

THE NEW Horis FACTORY.

SUCCESS follows success. Our forward policy of never being afraid to invest in the most up-to-date plant and machinery, to spend money on keeping production on the topmost pinnacle of quality and workmanship, and to go all out to create and to develop new markets has reached another peak with the opening of the new "Harlie" factory on the Cambridge Arterial Road, not far from our old premises.

The growth of this organisation presents an inspiring example of what can be done, even in periods of acute general depression. From small components to complete Talking Picture equipment, Gramophone Pick-ups, Electrical Gramophone Motors, Radio-Gramophones, Loudspeackers and Microphones. Each now widely recognised as supreme in its class.

Having far outgrown our old Edmonton premises, we have had our new Factory specially designed and built to meet the exacting and highly technical needs of our production. The general design is decidedly modern in conception and execution.

Inside the factory will be found every evidence of the most thoughtful and advanced planning. Testing laboratories, sound-proof rooms, tools and machines capable of precision to the nth degree

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of accuracy, time-saving lay-out of processes from the creation of each individual part to its final assembly as a unit, and ample provision for future expansion, are features which are well worthy of inspection by all who are interested in mass-production methods applied to scientific apparatus.

The following pages offer convincing evidence of Harlie achievement in the highly specialised science of sound reproduction. Every claim made for any of the products listed is more than substantiated by actual performance, so that you can have every confidence that when you buy HARLIE you buy the best.

ELECTRIC REPRODUCTION.

HEN gramophone records are broadcast, the reproduction is so perfect that they are practically indistinguishable from an actual studio performance. Even with an exceptionally good receiver it is difficult to say, with any degree of certainty, whether an item is being performed or reproduced from a record. This being so, it is quite natural for the listener who is also using his receiver as a gramophone amplifier to consider that he should be able to obtain the same quality of reproduction from his own gramophone records. Some may even go so far as to think that as they are reproducing from the actual record the quality should be better.

Yet In the majority of cases gramophone reproduction is not nearly as good as radio. Why is this? It cannot be be the record, because the self-same records are used for broadcasting. It cannot be the amplifier portion of the receiver or the Loudspeaker, because these reproduce the gramophone recitals so well. Then the deficiency must be in the gramophone portion—namely the pickup and the Motor.

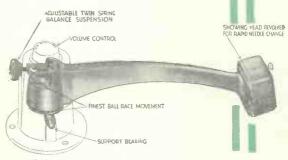
Some readers may wonder why we include the Motor. "Surely," they will say, "all that the Motor has to do is make the turntable revolve at a certain speed." Up to a point that is correct, but for good reproduction you must be sure that the speed is what you think it is and that it is constant at all times. Also the motor

HARLIE DE LUXE PICK-UP Model 36.

Complete with Tone Arm and built-in Volume Control. Finished throughout in Brown Bakelite. Pick-up head swivels in order to facilitate needle-changing. Ball-bearing movement of tone arm enables the needle to follow the record grooves with extreme accuracy, ensuring perfect parallel tracking and eliminating record wear. Special twin-spring balance suspension controlled by tensioning knob, permits of feather-weight adjustment, so that weight of pick-up on record is under complete control.



Pick-up incorporates best cobalt-steel magnet and special adjustable damping device by which exceptional purity of reproduction and maximum output are assured. Volume Control is perfectly smooth and silent in operation.



Harlie DE LUXE MODEL 36 AND 37, PICK-UP. SHOWING PRECISION CONSTRUCTION

MODEL 36. Complete, with 4 ft. 6 ins. Silk flex, fixing template, circuit book and Pick-up Rest. PRICE 27/6

Years of Concentration on the Design.

HARLIE FEATURES.

- The original Harlie knife edge bearing has been improved.
- Free and highly sensitive stylus movement.
- 3. 35% of cobalt magnet.
- Pole pieces of special high permeability alloy.
- Spring counter-balance insures correct weight on record.
- 6. Ball bearing base allows free swing over record.

- Remarkable frequency response range giving uniform tone quality.
- Unusual tone volume for reproduction from screen grid Receivers.
- Is triple tested for frequency output by the finest precision instruments.
- 10. Individually tested for tone accuracy.

The New Harlie Electric Pick-ups will successfully deliver all the quality that the Engineer and Manufacturer built in the Radio Receiver, Amplifier and Speaker Unit.



itself should not contribute anything towards the deficiency; in other words, it should be silent, electrically as well as mechanically. Mechanical noise you can hear, but electrical noise is often less evident and yet may cause hum which destroys some of the brilliancy of reproduction. But on this subject we have more to say later.

Undoubtedly, Imperfect gramophone reproduction is usually traceable to the pick-up, and It is a peculiar fact that the best reproduction is not necessarily obtained from the pick-up which appears to be the best "on paper." The characteristic curves of some pick-ups appear to be perfect, yet the actual reproduction may leave much to be desired. This fact, contradictory as It would appear, is due to the fact that few receivers and few records are perfect, and it is necessary to compensate for their deficiencies. When a record is broadcast the control engineers can regulate their apparatus to compensate for imperfections and can also compensate for deficiencies in the average receiver, if, for Instance, they know that the average recelver will not reproduce very low notes, they can, when broadcasting a record, emphasise the low notes so that they will reproduce at approximately their correct value.

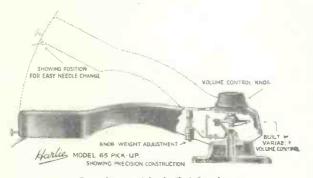
It will be obvious, therefore, that the manufacture of pick-ups calls for more than the ability to design a "perfect" pick-up. It must be designed by men who have a very thorough theoretical and practical knowledge of records and of the characteristics of broadcast receivers and gramophone amplifiers as used by the average listener. So many manufacturers make the mistake of designing pick-ups which will reproduce perfectly when used with a perfect amplifier. The quality of reproduction they obtain is delightful under those ideal conditions. Unfortunately, they are conditions which can rarely be obtained by the great majority of listeners and gramophone users.

We are in the happy position of being specialists in the manufacture of gramophone pick-ups and motors. Our experience goes back many years. We have on our staff men who are

HARLIE STANDARD PICK-UP Model 65.

An entirely new type of pick-up, designed to compensate for the normal deficiencies of the average record and amplifier. The bass reproduction has a rising characteristic, so that the lower frequencies are properly reproduced in a life-like manner yet amplitude distortion is avoided. The higher frequencies are also reproduced with all their true brilliancy of tone. Finished throughout in Bakelite, this Pick-up is most attractive in appearance. Incorporates adjustable spring tensioning device, gives parallel tracking and practically eliminates needle scratch and record wear. Head rises to facilitate needle changing.



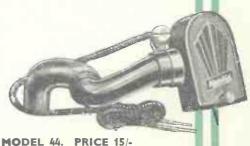


Complete with built-in volume control and 4 ft. 6 in. Silk Lead, MODEL 65. and supplied with template, circuit book and Pick-up rest.

PRICE 22/6

HARLIE PICK-UP Model 44.

Is designed for the convenience of users who decide to discard the sound box on their Gramophone whilst retaining the use of the existing Tone Arm. Model 44 has been specially designed to fit all standard Tone Arms in place of the existing gramophone sound box. The leads from the Pick-up are connected to the Radio Receiver. Various methods are shown on Pages 13 and 14.



Hire Purchase Terms on Page 15.



practical, and not merely Idealists. They know the conditions under which their pick-ups will be used. Their pick-ups are designed, not to give perfect reproduction under ideal conditions in the laboratory, but to give the "ordinary listener" the finest possible reproduction obtainable with his equipment. Thus it is, as proved by many, many letters we receive, that our pick-ups provide the listener with music which is nearly, and often quite, as beautiful as that which is obtainable under ideal laboratory conditions.

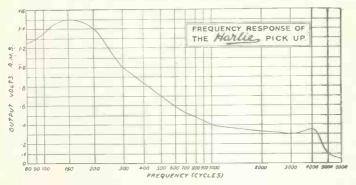
And now, in case we have been writing "over the head" of the listener who has not yet attempted electrical reproduction of gramophone records, we wish to give a brief and nontechnical description of this process as compared with the ordinary gramophone.

Both radio and gramophone reproduction depends on the production and amplification of vibrations. In the case of radio, electrical vibrations are picked up by the aerial and amplified up to a sufficient strength to operate the loudspeaker. With the ordinary gramophone the wavy formation of the grooves on the record cause the needle to vibrate, and these vibrations are amplified in the horn or sound chamber. With an electrical reproducer or pick-up the vibrations of the needle are converted in the same manner as radio vibrations. Thus, if these vibrations can be passed through the amplifying portion of an ordinary radio receiver they will operate the loudspeaker in exactly the same manner as programmes received from a broadcasting station.

It is actually a very simple matter to connect a pick-up to a receiver, either by means of a switch or an Adaptor. Both of these are described in this Booklet, on page 9, whilst in the Technical Section on pages 13 and 14 the methods of connection are clearly shown and described.

The pick-up itself is mounted alongside the turntable and is used in the same manner as the ordinary sound box and tone arm. It can be mounted in place of the original tone arm, or it can be mounted alongside so that either can be used at will.

HARLIE PICK-UP Response Curve.



It will be seen from the curve illustrated above, how well the Harile Pick-up compensates for the deficiences in the ordinary record.

Note the gradually increasing sensitivity in the lower frequencies below 1,000 cycles, denoting the large amount of compensation for the gradual cut-off of the base notes which is common to all records.

Note also the cut-off at 5,000 cycles eliminating excessive needle scratch

Harlies

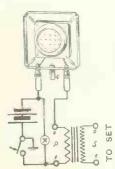
MODEL 53

HARLIE MICROPHONES.

Give uniform response at all audible frequencies. Rigid construction, withstanding rough handling without losing its fine adjustment. Complete on table stand, adjustable from 13 in. to $18\frac{1}{2}$ in., with Bakelite base which accommodates transformer, battery and switch, complete and ready for use with any Amplifier or Radio Set.

Complete with stand, trans-MODEL 53. former, battery and switch PRICE 55/ready for immediate use.





MODEL 56. Complete Microphone, Transformer, Battery and Switch, housed in a Bakelite Portable Case.

Hire Purchase Terms on Page 15.



The listener who does not possess a gramophone can quite easily make one as described in the "Motor" section of this Booklet.

There is one other feature of electrical reproduction which is unobtainable with the ordinary gramophone, namely, efficient volume control. Every gramophone user knows the difficulty of satisfactorily reducing volume; with a pick-up all one has to do is to turn a knob and volume is under complete control from the merest whisper to the full volume of which the amplifier is capable.

ELECTRIC GRAMO-MOTORS.

GRAMOPHONE motor must run at a constant speed. It is not sufficient that the number of revolutions per minute should be, for instance, 60; if the speed regulator is set at 60 the turntable must make one revolution per second. Every gramophone user knows that the slightest alteration of the speed regulator or touching the turntable whilst the record is playing will cause a variation in tone. But it often happens with many motors that smaller and less noticeable speed variations are taking place which destroy some of the quality of reproduction. A motor which is not sufficiently powerful may lose speed momentarily during the playing of a heavy passage of music, as there is actually a variation in the load of an average Record of 300 per cent. Any inaccuracy or roughness in the mechanism may easily cause irregular running or irregular revolution of the turntable. The average speed is correct, but the actual speed may be quite Irregular. All such factors should be considered when choosing a gramophone motor. Any such Irregularity in speed as described above may not be very noticeable, but the effect is to destroy some of the brilliancy of reproduction by slurring over certain notes that should be clear-cut.

Obviously, too, the motor should be quite silent in operation. Not only silent mechanically, but also electrically silent. A motor which rattles or causes an electrical hum immediately

HARLIE ADAPTOR.

When the Receiver is not provided with Pick-up connections, the use of a Harlie Adaptor is recommended. This is similar in general appearance to a valve-holder, and all one has to do to convert the receiver for gramophone reproduction is to remove the detector valve, insert into Adaptor, and then insert the Adaptor into the valve holder from which the detector valve was removed. (See Technical Section, page 13).

MODEL 20.

PRICE 1/6

HARLIE RADIO-GRAM SWITCH.



A neat and reliable Switch of the ROTARY snap-action type, single hole fixing, totally enclosed in Bakelite moulding. Used for change-over from radio to gramophone. (See Technical Section, pages 13 and 14).

PRICE 1/9.

THE HARLIE GRAMO LAMP HOLDER.

A necessary fitting to all radio-gramophones. Easily fitted to the baseboard. It reflects a light ray in any direction on to the turntable and Pick-up and will be found a very great convenience by all gramophone users. The light is switched off by half turning the moulding. It takes standard G.E.C. lamps of all voltages of the Pygmy S.E.S. 15-watt type. Finished throughout in Bakelite. Connect the two terminals provided directly across mains supply.

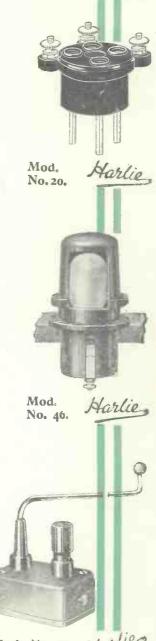
MODEL 46. PRICE 5/6 without Bulb
Mains Bulb 2/3 each, state voltage required.

HARLIE AUTOMATIC ELECTRIC STOP.

Can be easily fitted to any electric-driven gramophone and is readily fitted so that the moment the tone arm touches the extended arm of the Automatic Stop, the motor is switched off electrically and a brake comes into action, instantly stopping the turntable. Also ideal for Spring motors.

MODEL 33.

PRICE 4/6.



Mod. No. 33. Harlies



proclaims itself as unsuitable and can be discarded, but there are many motors which can cause a type of electrical interference which, though very much less noticeable than an ordinary hum, can be just as effective in destroying quality.

It is not necessary to pay a high price for an electric motor in order to obtain a motor which you know will be perfectly constant in speed and absolutely silent, both electrically and mechanically. HARLIE motors are designed with the same care and experience which have made HARLIE Pick-ups famous. Externally they may differ very little from others, but it is their performance and constant reliability which definitely places them as supreme amongst electric gramophone motors.

Gramophone users whose instruments contain a clock-work motor know only too well the inconvenience of having to rewind the motor after every one or two records. They have experienced, too, the very noticeable loss of tone towards the end of a record due to the motor running down. An electric motor has none of these disadvantages. If it is properly designed It will attain the selected speed immediately and retain that speed during the whole playing of the record. To be able to start and stop the motor by the touch of a switch is a convenience and pleasure which will delight every gramophone enthusiast who has previously had to spend two or three minutes between every record in rewinding the Motor. Gramophone Motors can easily be substituted for existing clock-work motors, or an entirely separate electrical reproducer can be made up quite easily. No elaborate cabinet or sound chamber is necessary; simply a motor—a Harlie motor, a pick-up and volume control and, for convenience, an automatic stop. These can be assembled on a board which can be mounted in the simplest of manners or placed in a suitable box or cabinet. For those who wish to save themselves the trouble, the HARLIE range includes Model No. 64, complete with Pick-up and Automatic Stop, which is already assembled and ready for use.

Our information Bureau is at your disposal for any other details and advice.

MIDGET ELECTRIC GRAMOPHONE MOTOR.

Induction type for A.C. Mains all, voltages—50 cycles—Silent and compaca—requires no attention, nicely finished Bakelite Moulded Body, with powerful and self-starting motor having worm gear and fibre drive. Supplied with 10-in. turntable, and complete fixing instructions.

MODEL 61.

PRICE 39/-

An highly efficient De Luxe Electric Gramophone Motor-Induction type,-A.C. Mains all Voltages, 4-pole, slow speed Rotor with Bakelite Moulded Body having worm gear Fibre Drive and Unique Parallel Speed Control adjustable on Governors, which are of special construction-very powerful Motor giving constant speed under the heaviest of recording immediate on switching-the Electric Motor is fitted on handsome Bakelite Moulded Plate with concentric Mounting, enabling the Motor and Speed control to be fitted into any position in the Cabinet. Supplied with 12-in, turntable, and complete fixing instructions.

MODEL 62.

PRICE 55/-

A low price Motor for A.C. Mains—all voltages, having 2 poles, with high-speed Rotor. Mechanically and electrically silent, small size—all Bakelite Body—constance speed, which can be regulated between 75 and 85 r.p.m. A powerful smooth-running Unit, with silent Worm drive. Supplied with a neat and attractive Bakelite Plate with 12-in. Turntable and fixing instructions.

MODEL 63.

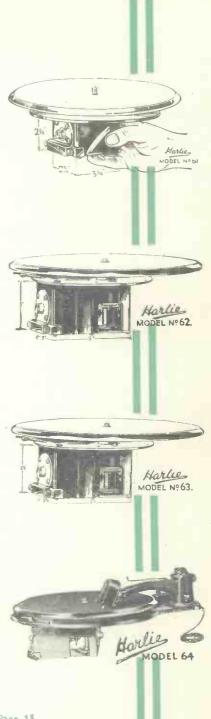
PRICE 45/

A complete assembly, De Luxe Induction Motor A.C.—all voltages—De Luxe Pickup with volume control and featherweight adjustment Model 36—and Auto Stop Model 33—fully assembled and mounted on an attractive Bakelite Unit Plate with 12-in. Turntable All designed for instant and easy fitting into Cabinet—standard Model 64 is a complete assembly for converting Radio Set to Radio Gramophone.

MODEL 64.

PRICE £4, 5, 0





Harlies MODEL Nº 66. PRICE 4/6.

A device which definitely improves reproduction

A device which definitely improves reproduction from every type of Loudspeaker.

ODERN Loudspeakers have reached such a pitch of perfection that they are capable of giving a remarkably lifelike reproduction of the actual broadcast performance. It is, however, a fact that different people prefer different types of Speakers—for much the same reason as one person will prefer a musical selection played by a brass band when another will prefer it played by a string orchestra.

It must also be remembered that although modern receivers and loudspeakers are so remarkably good, they are not yet perfect, particularly if Set and Speaker are not accurately matched. Thus, whilst a listener may be very pleased with the reproduction it is quite reasonable for him to wish that he could perhaps make a soprano song sound more mellow, or that he could add depth of tone to an organ recital or accentuate the higher notes of a violin. Whatever type of loudspeaker is used, every listener would at times like to be able to exercise control over the tone.

And that is just what the Harlie Tone Selector enables him to do. It is a device which gives distinctly different tones from any loudspeaker. No matter how perfect the Set or Speaker, the Harlie Tone Selector will make the tone more pleasing to its owner.

In addition to giving improved tones, the Harlie Tone Selector has other very considerable advantages. Most listeners have experienced a high-pitched whistle when listening to certain stations. Users have discovered that the Harlie Tone Selector subdues and usually entirely eliminates this whistle as well as minimising atmospherics and other undesirable noises.

AS A SCRATCH FILTER.

Another very important feature is one which appeals particularly to users of a pick-up or radio-gramophone. The extent to which the Harlie Tone Selector eliminates needle scratch is remarkable. So much so that many listeners have written to tell us that they are now able to use and enjoy old records which they had discarded as useless. They have noticed that not only is needle scratch eliminated entirely, or subdued to such an extent as to be unnoticeable, but that old records which were made before electrical recording was introduced sound much more like a modern record when the Harlie Tone Selector is used. Even with a perfectly new and up-to-date record the improvement is most noticeable, and every user of an electrical reproducer should most certainly fit a Harlie Tone Selector between his set and Loudspeaker.

MODEL 66.—Harlie Tone Selector......PRICE 4/6.

Hire Purchase Terms on Page 15.



TECHNICAL SECTION.

How to Play your Records through your Radio Set.

HARLIE ADAPTOR.

The simplest method of connecting a Pick-up is shown in Fig.1. The two Pick-up leads are connected to two of the terminals on the Adaptor, which is then inserted in the Detector Valve inserted in the Adaptor. The part of the receiver preceding the Detector Valve is then automatically disconnect ed and no radio signals will reach the grid. One of the Pick-up leads should be connected to terminals "G" on the Adaptor and the other to the terminal corresponding to the negative socket in the Detector valve holder. If there is any doubt, connect to whichever of the two terminals gives most pleasing results.

APPLYING GRID BIAS.

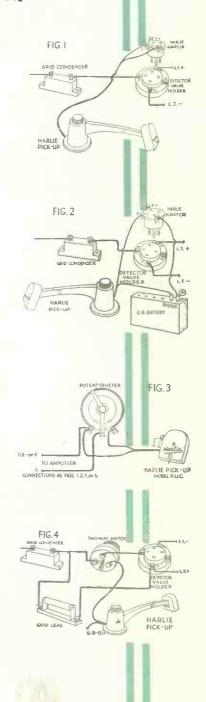
When the Pick-up is connected as shown in Fig. 1, the Detector valve is acting as an amplifier and grid blas is usually advisable. The method of obtaining it is shown in Fig 2. Connect one of the leads to terminal "G," and the other to the most suitable negative socket in the grid bias battery, 1½v.— is usually found to be sufficient. If a separate grid bias is used the positive socket should, of course, be connected to L.T.—.

VOLUME CONTROL.

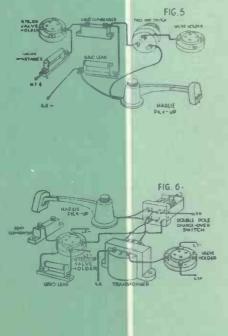
When using a Pick-up which does not Incorporate a volume control, a separate control can be connected as shown in Fig. 3. The resistance of the volume control should be from 0—50,000 ohms.

SWITCHING FROM RADIO TO GRAMOPHONE.

Instead of using a Harlie Adaptor the Pick-up can be left permanently connected and the change from radio to gramophone can be made by means of a switch. A two-way change-over switch such as the Harlie Gramo Switch should be used connected as shown in Fig. 4. Suitable grid bias should be applied as shown.



TECHNICAL SECTION—continued.





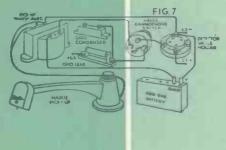
It will often be found that sufficient volume can be obtained by connecting the Pick-up to the amplifying part of the receiver following the Detector. When the L.F. coupling immediately following the Detector is of the Resistance Capacity type a simple two-way switch such as the Harlie Radio Gram Switch can be used as shown in Fig. 5. Where a transformer coupling is employed and it is required to connect to the primary of the transformer, a 2-pole change-over switch becomes necessary and the connections are as shown on Fig. 6. In such circumstances Grid Bias Is probably already provided so that no alterations or additional battery will be necessary.

USING A PICK-UP TRANSFORMER.

When a Pick-up is used at a distance of more than 12 ft. from the amplifier the use of a Pick-up Transformer is recommended. The connections are as shown in Fig. 7. The Transformer being placed near the amplifier a simple change-over switch such as a Harlie Radio Gram Switch is used to switch from radio to gramophone.



Where the constructor is using A.C. Mains Valves with automatic bias in the Cathode lead, the Harlie Pick-up and Volume Control is placed directly across the grid and H.T.— (Earth) Fig. 8. In this case the potential of the grid remains at zero whilst the Cathode is made positive. Electrically this conforms with the requirements for the biassing of the valve.



MICROPHONE CONNECTIONS.

All the above methods of connecting a Pick-up to a Radio Set are applicable when using a Microphone, the two leads of the Microphone taking the place of the two Pick-up leads, shewn in drawings.



HIRE PURCHASE TERMS, PRICES & PAYMENTS.

1st Column represents the model number of the article required.

2nd Column Is the amount which must be enclosed with your Application Form (see other side).

3rd Column is the further payment to be made within 7 days of receipt of Goods.

4th Column is the agreed monthly payment which is to be remitted to HARLIE LTD., Cambridge Arterial Road, ENFIELD, Middlesex.

	Мо	del Nu	mb	er			First Payment	Second Payment	Monthly Payments
PICK-U	PS.								
Model	36	shown	on	page	3		2/6	2/6	5 @ 5/0
9.9	65	* *		9.9	5 .		2/6	2/6	5 @ 4/0
931	44	11		**	5 .		2/0	2/0	5 @ 2/6
ELECT	RIC	GRAN	10	-MO	ГОБ	₹.			
Model	61	shown	on	page	11 .		4/0	4/0	5 @ 7/0
9.9	62	9.9		11	11	- 1	7/6	7/6	5 @ 9/0
* *	63	15.		,,	11	4	5/0	5/0	5 @ 8/0
27	64	9.9		3 9	11 -		10/0	10/0	5 @ 15/0
MICRO	PH	ONES.							
Model	53	shown	on	page	7		7/6	7/6	5 @ 9/0
99	56			, ,,	7	- 1	9/0	9/0	5 @ 9/0
GRAMO	L	AMP	НО	LDEF	₹.				
Model	46	shown	on	page	9		1/0	1/0	2 @ 2/0
AUTON	1A	TIC ST	OP						
Model	33	shown	on	page	9		1/0	1/0	2 @ 1/6
TONE S	SEL	.ECTO	R.					da .	
Model	66	shown	on	page	12		1/0	1/0	2@ 1/

IT IS IMPORTANT-

THAT THE OTHER SIDE OF THIS PAGE IS COMPLETED AND RETURNED TO US WITH YOUR FIRST PAYMENT.

Complete this page and forward to Harifo Ltd., together with

HIRE PURCHASE AGREEMENT FORM.

This Form must be completed and sent with a cheque or Postal Order (covering the initial payment) made payable to Messrs. Harlie Ltd., Cambridge Arterial Road, ENFIELD, Middlesex.

I AGREE to hire from you a Harlie Model No. (as shown on page.....of your Booklet), on the terms and conditions set forth:—

- I AGREE to pay £ s. d. In Cash upon signing this Agreement, and a similar amount within 7 days of receipt of goods.
 And further agree to remit to you at your offices the balance payable by instalments of £ s. d. per calendar month.
- It is understood that during the currency of the Agreement the above goods remain your property, and I will not sell, pledge, damage or remove same.
- 3. I understand that I may at any time during the hiring become the absolute owner of the goods by paying to you all arrears of hiring rent if any, and all the remaining payments of rent if any to become due under this Agreement.
- 4. I have read over this Agreement and no other agreement, verbal or otherwise, has been made between me and yourselves, or any other Party regarding its subject matter.
- 5. In the event of the application not being accepted, my initial payment of £.......d. enclosed herewith will be returned to me within 14 days.

Name in full	ର ବଳ ବର୍ଷ ବଳ
Permanent Address	• T = 10
**************************************	6
State if Householder How long or	ccupied
Age (over 21), YES or NO Occupation	1
Date Signature	6d. stamp to be affixed here if

Block Letters.





Telegrams: "BROSHARLIE, ENFIELD."
Telephones: ENFIELD 3431-3432.