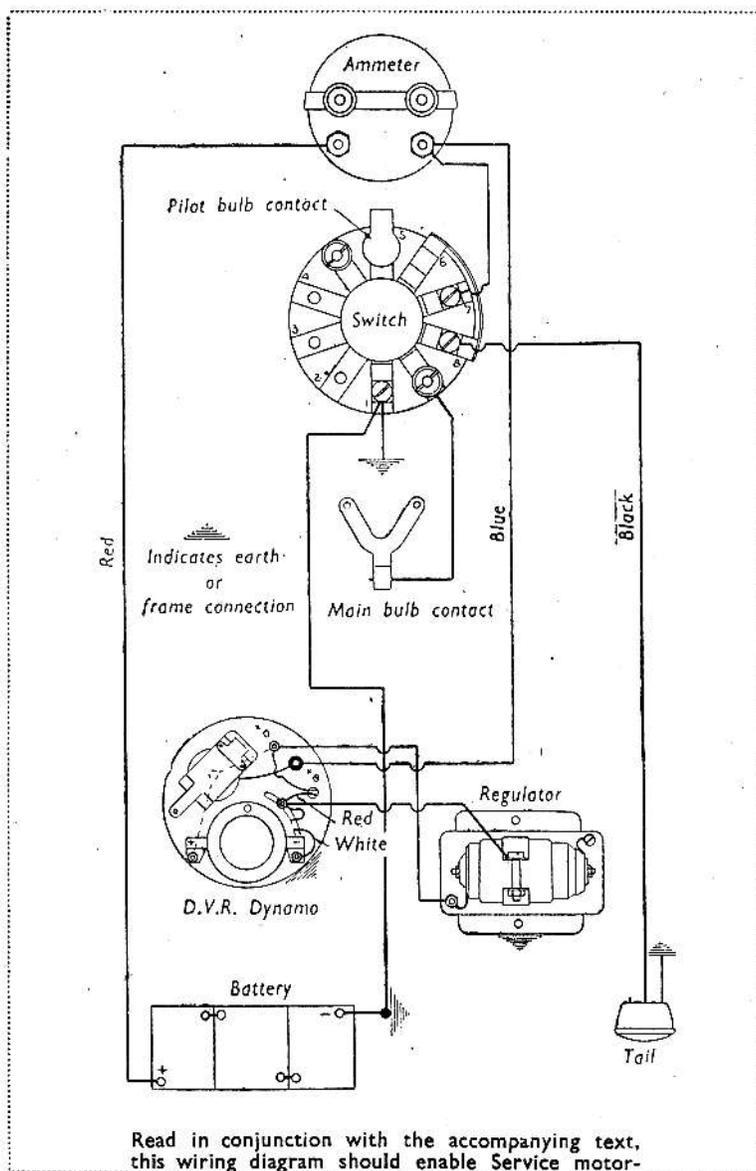


Servicing the W.D. MILLER

How to Dismantle and Refit the Dynamo Which is
Machines, Together With
Regarding the Model's



Read in conjunction with the accompanying text, this wiring diagram should enable Service motorcyclists to trace and remedy any fault which may occur in the Miller lighting system.

THE Velocette now being supplied to the British Armed Forces is fitted with a Miller dynamo and lighting set. Mounted in front of the cylinder, the dynamo is driven by a flat belt, which must be kept tight or misleading symptoms of low charging will be experienced. For instance, on starting up normal charging may take place, but in a very short time the charge rate will fall off, a symptom which might be attributed to the correct functioning of the voltage regulator, provided the battery was in a full state of charge.

No such symptom should appear with a partially or wholly discharged battery, so if any doubt exists it is advisable to remove the belt cover, place the hand on both pulleys, and if either is hot tighten the belt by slackening the dynamo clip and turning the whole instrument round until the required tension is reached. We mention this point first because it must receive attention before any further accurate check can be taken on the charging set. Also, it is imperative to see that the dynamo body is well earthed to its cradle.

Going a stage further, as in our previous articles, a good voltmeter is essential for rapid and accurate fault-finding, but it should be noted that the dynamo output is quite independent of all switch contacts and connections; thus the first check should be taken at the dynamo itself, after disconnecting the battery and plug, which must be insulated or kept clear of the frame.

As before, a voltmeter reading from 0-10 volts should have a pair of leads about 2 ft. 6 ins. long equipped with spring clips. With the + lead connected to a plug in the dynamo output socket and the - lead clipped to a good earthing point on the dynamo, start the engine and gradually increase the speed until a reading of 4 volts is registered, but on no account must the engine speed be raised so that the reading exceeds 8 volts.

In the case of "no charge" being shown, the following points should be examined and, if necessary, put into good order.

(1) Worn Brushes

The brushes may have become worn until the spring clip no longer presses them on to the commutator. This causes sparking, which blackens the segments and makes it necessary to clean them with fine glasspaper, pressed on with a piece of wood, afterwards removing any dust with a pump. New brushes must then be fitted.

(2) Sticking Brushes

Brushes tight in their holders should be cleaned with petrol and freed. If the springs have become weak they should be renewed, or if the commutator appears pitted it must be touched up in a lathe, afterwards undercutting the mica insulation strips with a ground-down hacksaw blade until they are 1/32 in. beneath the commutator surface. How to remove the armature will be found later in the text.

(3) Faulty or Dirty Cut-out Contacts

Dirty contact points should be cleaned with fine glasspaper drawn through them, but it should not be necessary to interfere with the adjustment. If, however, this is unavoidable,

Lighting Set

Fitted to Army Velocette

Full Instructions

Wiring System

able the contact-point gap should be set to $1/32$ in. The points should close when the ammeter needle is just beginning to flicker (i.e., $\frac{1}{4}$ to $\frac{1}{2}$ amp.) and open when the charge current falls to zero or shows a similarly small discharge. The "on" and "off" tension can be varied by bending the small brass bracket to which the end of the tension spring is anchored. Of course, the cut-out wires are assumed as being intact.

(4) Regulator Cartridge

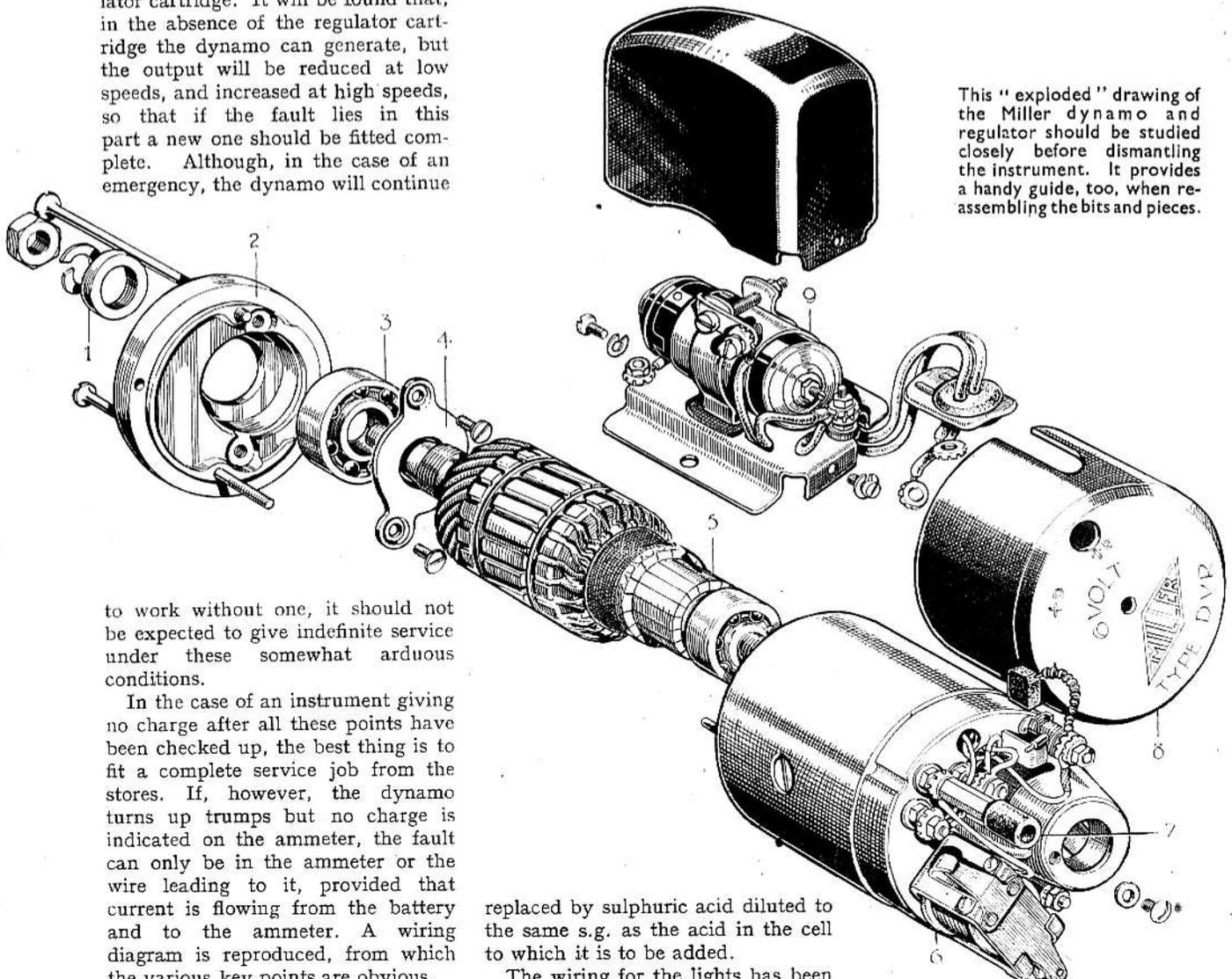
If the above points fail to effect any improvement, remove the regulator cartridge. It will be found that, in the absence of the regulator cartridge the dynamo can generate, but the output will be reduced at low speeds, and increased at high speeds, so that if the fault lies in this part a new one should be fitted complete. Although, in the case of an emergency, the dynamo will continue

cases when there is no charge at all; however, low or intermittent charge might be caused equally well by many of the same faults already outlined, but bad, loose or dirty connections, either at the battery or on the dynamo plug, are possible sources of trouble and are best cleaned and replaced before engaging on any major fault-finding manoeuvres with the voltmeter.

Continued high charging rates are certain to indicate that the battery has become discharged completely and is a condition which calls for immediate attention, particularly if the length of daylight runs is small and the speed of night riding too low to hold a really good charging rate. The remedy is to remove the battery and give it a bench charge until its condition is at least normal; i.e., when the s.g. lies between 1.260 and 1.280. Any topping-up of the battery must be done with distilled water, unless some electrolyte has been lost by spilling, in which case it must be

switch. This is a most sensible and practical change which obviates a potent source of trouble, simplifies the wiring and still provides all the light required with a single-pole headlamp bulb. Reference to the wiring diagram will provide the necessary information for any fault-finding which may be necessary. One point to remember is the earthing wires or contacts, which are most important on all lighting sets. Check the tail lamp, and make certain the earthing wire between battery and the switch earth contact is in sound condition.

Dismantling the dynamo presents no difficulties and should only be necessary if the bearings are worn or the commutator needs touching up in a lathe. The simple procedure is as follows: Pick out the Woodruff key in the drive-end taper, undo the two long studs which hold the two end covers to the central tunnel and remove the two brushes, or lift them halfway out of their holders, in which position they will be held clear of the



This "exploded" drawing of the Miller dynamo and regulator should be studied closely before dismantling the instrument. It provides a handy guide, too, when re-assembling the bits and pieces.

to work without one, it should not be expected to give indefinite service under these somewhat arduous conditions.

In the case of an instrument giving no charge after all these points have been checked up, the best thing is to fit a complete service job from the stores. If, however, the dynamo turns up trumps but no charge is indicated on the ammeter, the fault can only be in the ammeter or the wire leading to it, provided that current is flowing from the battery and to the ammeter. A wiring diagram is reproduced, from which the various key points are obvious.

So far we have only mentioned

replaced by sulphuric acid diluted to the same s.g. as the acid in the cell to which it is to be added.

The wiring for the lights has been clarified by the removal of the dipper