H. A. Dell, Ph.D., and B. E. Noltingk, Ph.D., A.Inst.P., on October 12th, at 7-30 p.m. The subject will be "Vibration Test Methods and Measurements". In this lecture it will be shown that the use of electronic methods of measuring small movements has enabled a far greater precision to be achieved in studying the behaviour of mechanical structures. The principles on which such methods are based will also be discussed and the complete apparatus that is now available will be described.

Should any Dealers and Service Engineers in the Glasgow area, who are interested in this important branch of electronics like to attend this lecture, they can obtain tickets and further details from the Engineering Centre.

The previous lectures in this series were very well received. The first dealt with the fundamentals of ultrasonics, and an outline was given of the possibilities of this rapidly-developing science in the physical, chemical, and biological fields. Lectures were also delivered on the general properties of industrial electronic instruments, and the latest developments in photo-electric devices.

EXHIBITION OF ELECTRONIC FLASH PHOTOGRAPHY

A special exhibition of electronic flash photography, organised by Ilford Ltd. in collaboration with Mullard Electronic Products Ltd., will be opening at the Engineering Centre, Glasgow, on October 16th, and will remain open to the public for two weeks.

This exhibition was held earlier in the year in London at the Holborn Gallery of Ilford Ltd. The interest it then created may be judged from the fact that a number of the pictures exhibited were televised in the well-known Picture Page programme on June 22nd. Interviewed during this programme, Mr. G. A. Gilbert of the Mullard Communications and Industrial Valve Department stated that the wide range of electronic flash tubes now being manufactured in this country were the finest in the world.



Leslie Mitchell interviews Mr. G. A. Gilbert and Mr. K. H. Gaseltine of Ilford Ltd. on Television Picture Page Programme.

Of particular importance among these tubes is the well-known Mullard 100-joule tube LSD3. This tube, having established itself in Press photography, is now finding extensive use in commercial, industrial, medical and scientific photography. It has been designed specially for use in light-weight, studio and portable photo-flash equipments, and is particularly noted for its high luminous efficiency, small size and reliable triggering with a low triggering voltage.

Dealers in the North who are interested in the electronic flash business should find the Exhibition in Glasgow of particular interest. They will see from the large number of fascinating pictures taken with the LSD3, the great possibilities of this popular tube in every branch of photography. They will in addition, be able to see a display of special tubes, and a representative selection of the latest electronic photo-flash equipments.

OUR FRONT COVER



Miss Petula Clark, the popular young film, radio and television star, was one of the celebrities who visited the Mullard stands at Castle Bromwich. Here she is seen comparing a miniature television valve with a giant model of a similar type.

EDITORIAL

POWERFUL ALLY

When all is said and done, your job in life—and ours too—is to provide the public with the means of receiving radio and television transmissions. The quality of the products we sell and the nature of the services we provide are, of course, vitally important. But what the public really buys is B.B.C. entertainment.

In the case of Television, for instance, it is clearly the programme which must be sold first, and that is the reason why everybody anxiously watches the development of the B.B.C. transmissions. But one need not leave it entirely to the B.B.C. to sell its television service. Every dealer can help himself by displaying not merely the means of receiving the programmes, but also publicity about the programmes.

The B.B.C. can be a very powerful ally in our business. On another page in this issue, you will read a B.B.C. statement which Mullard have been given permission to use in advertising and publicity. It is a statement of considerable significance and, if fully exploited, cannot fail to help you sell more valves and service, and probably more sets, too.

We are going to assist you to take advantage of this opportunity by national advertising in the "Radio Times". We will also provide you with window publicity and literature. But the ultimate success of the campaign will depend upon you. While it may not be possible to go to the same lengths as Wm. Grime and Sons Limited, whose bold attack produced such handsome dividends, it will certainly pay you to devote a portion of your windows permanently to this and other valve replacement publicity.

Editorial Offices:

CENTURY HOUSE, SHAFTESBURY AVENUE LONDON, W.C.2

Published by:

MULLARD ELECTRONIC PRODUCTS LTD.

VALVE SALES UP 33%!

BOLD EXPERIMENT INCREASES VALVE, SERVICE AND SET SALES

Wm. Grime & Sons Ltd., of Wigan, have been established in the Music Trade for nearly 100 years, and they have been handling radio from its inception. Their radio business to-day is very substantial, and a large, fully equipped service department accounts for a big percentage of the turnover. The service department staff comprises three qualified engineers and two apprentices. Over £1,500 of valves, tubes and components are carried in stock. The Company also operates three vehicles.

We are indebted to Mr. G. Leslie Marks, Managing Director of the Company, for sending us the following story.

A short while ago I had the pleasure of meeting Mr. D. M. Hall, Manager of the Mullard Valve Sales Department. He called on me in company with my good friend Ted Wilding. We got around to discussing the valve replacement market and the apparent apathy of dealers in going out for it. We all agreed that the retailer does not give sufficient time or window space to valves, and when they had me agreeing that this was so, they had me, and I really mean "Had me". I finally offered Mullard the use of our best selling window for a full and exclusive display of radio valves for a fortnight.

The sales staff went right up in the air when I told them about it. "What! waste a good window for a valve display? It's crazy!" They then handed me wonderful arguments against it, proving by figures that I would have to sell colossal numbers of valves to make up for an "x" number of sets they anticipated selling. Well, after a lot of argument I got my own way, perhaps because I am the Managing Director.

Before the display arrived we inserted a number of small advertisements in the local papers suggesting that sets might have valve trouble. Then the display arrived,

and the Mullard Publicity Department certainly did us proud. The display was installed amid the groans and grumbles of the assembled salesmen who cast all sorts of gloom over the poor bloke who was making the show. After it was all finished I had qualms about it myself, even though it looked very nice, very impressive and carried a good message—"Your set will relive if you revalve with Mullard".

After the show had been in two weeks, it was taken out and a standard window dressing made. The display has now been out a month and the following information may be of interest to other members of this much maligned trade.

Our valve sales are up 33%, set sales about 12%, and the service department has had an increase of about 15% in paid service. The salesmen all now agree that it has been very useful indeed. It brought people into the shop, many new contacts were made which will result in sales in the future, and most important of all, a reputation is being established for a radio valve centre which is resulting in a great many more people buying new sets after they have had a talk with our salesmen and technical staff. (Anyone want any part exchange sets?)

From the Trade's point of view, a big attraction at the Castle Bromwich Exhibition was the Mullard High-Speed Valve Tester. In this picture Mullard Representative, R. Webb, shows one of the many lady visitors how simple the instrument is to operate, and how a complete set of valves can be accurately tested in a matter of minutes.



New Mullard Advertising Quotes B.B.C.

Important statement will pull in thousands of New Prospects

The B.B.C. is concerned quite as much as the Radio Industry with the maintenance of a high standard of reception. For this reason they have made a direct appeal to listeners to consult their dealers regularly. And Mullard, who have already done more in this connection than anybody else, have now been given permission to quote them.

The B.B.C.'s statement, which is reproduced on this page, provides an opportunity for sales promotion which no dealer can afford to miss. By tying up with the new Mullard campaign, every retailer can take immediate advantage of it.

MESSAGE WILL REACH 8,000,000 LISTENERS

Over the next few months—at a time when it is most needed—Mullard will give dealers greater support than ever before. Window publicity, literature and sales promotion ideas will be backed by advertising which will positively reach three-quarters of all the listeners in Great Britain.

The press advertising will be concentrated in the "Radio Times" which is read by nearly eight million listeners—everyone an ultimate prospect for new sets, new valves and service. The campaign will commence with a preliminary advertisement on October 6th, and will continue with

frequent insertions throughout the coming five months. The advertisement which is to appear on October 20th, is reproduced on this page. It features the new Mullard character, Sidney, and is the key to the whole scheme. It is designed to enable you to make an immediate tie-up with it.

PUBLICITY ALREADY DISTRIBUTED

Together with this issue of the OUTLOOK you will have received the first supply of new Mullard window publicity. Two items are included—a clever showcard in which you insert an actual valve (an EF36 or another of similar size) and a "Sidney" transparency—both essential for tying in with 'Radio Times' advertisements. The transparency is very easy to fix as it is only necessary to damp it and press it firmly to the window.

Some of the other publicity which is to come and which includes an unusual and attractive booklet, streamers and cutouts, will be described in next month's OUTLOOK. Supplies will be available about the same time.

IDEAS BEHIND THE CAMPAIGN

Elsewhere in this issue are a few statistics which illustrate the potentialities of the valve replacement market. From this point of view alone, active participation in the Mullard campaign can be more than justified. But in addition to this, the whole scheme is designed to create opportunities to sell service work and new receivers. Millions of receivers are long overdue for repair and replacement, and yet they go on "working" year after year. Many of the owners of these receivers are by now, unfortunately, accustomed to indifferent reception and their resistance to the appeal of new sets is very high. But others—and they

are probably in the majority—are fully conscious of defects in quality and performance.

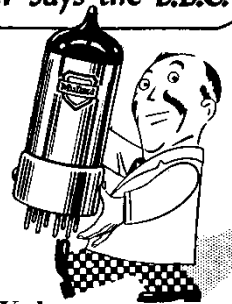
It is this latter group of listeners who are the logical target for valve replacement advertising, and the Mullard campaign is directed to them.

This advertising cannot fail to stimulate a desire for better listening, and among those who respond to it will be many whose sets are either badly in need of repair or quite beyond redemption.

TEST VALVES REGULARLY says the B.B.C.

If you want Better Listening all the time, take the advice of the B.B.C. Here's what they say—
 "... you would probably be astonished at the improvement if you had any weak valves replaced ... At regular intervals have your set examined by a radio serviceman who is expert in your particular make of receiver."

And don't forget to insist on Mullard valves for replacements—that's good advice too.
 FREE: Send for free booklet—"All set for better listening."



Mullard The Master Valve

MULLARD ELECTRONIC PRODUCTS LTD., CENTURY HOUSE, SHAFTESBURY AVENUE, W.C.2



WHAT THE B.B.C. SAYS

This important statement by the B.B.C. will be quoted in full in Mullard literature. Extracts will also appear in 'Radio Times' advertisements.

"Your receiver is a scientific instrument. It needs skilled attention from time to time to maintain its original performance, because it contains parts that wear out and adjustments that must be kept just right. The performance falls off very gradually, so that you don't notice anything from day to day or even from week to week, but you would probably be astonished at the improvement if you had any weak valves replaced and the internal tuned circuits 'realigned'. At regular intervals have your set examined by a radio serviceman who is expert in your particular make of receiver".

IS THIS THE WAY TO SELL MORE SETS?

If you sell a new radio set to a customer to-day, the chances are that you will not be able to sell him another until 1960. For according to available statistics, the average life of a receiver is ten years. And this state of affairs has been constant for some time.

One might submit as a reason for this long average life that receivers do not appreciably deteriorate. But all the evidence shows (and your own busy service department is evidence in itself) that the quality of reception declines steadily as valves wear out and circuits get out of alignment. So this argument holds no water.

Why then, despite the great sums of money which are spent on national advertising by manufacturers, are sets not replaced more frequently? Well, let us consider what happens to the average listener, and see if this throws any light on the subject.

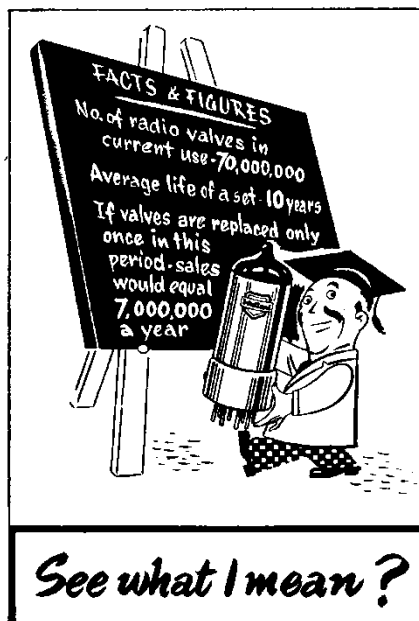
A LISTENER BUYS A SET

The customer who comes into your shop to-day has been thinking about a new set for a long time. He has been influenced by advertising, often to the extent of deciding in advance the make of receiver he is going to buy. He has studied the financial aspects and, generally speaking, has made up his mind to put off the purchase of another needed article in favour of a radio, for he hasn't enough money for both.

So he comes into your shop, hears a variety of sets and buys the one of his choice. He is well and truly sold on his choice, too. He has been convinced by you or your salesman that, for the amount of money he can afford to spend, he could not have made a better choice. And he goes away looking forward to years and years of happy listening.

As time passes and the performance of his set slowly deteriorates, his ears gradually become accustomed once again to indifferent reception. They become so accustomed to it, in fact, that even though what he hears is a mere travesty of the broadcast, he believes that the "mellow" tone of his set is better than that of a new one. The tragedy of this situation is that the longer a listener keeps his set the greater becomes his resistance to buying a new one.

There are twelve million listeners in Great Britain and only one in ten bought a new set in the last twelve months. Can the Trade afford to be satisfied with this rate of replacement? Are we sure that existing methods of sales promotion are good enough? This article will give you food for thought. It may even point the way to better selling methods.



but he will find in each customer an extra source of revenue between one set sale and the next.

TASK FOR THE DEALER

As we have seen, no amount of advertising by manufacturers can apparently alter the present position. This is a task which only the dealer can undertake, and it may be necessary for him to modify quite a number of ideas if he is to be successful. For instance, when should one start telling the listener that his set will need regular inspection? If one waits for a couple of years, resistance has already begun to build up. The right time to do this then is at the time he is buying a new set. Of course, there will be objections to this. Some dealers may say "Sufficient unto the day" Others may say that a statement like this at the time of sale will undermine the customer's confidence.

Nothing could be farther from the truth. In point of fact there are many other domestic appliances far less complicated than radios, where regular maintenance is recommended at the time of sale. And a very high percentage of customers accept the recommendation without question.

Here at Mullard, we have given a great deal of thought to this question, and we believe we have most of the answers. In next month's issue of the *OUTLOOK* a plan will be presented—a simple plan which any dealer can operate. It will be worth studying, and if, in the meantime, you have any ideas on the matter which you feel we might be able to publish, please write to the Editor. Your views will be more than welcome, for if one can succeed in reducing the average life of sets, the prospects are rosy indeed.

How can this problem be solved? Obviously, one must disillusion the public about the length of time a set will work satisfactorily without attention. Listeners must be made to realise that receivers will NOT go on performing well indefinitely. They must be taught, in addition, that the only way to maintain the performance of their sets is by regular servicing and the replacement of worn-out valves.

If such a state of affairs can be realised, the opportunities for selling new sets are obviously multiplied. Paradoxical though it may seem, when a dealer sells a set under present conditions, he literally loses a customer. But if this new attitude can be created, he will be able to keep in contact with him all the time, and by doing this he will not only be in a position to start selling a new set at the psychological moment,

VALVES IN THE MAKING

FACTORY VISITS FOR DEALERS AND SERVICE ENGINEERS



Arrangements are now available for Dealers and Service Engineers to visit our valve factories at either Mitcham or Blackburn. We feel sure that you will find these visits both instructive and entertaining. You will be able to see the results of years of technical development in valve design and manufacture, and experts will be available

to answer your questions, and arrangements will be made for your entertainment.

There is already a long waiting list of our trade friends who would like to visit us, but if you would also like to take advantage of this opportunity, why not write to the Valve Sales Department, Century House, and book a reservation.

NEW STYLE AVAILABILITY LIST

Many Dealers are already making a practice of referring to the New Valve Availability List when making out their orders. The list includes all current valves for radio receivers, television receivers and amplifiers, and types which are available for delivery in any particular month are suitably starred. In the case of normal valves not listed, dealers should refer to the section of the Mullard wall catalogue or the pocket data book which deals with substitutions for non-current types.

VALVE REPLACEMENT GUIDE

To facilitate distribution of the new Mullard Valve Replacement Guide, arrangements have been made for supplies to be distributed exclusively by wholesalers. The price to dealers is 2/6 nett.

VALVE AND SERVICE REFERENCE MANUAL

Publication of the new edition of the Mullard Valve and Service Manual has been unavoidably delayed. However, it is hoped that supplies will be available by the end of November, and we strongly recommend you to place your order with your wholesaler now.

DO YOU INSURE YOUR GOODS IN TRANSIT?

In spite of the care that most Dealers take in packing radio and electrical goods for return to Service Departments, there is always the possibility that they will become damaged or lost in transit. Indeed the words "damaged or lost in transit" are only too familiar.

What is perhaps not generally known is that many Insurance Companies offer policies covering the despatch of such goods by Post, Rail and Carrier, anywhere in the United Kingdom. Such policies are available to cover not only valves and C.R. tubes, but also radio and television sets and all electrical appliances and components. A proviso is usually made that all C.R. tubes should be despatched in manufacturers' approved packing. The insurances cover loss and damage, but exclude mechanical derangement.

A good scheme for Dealers is to purchase blocks of Insurance and then each month make a Declaration to their Insurance Company of the goods despatched. Whether or not you have suffered much loss or damage of goods in transit, it may be worth while looking into these schemes. So why not write to your Insurance Company for further particulars — perhaps they can help you.

Queen Visits Mullard Stand at Radiology Congress

During the Queen's visit to the Technical Exhibition of the 6th International Congress of Radiology, Her Majesty paused at the Mullard Stand, where the X-ray Tube Division of Mullard Electronic Products Ltd. exhibited a wide range of X-ray tubes and associated products.

Among these was a range of rotating anode X-ray Tubes specially designed to withstand the arduous conditions of radiographic diagnosis. These tubes are proving invaluable to the medical specialist in his continual fight against disease.

A special feature of these tubes is the use of patented bearings lubricated with a film of metallic lead of molecular dimensions. As a result of this technique, the tubes are almost silent in operation, and the bearing life and efficiency are greatly extended.

A selection from the latest range of Mullard Geiger Muller Counter Tubes for Alpha, Beta, and Gamma radiation measurements were also displayed. Besides finding wide use in nuclear physics research, these tubes are now being used in increasing numbers in connection with radioactive tracer techniques in medicine and industry. A series of X-ray tubes for medium X-ray therapy were also displayed together with a number of oil-immersed and air-insulated high-voltage rectifiers for use in X-ray apparatus.

