HINTS AND TIPS
for AMAC Users.

"AMAC"

ASTON CROSS,
BIRMINGHAM.

Telephone: 477 & 478 East.
Telegrams: "Terminals, B'ham."

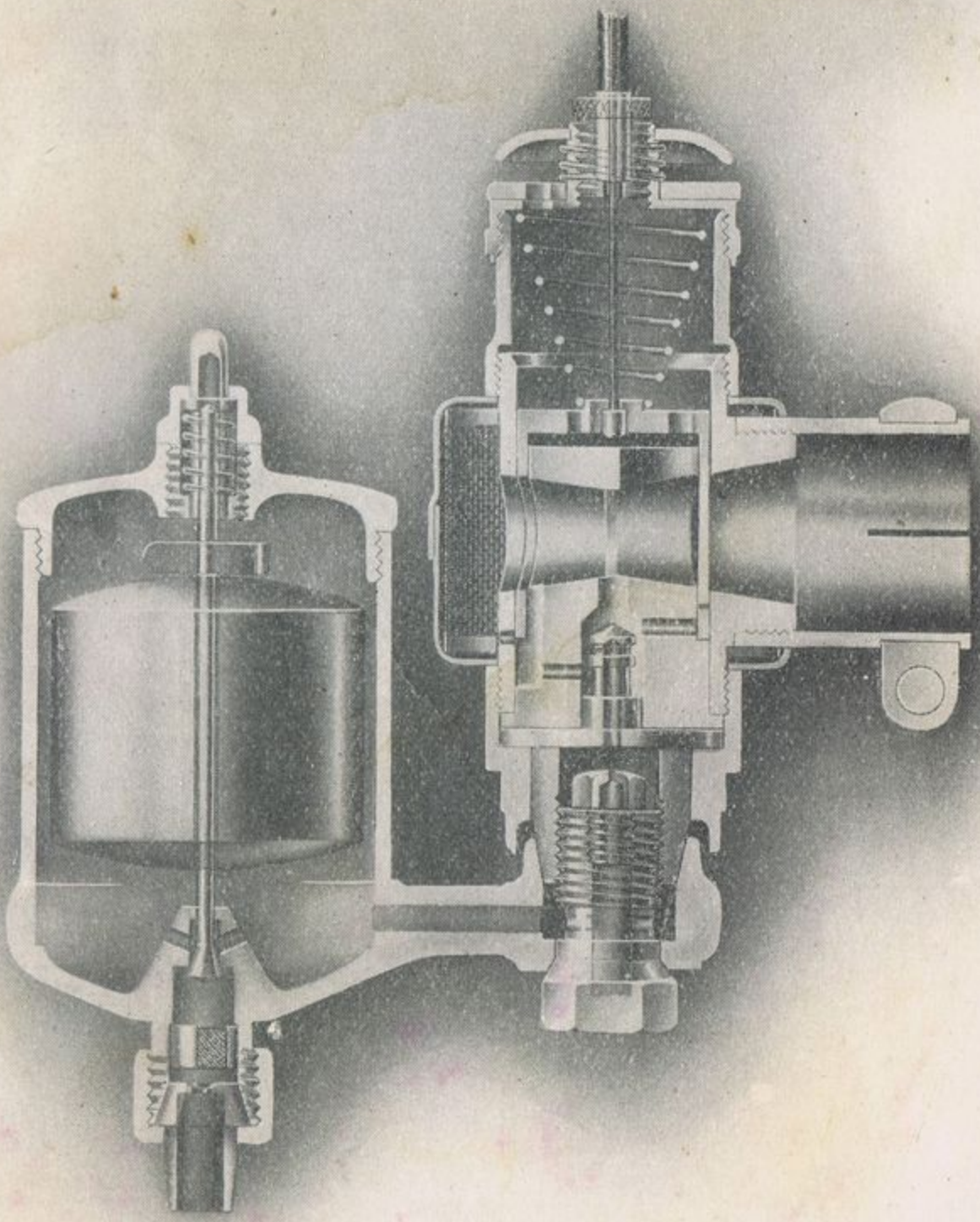
HINTS AND TIPS,

for AMAC Users.

AMAC, LTD.,

ASTON CROSS,
BIRMINGHAM

TYPE H (1919-20) Y (MIXING CHAMBER WITH VAPORIZER & FLOAT CHAMBER WITHOUT) S (SINGLE CONTROL)



INDEX.

AMAC CARBURETTORS

Patented.

Section 1: General.

To the average motorcyclist the principally desired function of a motor cycle is: "Taking him there; bringing him back."

The object of these brief notes is to spread carburettor knowledge, enabling the average rider, so far as his carburettor is concerned, to get "there and back" no matter what the road or weather, in confidence and comfort—not once, but always.

The various parts of a motor cycle are intimately related one to another, and their functioning, good or bad, affects the running of other parts. Of no part is this more true than the carburettor. It has within its power to affect ignition. Too rich a mixture fouls up plugs, which in their turn cause heavy resistances leading to burnt-through armature connections and dirtied and burnt platinum points. It affects the wear on bearings, for the heavy kicking motion produced by carburettors which pass practically liquid fuel into the cylinder instead of gas, spells short life to bear-

ings. Imperfect vaporisation also leads to excessive piston wear, as the heavy unvaporised residues which will not explode, but condense in the cylinder, form a cutting compound in combination with the carbon which now and then becomes dislodged. Transmission and tyres are also affected, heavy impulses wearing them out sooner than soft ones. This also shakes keys loose, and lessens the life of the gears and other parts generally. Burnt-out exhaust valves are (apart from errors of valve and magneto timing, and unsuitable metals, etc.) due to carburation, chiefly caused by a too rich slow-burning mixture which leaves the valves and cylinder considerably hotter than a right mixture would. Safety on "greasy" roads is assisted by correct carburation. A carburettor that will only pull jerkily at slow running is far more likely to cause you to skid than one which delivers its impulses smoothly. It's all the difference between being pushed along and kicked along; the same power is exercised in both cases.

To the question "Non-automatic, semi-automatic, or automatic?" The non-automatic type is a thing of the past. The semi-automatic and automatic both fill a requirement, as there are two distinct types of riders. First, those who possess the inclination and judgement to handle two levers; secondly, the average everyday rider. The first *satisfactory* semi-automatic was marketed by AMAC, and we now claim the first *satisfactory* automatic motor cycle carburettor as an AMAC.

Section 2: Fixing to Machine.

The points to watch are: That the carburettor is fixed vertically; that the float chamber assumes a slightly higher position when climbing a hill, thus raising the level of the float chamber (raising the petrol level). In practice this is attained by placing the float chamber slightly in advance of the mixing chamber in the direction of the machine's travel. If flange fixings are used, give each nut a turn alternately. Do not screw one up tight and then afterwards the other, which will not give a good joint.

Avoid placing the carburettor in a direct cold draught. If impossible, then shield it, as it works best in as even an air stream as it is possible to obtain.

Section 2a: Petrol Pipes.

See that the pipe is formed so that it goes into position easily. A pipe strained into position is bound to soon break. The pipe should sometimes be detached and re-annealed by heating to bright red and plunged into cold water. Pipes curved and looped horizontally are less liable to cause air lock than those where the loop is vertical.

Section 2b: Controls.

Lubricate levers with engine oil. The wires are treated with a special preparation before being fitted up, and should only be oiled at the control end, which is well covered in our New Model Control, where the enclosure is absolute.

Avoid sharp bends in cables, as they cause wires to work stiffly.

The most convenient way of fixing the levers of the control is to open the valves in the carburettor by pushing the levers inwards towards the cycle frame, and closing them by pushing outwards, but AMAC designers, fully realising that some riders may be used to work the levers the opposite way, have arranged accordingly, and so that they can be changed over from opening inwards to opening outwards in a few minutes. The best position for the levers in relation to the handle bar when the valves are closed, is to allow the ends of the levers to overhang the bars outwards about $\frac{5}{8}''$, which gives the best position for use in traffic. The AMAC control levers may be placed in any position most convenient to the individual rider. They are made of brass stampings, therefore may be easily bent or straightened, to follow the shape of the handle bar.

Adjust the cables when the carburettor is fitted and all wires are in their final position, as bends in the cable alters the adjustment between the cables and the wires. Put the levers in the closed position, then screw adjusters at the top of the carburettor in or out until all slackness in the cable is just taken up. When doing so, hold the cable to prevent it from twisting with the adjuster.

Section 2c: Air-Leak.

It is most important to do everything possible to avoid air leaks, as they affect

Slow Running, Easy Starting, Pick Up, or Acceleration; also, indirectly, Consumption.

Absolute freedom from air leak on the engine side of the throttle is, in the case of poppet valve engines, practically impossible owing to leakage past the valve guides, but if engine designers would pay more attention to this most important point, they would considerably simplify the carburation problem. Nevertheless, air leaks can be largely eliminated by observing the following points:—

See that the carburettor is pushed right home on the induction pipe. If, owing to shortness of the pipe, the slots in the mixing chamber are open for the air to enter, fill in the slots with asbestos and gold size. It is well to fit the mixing chamber to the induction pipe very carefully, using plenty of gold size, and allowing good time to dry. Consider, for all practical purposes, the mixing chamber as a part of the induction pipe, removing it only in the most extreme cases.

One of the greatest difficulties with air leaks is on twin engines of the V type, owing to the difficulty the makers experience in getting the induction pipe faces to align, and also to the fact that the cylinders under variation of temperature tend to draw the port faces apart. Under these conditions it will be appreciated that to even the most careful manufacturers the problem is a difficult one. The private owner, if careful, may do a lot to minimise this

trouble. In cases where large nuts are used to bring the faces together, compressed annular cork washers make a splendid joint. A point against them is that the use of benzol affects them badly. Copper and asbestos washers, if the right size can be obtained, are good. Asbestos, or even ordinary string, soaked in gold size and placed between the faces, forms a fairly satisfactory substitute. The width of the faces are usually too narrow to allow of a ring being made from any of the well-known packings. The manufacturers are, quite rightly, loth to rely upon artificial joints, because owners occasionally forget to replace them or remake them properly.

For flange joints use washers made of any good jointing, preferably of the graphite type. Thick brown paper soaked in gold size makes fair joints, though they are not to be strongly recommended on air-cooled engines, and the flange should be bolted up whilst the washer is wet.

Insulating tape is a good temporary measure for overcoming air leaks, but should be replaced from time to time, as when dry it is of no value, and will not prevent air leak.

Accurate machining and gold size make by far the best job.

Section 2d: Sticky Valves.

Sticky valves are practically unknown with the AMAC. Same may occur if the carburettor is fixed in such a position that an undue

amount of mud and dust is thrown on the air-intake, and this point ought to be watched. If the valves do not work freely, it is generally due to their being bruised when dismantled, or to the Bowden wire being kinked, being fitted with a sharp bend or having rusted up. Of course, if the Bowden cable itself is not properly adjusted, then the valves will not work. In exceptional circumstances in foggy weather, freezing might take place, but this only applies to machines on which the carburettor is very much exposed. The only cure for this is to fit a hot air pipe to the air-intake or shielding the carburettor. The valves should never be oiled, as this causes dust to collect on them. They may, however, be rubbed with graphite if desired.

Section 3: Setting Single Lever, H Type (1920), Carburettor.

Setting, or "tuning," as it is usually termed, will, with standard engines, be found practically unnecessary owing to the wide variation to which the AMAC Carburettor lends itself. At the utmost for the ordinary rider, a change of jet will be all that is necessary. Should there be any doubt in the rider's mind that a correct setting has been supplied, we can send details of a proper setting with necessary parts for correction per return upon receipt of particulars of the make of engine, horse power, and date. These particulars should be as complete as possible.

Section 3a: SPECIAL setting for Single Lever, Type H (1920) Pattern, Carburettor.

We can supply spare sets of adapters and valves, and the procedure for setting is as follows:—

It should be clearly realised that the settings for Speed and Power, Intermediate Running, Slow Running, are things apart.

Speed and power is governed by size of adapter and jet.

Intermediate running, by size and shape of aperture on air-intake side of throttle valve.

Slow running, by size of vapour passages.

It will be realised from this that one result may be obtained independent of the other two, therefore no compromise need be made.

The first setting to get correct is for maximum speed and power. By experiment, and with the help of the Table of Adapter and Jet sizes (see pages 26 & 27), fit the smallest size you are satisfied gives you the maximum result of which the machine is capable. These trials should be made with the throttle wide open, therefore at this setting any valve will do, but it is as well to try a valve with an air-intake hole of the same size as the smallest bore of the adapter, which is likely to be right also for the intermediate running. Should a valve of special shape be necessary, any of these may be used at this stage.

Should the Intermediate Running not be to your satisfaction, the following is its method of adjustment:—

If you find the machine will not pick up quickly, but takes time to assume its stride, then try a throttle valve which allows for a larger air-intake. If it misses or spits back owing to too poor a mixture, try one with a smaller intake.

All the valves can be tried in a short time by unscrewing the mixing chamber top and changing the valves.

Section 3b: Setting for Slow Running.

This is controlled by the area of vapour hole, through which the vapour enters the main passage in the adapter. It will be usually found that the jet already fitted for maximum power will give slow running over. If, however, this jet gives too rich a mixture for slow running, then enlarge the vapour hole. In very exceptional cases a smaller hole may be necessary, for which special adapters can be supplied. Do not make any alterations until absolutely satisfied they are necessary. Either a too rich or too poor mixture will cause misfiring at slow engine speed, or stop engine altogether. If the mixture is too rich, black smoke will issue from the silencer. If very poor, "popping back" will take place in carburettor.

NOTE.—All these three tests should be carried out with the air regulator, which is

fitted at the top of the mixing chamber, placed in No. 2 or 3 position. It will be appreciated that the regulator can be used as a "tell-tale" to indicate if the mixture is too rich or too poor.

On clutch fitted machines, where a good deal of traffic driving is done, it is a good thing to set the throttle when the lever is fully closed, so that the engine just turns over when declutched. This is done by unscrewing the Bowden wire adjuster at the top of the mixing chamber so as to open the valve a good way with the lever in a closed position, and then screwing the adapter down till the desired slow turn over is obtained.

Remember that the magneto is far more often the cause of erratic firing at very slow speed than the carburettor. An intelligent use of the magneto advance and retard lever will help in this direction. Other faults beside carburation causing bad slow running are: Weak exhaust valve springs, which would allow the exhaust valves to open during the suction stroke when the throttle is nearly closed; faulty plugs; sparking points in plug too far apart or too near; slight leakage from high tension cable to frame; weak magneto, dirty or untrue contact breaker points; cables sticking, etc.

Section 3c: Special Setting for Double Lever, Type H (1920), and for Type E (1914—1919) Carburettors.

In setting carburettor, do not fix a jet so large that the engine will take full air and

throttle simultaneously. The air valve acts as a variable choke. The passage in the air chamber when both valves are fully opened is larger than the inlet pipe. This is done so that plenty of air can be obtained even with a racing setting without having to drill and cut about the spraying chamber.

If the air lever can be opened $\frac{2}{3}$ to $\frac{3}{4}$ when going all out, a correct setting is indicated. If less, the jet is too small; if more, too large. This does not apply to racing or hill-climbing competitions. As the action of the throttle valve supplements that of the air valve to a certain extent, it will be found that for all ordinary variations in speed it is not necessary to alter the air lever. Of course, on a steep hill the air lever should be closed down—this is better done early before the engine speed begins to fall off, so that a good speed may be maintained for the entire hill. Close also for very slow running. Although it will be found that the machine will run with the throttle very nearly closed and the air lever full open owing to the supplementary action of the two valves, this must not be taken as an indication of too large a jet, or that the carburettor does not give enough air, but this is a natural consequence of its semi-automatic action. Neglecting the finer points, there are practically only three positions for the air lever: Closed for starting; a quarter to half-way open for traffic; half to three-quarters for country roads.

Approximate sizes of jets to suit different sizes of engines are given as an indication of what ought to be fitted, and are shown on pages

25, 26, & 27. Engines of the same capacity do not always call for the same size jet. We have found, as a rule, the rider has a tendency to fit too large a jet.

For two-strokes in undulating or flat country, a No. 3 throttle valve will be found most suitable, but for very hilly country where sustainance of power on hills is of more importance than regular slow and intermediate running, a No. 2 is advisable.

Section 4: Easy Starting.

With the carburettor correctly set, easy starting is a matter of freedom of pistons and a hot spark at the plug. It is sometimes necessary to inject paraffin into the cylinder to free the piston from the thick oil, so that the engine can be revolved sufficiently fast to obtain a good spark at the plug.

There is a possibility of failure to start if you flood too heavily. Three short depressions of the needle is the utmost required, and when warm flooding is unnecessary. Do not open the throttle too far. On type E do not open more than a quarter, keeping air shut.

Section 5: Air Regulator.

The function of this has been made clear previously, and we only here wish to emphasise its use as a check on the jet size. The general tendency is to fit too large a jet. This practice cannot be too strongly deprecated, as beyond the requisite size no further increase of power is obtainable, to say nothing of the slow running and starting being upset.

Section 6: Economy.

Having set for maximum power and obtained good results, you will find the consumption bears favourable comparison with other carburettors. The point then to watch is that you are not robbed of the benefits the carburettor gives you by such power wasters as slipping clutches or belts—too tight chains or belts—excessive valve tappet clearances—poor sparks at plugs—brakes that are never really off—late ignition—too low a top gear—too high a top gear, leading to excessive call for second speed—weak valve springs—poor compression—choked silencers—sidecars out of line with motor cycle.

Heavy consumption caused through faulty carburation is generally due to too rich mixture, either through too large jet being fitted or through flooding. It might also be caused through the air gauzes gradually getting stopped up with dust. Undue vibration is another reason.

Section 7: Two-stroke Notes.

The carburation of these from a flexibility point of view is one of the greatest problems confronting the engine designer to-day. It lies primarily in the fact that though the conventional type of two-stroke motor cycle engine crankcase is really part of the carburettor, it is designed as a crankcase only. Its functions as a pump and vaporiser are disregarded. Despite these handicaps our new model will be found to be a revelation in slow running and pulling against load,

The same points are to be observed in setting as for a four-stroke. When using petrol lubrication, a size or two larger jet is necessary, as the quantity of oil also passing through the jet naturally reduces the quantity of petrol. Though we would again urge the rider to guard against using too big a jet.

With two-strokes as at present made, a certain amount of fourstroking is always observable going down hill, and sometimes when going fast down long gentle slopes. It should not be present at any speed above eight miles per hour on the flat, and if it does, something wrong with the carburettor is indicated; usually too rich a mixture.

Too weak a mixture is indicated by firing back through the carburettor, though on starting away on a cold morning, till the engine gets warm, a slight tendency to spit back may be noticed. If the machine, previously running well, starts suddenly to blow and spit through the carburettor, and, upon examination, any evidence of weak mixture being caused by the carburettor, such as dirt in jet, is absent, then the most probable cause of the trouble is a blown joint between either the induction port faces, the transfer port inspection door faces, or cylinder and crankcase register faces. In the dark these can be very quickly located by the flame coming through them, but by day the force of the explosions can be felt by passing one's hand round the engine whilst running on the stand. Another cause is that on crankcases with taps to release excess oil, these get acci-

dentally turned on, and sometimes plugs fitted for the same purpose fall out, when similar symptoms develop.

Section 7a: Lubrication.

With engines lubricated by drip feed, great care should be taken to guard against excess of oil, as this, more than bad carburation, is the chief cause of fourstroking. Do not use too thick an oil. The "Summer" grade supplied by makers will give a good deal of trouble if used in cold weather with drip feed. If "Winter" grade is not available, mix about 25% good watercooled oil with the "Summer" grade. It will save you a good deal of trouble, especially when getting away first thing in the morning.

With the "Petroil" system of lubrication the oil is mixed with the petrol, and fed through the carburettor, separating out later in the crankcase. The proportion should be about eight to one of petrol and oil respectively.

A tendency will be noticed when the machine is stationary, for the oil to sink to the bottom of the tank and float chamber. This can be overcome by shaking (rocking gently from side to side is sufficient) the machine, and agitating the liquid in the float chamber with the needle. It is also a good thing when finishing a run to turn the petrol off a little before stopping, and so ensure an empty float chamber.

Remember, Benzol and oil WILL NOT MIX, therefore Benzol cannot be used upon a machine lubricated by " PETROIL" system.

Section 7b: Two-Stroke Notes. Magneto Timing.

Magneto timing is a very important factor in successful two-stroke running. They will stand a very much earlier firing point than fours. This is not so widely known as it should be, and four-stroke methods of timing, by even those who should know better, are frequently employed. Then the carburettor gets blamed because the engine over heats, and the petrol consumption is high.

When two-strokes are "revving" the point to which the ignition can be safely advanced seems out of all proportion compared to four-stroke practice, and is frequently disbelieved by those without experience.

There are two methods of treating the matter, and the reader can take his choice. One is to treat the magneto as a fixed ignition, setting it so that there shall be no knock even on the steepest hill. This is translated into practice by causing the platina on the contact breaker to commence to separate when the piston is about 4 m/m from the top on the " compression " stroke.

The other way is to recognise that ignition is capable of being advanced and retarded, and setting your timing for maximum speed to use the advance and retard lever with discretion,

A fair setting for maximum speed would be: Platina separates on fully advanced contact breaker when piston is from ten to twelve millimetres from the top on the "compression" stroke. Providing always that the firing angle allowed by the movement of the contact breaker will allow of a retard back to 3 m/m, should a steep hill with a head wind blowing down it call for it.

Heavy electrodes on sparking plugs, please! the heavier the better.

With this setting you will find you can start away on half advance, do most traffic work on five-eighths to three-quarters, and when the open country comes and the road opens long and straight before you, you can fully advance, and wipe out the oft-repeated slur "that two-strokes cannot move."

Though this booklet purports to deal with carburettors, we have written thus on lubrication and magneto timing because there is a tendency to presume these two items always perfect, whereas they are far more often to blame for bad running than the carburettor.

Section 8: Trouble.

Carburettor trouble divides itself into two forms—absolute, in which your engine completely stops, indicating that the carburettor has ceased to make gas; or conditional, in which it makes gas badly, the running depending on how badly.

Section 8a: Location of Carburettor Trouble—ABSOLUTE.

Your motor stops, and you wish to quickly verify the carburettor. Work throttle lever to make sure cable has not broken, so allowing throttle to remain closed; presume you find this in proper action—see that you have petrol in the tank, and that the tap is turned on—take down jet, and if choked, you have found your trouble. Clear out with fine wire or by blowing through, replace, and proceed on your way. If you find jet clear, remove float chamber top; if full of petrol, then suspect passage between float chamber and mixing chamber, so take out float (LOOK for water at base of float chamber), and clean passage with piece of copper wire. If clear, take down petrol pipe, and verify clear passage by blowing through.

Water.—One of the most frequent causes of sudden stoppage and missing is water in petrol. In the damp, moist English winter, especially where machines are stored in cold sheds, the moisture in the atmosphere condenses in the tank, passing through the filters in the form of very fine globules, and unfortunately accumulates in the float chamber. Now, the AMAC, owing to its concave base float chamber, and petrol passage being placed high, will stand this sort of thing to an extent that would place most carburettors out of action, but even the AMAC occasionally protests and gently reminds you that carburettors will not "do their work on water." It only takes two

minutes to clear it out, so it is well worth doing regularly in comfort, lest it should have to be done compulsorily on a wet, cold night.

If upon your examination petrol is passing through the jet, your throttle is opening, and there is no water, cease at once to suspect the carburettor, and examine other parts of the Power Unit.

Section 8b : Location of Carburettor Trouble.

Conditional.—Motor runs hot through carburettor fault, therefore gives too rich or too weak a mixture; try change of jet.

Very poor pulling.—If carburettor, mixture too weak owing to too small a jet, or constriction of fuel at some point. Excessive air leak.

Heavy "thumpy" running.—If carburettor, mixture too rich; if accompanied by occasional misfiring, probably float needle sticks, and gives rise to intermittant flooding.

Knock.—If carburettor, too poor a mixture, or paraffin in petrol.

Misfiring.—If carburettor, too weak a mixture; water, dirt, in jet, spraying holes, or petrol passages.

Eight stroking.—Always carburettor, too rich a mixture; intermittant flooding, owing to dirt on needle.

Flooding.—A certain amount of this over very bumpy roads is inevitable. Other causes are: Dirt on needle valve seating, valve seating

worn, distortion of gauze in union throwing needle to one side, punctured float. On the E type, where the level can be altered, the spring collar is sometimes moved; in readjusting, give about $\frac{1}{16}''$ up and down play to needle, and the level will be found correct. To remove dirt from needle valve seating, twist needle in fingers, pulling up at same time. Occasionally on new machines sawdust and dirt will be found in the petrol tank, and failing taking down tank and washing out, 100 miles or so must be covered before this washes out, and the flooding caused thereby stops.

Notice that the level of petrol is set above the jet, and that the jet is always submerged in petrol. The level is carefully set and tested at the works before carburettor is sent out, and ought not to be interfered with.

The new H (1920) type is not very sensitive to the level of the petrol, and slightly raising or lowering the level will have no effect on the working of the carburettor.

When the float chamber is flooding, petrol will be seen to trickle down round the bottom of the mixing chamber. This petrol comes through the two small holes in the base of the mixing chamber, which are provided to prevent accumulation of petrol at this spot. Petrol showing at this place may give the impression that the cone joint between the float chamber and the mixing chamber is leaking.

Machines ought not to be left standing for long periods without turning off petrol cock.

Section 9: Fuels.

Petrol.—At present it is sold in four qualities: Aviation spirit, Nos. 1, 2, and 3; petrol Nos. 2 and 3 appear to be of very poor quality. The specific gravity of aviation spirit is 680, and some brands of present-day petrol go as far as 800.

These differences of petrol quality give a great deal of variation in the running of engines, and should always be taken into consideration.

Benzol.—When running on benzol, use a smaller jet. The opening of the regulator at top of mixing chamber on single lever carburettors might give the same result. Spark lever must be further advanced. Benzol is specially good to run on when your engine knocks, owing to combustion chamber being carbonized, and you haven't got time to clean same. For heavy work, one-third petrol and two-thirds benzol makes a splendid pulling mixture. Benzol gives slightly more miles to the gallon.

Paraffin.—If from any cause you are compelled to run on paraffin, lower your compression as far as possible, set the spark later (about 4 m/m at full advance on a four-stroke, and 7 m/m on a two-stroke), and use as low a top gear ratio as possible.

We do not claim that the AMAC carburettor is a paraffin carburettor, but through its perfect

vaporising design it will give better results than with any other motor cycle carburettor on the market.

Mixtures.—Half aviation spirit and half paraffin is quite good. Two-thirds No. 1 and one-third paraffin is a passable mixture for long runs, but is not to be recommended for traffic work with a sidecar. Half No. 3 and half paraffin can be run on, but starting is very difficult. Two-thirds benzol and one-third paraffin is fairly satisfactory, but difficult to start from cold. Shake all mixtures up well before starting, as they have a tendency to separate whilst at rest.

Section 10: "Dodges" to Get You Home.

Rubber tubing can be safely used temporarily to repair a fractured fuel pipe. Failing this, bind with insulating tape or soaped ordinary tape. Soap (household yellow preferred) is a fine stopper of petrol leaks.

If your throttle wire breaks on the two lever model, change over the wires, fasten the air slide, if possible, so that it remains in the position for average running, or take it away altogether, and get home like that, injecting plenty of petrol to get a start. If it is a single lever model, fix the valve so as to give you 25 to 27 miles per hour, and control off your exhaust lifter, brakes, and spark advance; if you have a gear box and clutch, it's easy.

If you puncture your float badly or from any cause get bad flooding, adjust your petrol tap that it feeds just sufficient to keep your machine running at average speed.

Section 11.

Approximate sizes of nozzle to suit different sizes of engines are given below as an indication of what ought to be fitted.

For 1915 to 1919 models only:—

8 h.p. twin, nozzle 31.
6 h.p. twin, nozzle 28.
3½ h.p. twin, nozzle 27.
2¾ h.p. twin, nozzle 27.
4½ h.p. single, nozzle 32.
3½ h.p. single, nozzle 31.
2½ h.p. single, nozzle 27.

For side-car work or very hilly country, a nozzle one, or perhaps two, numbers larger may be used.

Section 11a.

The size of nozzle best suited for the following two-stroke engines are:—

Alldays	...	...	No. 27.
Clyno	...	...	No. 26.
Connaught		...	No. 25.
D.A.L.M.	...	...	No. 24.
Enfield	...	...	No. 25.
Ivy	...	...	No. 27.
Levis, 2¼ H.P.		...	No. 26.
Radco	...	...	No. 27.
Union	...	...	No. 26.
Villiers	...	...	No. 26.
Velocette	...	...	No. 26.
Verus	...	...	No. 27.

When corresponding, clients will oblige by giving fullest particulars and *date* of machine.

We are at all times very pleased to give every assistance and advice.

LIST OF SETTINGS FOR VARIOUS ENGINES.

Section 11b. ## Y Type Carburettors.

	Capacities.	15 H.Y.S.			15 H.Y.D.			25 H.Y.S.			25 H.Y.D.		
		Jet	Thrtl. Valve.	Adapt.	Jet	Thrtl. Valve.	Cross Bore Mix. Ch.	Jet	Thrtl. Valve.	Adapt.	Jet	Thrtl. Valve.	Cross Bore Mix. Ch.
Twin Cyl. 4-Stroke.	1000 C.Cs	29	E	20	30	2	Med.						
	750 ,,	28	E	20	29	2	Med.						
	500 ,,							27	D	16	27	2	Large
	350 ,,							25	E	14	26	2	Med.
Single Cyl. 4-Stroke.	600 C.Cs	32	D	22	32	2	Large						
	500 ,,	29	E	20	31	2	Med.						
	350 ,,							25	D	16	27	2	Large
	150 ,,												

LIST OF SETTINGS FOR VARIOUS ENGINES.

Section 11c.

Z Type Carburettors.

	Capacities.	15 H.Z.S.			15 H.Z.D.			25 H.Z.S.			25 H.Z.D.			30 H.S.		
		Jet	Thrtl Valve	Adap	Jet	Thrtl Valve	Cross Bore Mix. Ch	Jet	Thrtl Valve	Adap	Jet	Thrtl Valve	Cross Bore Mix. Ch	Jet	Thrtl Valve	Adap
Twin Cyl. 4-Stroke.	1000 C. Cs.	30	Y	20	31	2	Med.									
	750 ,,	29	Y	20	30	2	Med.									
	500 ,,							28	Y	16	28	2	Large			
	350 ,,							26	Y	14	27	2	Med.			
Single Cyl. 4-Stroke.	600 C. Cs.	33	Y	22	33	2	Large									
	500 ,,	30	Y	20	32	2	Med.									
	350 ,,							26	Y	16	28	2	Large			
	150 ,,													20	E	12

Engine Revs. at Different Speeds—Miles per hour.

Section 12.

Diam. of Driving Wheel, 26in.

Gear Ratio	4	4¼	4½	4¾	5	5¼	5½	5¾	6
Speed in Miles, hour									
5	260	276	292	309	325	346	358	374	390
10	520	552	584	618	650	692	716	748	780
15	780	828	876	927	975	1038	1074	1122	1170
20	1040	1104	1168	1236	1300	1384	1432	1496	1560
25	1300	1380	1460	1545	1625	1730	1790	1870	1950
30	1560	1656	1752	1854	1950	2076	2148	2244	2340
35	1820	1932	2044	2163	2275	2422	2506	2618	2730
40	2080	2208	2336	2472	2600	2768	2864	2992	3120
45	2340	2484	2628	2781	2925	3114	3222	3366	3510
50	2600	2760	2920	3090	3250	3460	3500	3740	3900
55	2860	3036	3212	3399	3575	3806	3938	4114	4290
60	3120	3312	3504	3708	3900	4152	4296	4488	4680

For 28in. Wheels, multiply Revs. by 1.03. For 24in. Wheels, multiply by 0.93

Cubic capacity of standard size of engines at present on the road.

Section 13.

Millimetres.	C. C.	Millimetres.	C. C.
54 × 75	172	76 × 65, 5	298
55 × 90	214	76 × 82	372
59 × 98	268	76 × 85	386
59 × 100	273	79 × 100	490
60 × 60	170	82 × 94	496
60 × 61	172	82,5 × 93	497
60 × 74	209	84 × 89	493
60 × 75	212	84 × 90	499
60 × 76	215	84,5 × 88,9	499
60 × 90	254	85 × 65	370
62 × 90	272	85 × 85	480
63 × 88	274	85 × 88	499
64 × 77	248	86,4 × 85	499
65 × 75	249	86 × 96	558
68 × 76	276	88 × 85	516
69 × 80	299	88 × 95	578
69 × 93	348	89 × 89	554
70 × 64,5	349	89 × 96	597
70 × 90	346	89 × 120	746
72 × 91	370	90 × 77,5	493
75 × 79	336	90 × 85	543

In the case of multi-cylinder engines, multiply by the No. of cylinders.