

Catalogue Ref No.	Description
VAGNER	
FORK CROWNS	
Forged Steel Models	
Route 66 mm or Demi-Ballon 68 mm (centre to centre)	
Oval pockets size 29 × 16 mm—column hole 25.4 mm	
Cut-outs—Types DP. PL. PC. DL.	
BVR/320	" " " No. 11-12
BVR/325	" " " No. 12 REC.
BVR/330	" " " DP special for automatic brazing
BVR/335	" " " DP special for automatic brazing
EXTRAS:	
Note: Forged types available with:—	
Chevrons on the shoulders EXTRA	
Two plate effect EXTRA	
/CS	
/TP	
Pressed and Welded Steel Models	
Cut-out Type DP only	
BVR/350	Route 60 × 29 × 16 × 25.4 mm
BVR/355	Demi-Ballon 68 × 29 × 16 × 25.4 mm
BVR/360	Junior 66 × 26 × 14 × 25 mm
Fork Crown Covers—$\frac{1}{2}$ depth only	
BVR/460	Brass for forged pattern
BVR/461	Chrome on brass for forged pattern
BVR/470	Brass for pressed pattern
BVR/471	Chrome on brass for pressed pattern
ZEUS	
FORK ENDS	
BZS/450	Competition pressed front
BZS/451	" pressed rear with gear hanger
BZS/452	" pressed front and rear sets with gear hanger
BZS/460	Gran Sport forged front
BZS/461	" forged rear with gear hanger and adjusters
BZS/462	" forged front and rear sets with gear hanger and adjusters
<p data-bbox="374 1461 1088 1510">Remember we are constantly increasing our range of frame building requirements—always ask us first for your special needs.</p>	

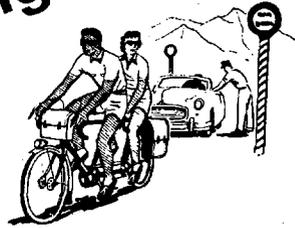
**USEFUL
ADVICE**



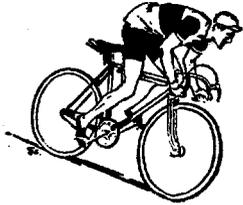
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RON KITCHING and members of his staff have personally tried and enjoyed all branches of this wonderful sport of cycling—have you? If not, here are some illustrations to remind you of the sport's various facets.

International Touring



Time Trials



Solo Riding



Club Riding



Tandeming

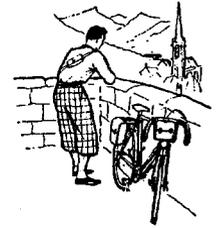


Massed Start

Roller Racing



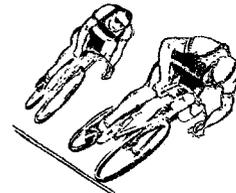
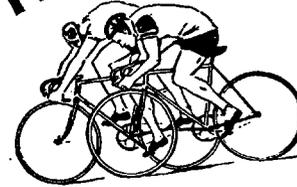
Cyclo Photography



Touring

Road Racing

Track Racing



Hill Climbs



Cyclo Cross



RON KITCHING has been fortunate in his lifetime of cycling to have made scores of friends, some of whom eventually became Britain's most successful internationals.

This Section is written by four of them whose names will always remain World famous and for this reason the section has been called—

USEFUL ADVICE BY THE SUCCESSFUL

BRIAN ROBINSON writes on General Hints.

REG HARRIS writes on Track Racing.

JOCK WADLEY Editor of *International Cycle Sport* introduces

TOM SIMPSON'S article on Road Racing.

THE ABC OF CYCLING is written by a Champion Amateur lady cyclist.

Finally, RON KITCHING himself offers Hints on the Choice and Care of Equipment based on his unrivalled knowledge of the cycle trade, coupled with his practical experience of Cycling in all its facets.

TRAINING HINTS from BRIAN ROBINSON



The first British Rider to win a 'TOUR de FRANCE' Stage.

Brian was the first British Rider to really make the grade in Continental Road Racing. His Yorkshire grit and determination gained him a first class reputation amongst the World's top Roadmen. Here in his own words is sound advice both for novice and expert.

Riders vary so much in physique and their need for training that it is almost impossible to give advice in the form of hard and fast rules.

To my mind the most important thing is to first find a comfortable position that will also give you style and power. Here are a few simple rules to give you a correct position.

SADDLE Height: Adjust the saddle height so that with the leg at full extent you should be just taking the weight off your leg with the **heel** of your shoe on the pedal, this of course while wearing usual light heeled shoes. This is the maximum height permitted even for racing tourists may prefer a slightly lower position.

SADDLE position in relation to bracket: Place one of the pedals forward of the bracket until the crank is parallel with the ground. Move the saddle forward or backwards so that when seated on the machine the lower part of the leg is perpendicular.

REACH: Having established the best position for the saddle, next it is important to set the handlebars at the correct distance from it. This reach seems largely to be a matter for personal choice, but a good guide when using 'average' shaped bars is for the distance from the saddle point to the bar centre to be equal to the length from the finger tips to the elbow **plus** 1½ inches.

FRAME sizes: Modern standards suggest a frame size equal to 10 inches less than the rider's inside leg measurement. This leaves approximately 3 to 4 inches of seat pillar visible.

TRAINING

Training is one of those subjects which can only be generalised in such an article as this, so much depends on the rider and his circumstances. Each individual should adopt a schedule for himself. First I would like to illustrate how two human bodies can differ. Rik Van Steenbergen races summer and winter alike, except for ten days spent at winter sports in January. He prefers this activity because when he stops riding he puts on so much weight that it is easier to race all the year round rather than have to start grinding off three to four stones at the start of the season.

Tipping the lighter end of the scale is the Luxembourg rider Charly Gaul. I think of all the current professional riders his is the shortest season of all. Very lightly built, hence his climbing prowess, he has only a small supply of reserves and therefore he is careful not to overtrain. This is the vivid difference between two different types.

Without any doubt training is a progressive build-up of all the organs concerned in a particular sporting effort and the two main organs used are the lungs and the heart. Normally on making an effort the effect will first be felt on the lungs, and to me these are the organs that need most training.

Try a dozen good deep breaths, filling the chest to the full and then pushing down the diaphragm with a second intake of air. This is rather difficult at first, but when training is well under way this can also be practised while riding.

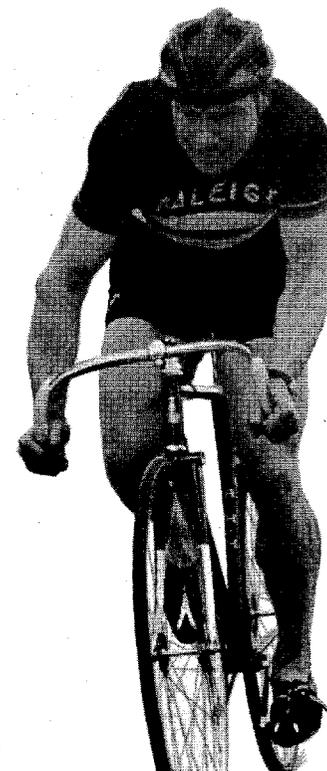
Finally a word on food. The things to avoid are heavy foods like steamed puddings, etc., and certainly all fried foods before racing as these are bad to digest. A good meal before a race is boiled rice with cheese and a raw minced steak, finishing with fruit either fresh or steamed. Otherwise the more raw vegetables and salads you eat the better. The main thing is not to suddenly change your diet overnight, cut out the poor foods for the better ones gradually.



Brian Robinson
with Ron Kitching
Isle of Man
International

TRACK TRAINING by REG HARRIS

Amateur & Professional World Sprint Champion



Reg Harris 5 times World Sprint
Champion

It might be asked if it is still worthwhile for any young man with the necessary physical qualifications to devote himself to 'track training' in view of the fall off in track racing interest at home and abroad. I am sure that it is.

For one thing, whatever is put into such training will never be wasted even if considered only from a physical fitness standpoint. For another, it is not impossible that sooner or later racing men will turn away from the traffic-laden roads to the 'peace' of the sports arenas; may indeed be constrained to do so. And what is most important, the standard of track racing at the moment is so low that a man of the right calibre, willing to make sacrifices, and imbued with a sufficiency of burning ambition could become sprint champion of the world with far less opposition than, say, Scheerens, Van Vliet or I encountered.

What the right calibre might be is too complex a subject to discuss here. Suffice it to say that apart from certain essential mental qualities, a trackman with aspirations must have the inborn ability to empty himself of all physical resource in a very short space of time. If he can do this in something akin to a physical explosion—he could make a champion sprinter. If it takes fractionally longer, perhaps a 1,000 metre man, but there is no place on wood, cement or cinders for anyone who lacks this ability in some measure. If it is present in a man's make-up in even moderate degree it can be developed by training, but obviously a 24-hour man will never make a trackman.

Some riders enjoy their training almost as much as the actual racing. I hate it! Long miles on the road, endless circling of empty tracks, the simulating of competition are chores that have to be done if the necessary confidence is to be there when the hush descends on the stadium just before the pistol cracks. In this country, one begins doing these chores just as soon as the weather allows.

You may have practised some form of physical culture during the winter, you may have ridden the rollers when roadwork was impossible, but the foundation of all track preparation must be laid on a base of fast road-miles. How many and how often depends greatly upon physical characteristics, but all of them should be done on a fixed wheel. At certain times of the year and for certain purposes I used variable gears in road training, but I say categorically that basic road miles must be on 'fixed'.

Once any 'rough' is off, the gear can be around 75"—78" and the riding should be over fairly level roads, in company, for 30 or 40 miles covered at a brisk pace—and with the final 10 miles almost flat out, team pursuit style.

Even in the light of many years' experience as a professional, I consider the training I used to do when an amateur, as a member of a famous Manchester 'school' could hardly be bettered. After 20 or 30 miles including 10 miles or so doing bit and bit, we used to end up on a stretch of dual carriageway that became the forcing-ground for some of the best sprinters Britain has ever had. With gears raised to 84" or 88" we had a sprint series, going for pre-designated marks as though world titles were at stake. Four or five runs down the Mauldeth Road 200 metres following the bit and bit sessions made us fully aware that we had been exerting ourselves.

To anyone who does not have ready access to a track, and to many who do, I would strongly recommend this procedure. Find a suitable stretch of road and do as we did, and as the Horn brothers did in their part of the world. If you can find like-minded companions then by all means train with a group, but do not hesitate to go off on your own if any of the boys are half-hearted or very much below your standard. You are out to be a champion, not necessarily to make friends, and in any case you can practise sprinting alone.

The final polish should come from work done on the track, on a track gear and on track tyres. Almost anything will be of benefit, leading-out, jumping, following tandems or small motors (not too much motor pace as this is too easy), fast lapping in team pursuit formations, starting practice or what you will, but effort must be put into everything you do, and every session should include actual sprinting practice. Too many present-day riders seem to put no more into their training than I used to put into warming-up, and how they expect to shine in such a fiercely energetic sport as track racing is quite beyond me.

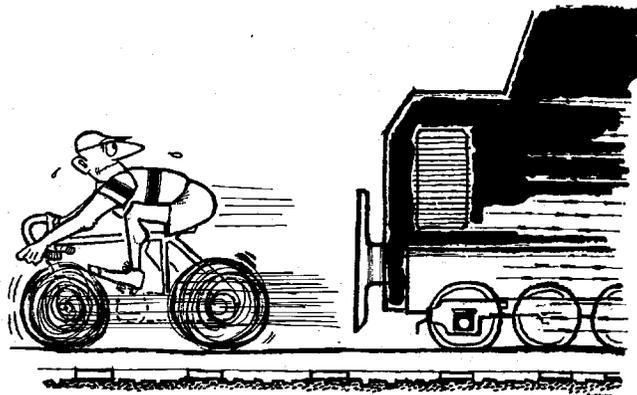
It has been said many times before, but it apparently needs stressing to every new generation of speedmen, that in training it is not so much **what** you do that matters as the **way** in which you do it. And for a would-be champion, the way is with zip, with unfailing regularity, with single-minded purpose and on occasions with something near to ferocity.

Some of that careful preparation will of course go into the mechanical part of the unique man-and-machine combination that makes cycling the sport that is different. Need I tell you that your equipment must be the best you can afford, must be impeccably maintained and that your presentation of yourself and your bicycle should be none other than immaculate?

There should be no sacrifice of strength and rigidity in the frame for the sake of lightness. There is nothing to be gained by freakish design, and any specialist builder in whom you have confidence should be left to his own devices. I would recommend steel handlebars and stem, not because alloy ones are not strong enough, but because they are inclined to whip slightly. I always preferred large-flanged hubs in both wheels, and would insist upon having one or other of the seat pillars capable of micrometric adjustment of tilt. For the sake of clearance, use the smallest pedals upon which your foot can sit. If your shoe size is between 7 and 8½ use a medium toe-clip; over 8½ use a 'long', and under 7 perhaps a 'short' with packing between the clip and the pedal plate. Tyres are the most expensive item, and while still on the way up there is no need for superfine silks, 8 or 9 ounces is a reasonable weight for most activities with the 5 or 6 ounces kept for the big occasions. I have every confidence in the cotterless alloy chainsets, and while a roller chain is adequate for pursuing and for the longer distance events, the sprinter must have a block chain. Saddles are personal items and I always did best on leather, but perhaps that was because I was unwilling to experiment with new materials.

There is no magic in any particular shape of handlebar, make of tyre or layout of frame that will make you into a champion, but equally there is no harm in trying various items until you find something that suits you. Neither is there any magic in anything I can tell you. The way to the top is sometimes long; it is always hard, and the men who have succeeded in reaching it have been hard men. None of them from this country have relied on coaching or any great amount of outside help, but have got there from knowing themselves, from setting themselves a goal and from developing to the uttermost limits all those qualities I have mentioned above.

TRACK RACING



TRAINING FOR ROAD RACING by TOM SIMPSON

Britain's most successful Road Rider
Professional World Champion 1965



Foreword by Jock Wadley
Editor 'International' Cycle Sport.

Among my souvenirs of a lifetime spent in cycling sport is a letter written by a 16-year-old enthusiast asking the great French rider Charles Pelissier for advice on training. I helped Monsieur Pelissier reply to the lad who signed his letter 'Yours in sport, Thomas Simpson, Harworth & District C.C.' That young fellow 11 years later was professional road champion of the world.

'How did he do it?' many have asked. I think that letter goes a long way towards giving the answer. Young Tom knew that there were hundreds of cyclists in the world with the physical qualities to reach the top, but that only those who knew the right way to train would succeed.

I had the privilege of being close to Tom Simpson during many of his greatest rides, but I firmly believe that he won those great victories not so much in the race itself as—to alter slightly a well-known advertisement—during the week before. In other words Tom triumphed in world championship, 'Tour de France' and 'classic' races through the thoroughness of his training.

The broad outline of Tom's training programme are admirably outlined in the following article. The ambitious young rider who follows it will have a priceless advantage over the 16-year-old who wrote to Charles Pelissier many years ago. Poor Tom died because he was forced to use drugs to keep ahead of inferior riders who had resorted to this malpractice. His death speeded up official action against the menace. Tomorrow's champion will be the rider who gets there on nothing but ability, deduction—and hard training.

So you want to be a champion bikie? Right, before we start let us make things clear, if you are going to be serious. If you are prepared to suffer constant agonies of mind and body, if you are prepared to flog yourself to get to the top then read on.

If you are not prepared to devote yourself, you can still get a lot of fun from cycling but, forget this and stick to time trialling, after all what fun can you get from trailing in behind a bunch in a road race?

To reach the top in any cycling sphere, be it road, time trial or track, requires some basic ability, a serious approach and the ability to learn from your own, and other people's mistakes.

Since we are all built differently with different physical and psychological make-ups, I cannot tell you exactly how to prepare yourself for your bid to gain the great rewards—both financial and personal satisfaction—which the bike game has to offer.

But I can give you pointers. By trying out what I have found right for me—the things which have enabled me to get where I have—and by trying what others have found best, you can use a process of elimination until you find exactly what is right for you.

Although this will differ in detail from what you read here, it must follow these basic lines because everyone who has got to the top has done so with a similar programme.

Before you even think of bike-riding, cast an eye to basic personal good health. Little things can make all the difference. A toothache can cause as much pain as a climb of the Galibier so why make yourself tackle both at once. Teeth, feet, nails, eyes all should receive regular attention—at the slightest sign of trouble see a doctor and get it cleared up. Rinse the eyes regularly to get rid of road-grit which can irritate them and cause conjunctivitis—and a ruined season. Cut toe-nails square and short and remember in-growing nails should receive immediate attention. Your feet are like the drive-shaft of a car, they transmit the power from the engine—your legs—to the wheels. Don't expect them to do so when they are uncomfortable.

Long hours in the saddle require hard skin on the points of contact. To protect the skin of the seat wash it every day—with cold water which will also toughen it. Protect the seat by using medicated talc or mutton grease on the chamois of your racing shorts. Percainal contains cocaine which helps kill pain and believe me, the seat can be pretty raw in a long race, especially when the roads are rough. And don't forget to wear racing shorts, under warm trousers, when training. They should be washed at least every three rides for hygiene's sake.



Your insides need to be in tip-top health too, not goosed-up with stodge. Eat plenty of salads, but add some solids to give a bit of bulk and so avoid 'the runs'. Try to eat sensibly. Of course it is a bit much to expect wife or mother to prepare obscure concoctions, especially when the rest of the family are calling for chips and the like. If you are having eggs then why not have them poached instead of fried? Why not eat your meat grilled? It does not take too much effort or take too much pleasure out of life to avoid fatty and fried foods. Avoid pork, bacon, fried potatoes, white bread, fermented cheese and the like—but there is still plenty of variety left to choose from.

Porridge is good for adding a bit of bulk to the diet but don't boil the goodness away, eat the oats raw—chewing is good exercise for the teeth. To make it more interesting add some chopped or dried fruit or some chopped nuts—all enjoyable and good for you. Yoghurt is another worthwhile addition.

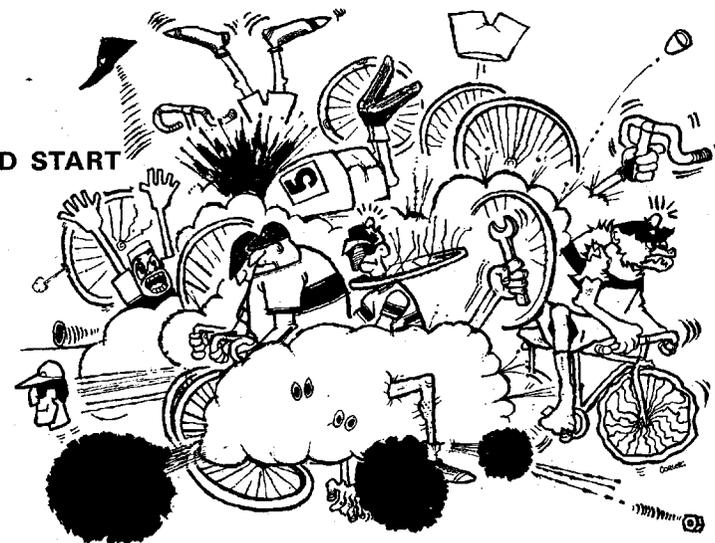
Of course diet needs even more attention when racing. Perhaps my own practice will provide guidance for you. In a road race I would probably eat two biscuits, two rice cakes or fruit tarts, six slices of honey-bread, in sandwich form (honey or ham as fillers). At about 25 miles I eat a couple of oranges or bananas and sugar lumps provide sustenance throughout the race; and there is the secret—don't wait until you are hungry before you start to eat, the 'knock' is the racing man's greatest enemy, but it is something which is easily avoided by eating regularly right from the first miles of a race. A high intake of easily digested carbohydrates will give you a quick return of energy.

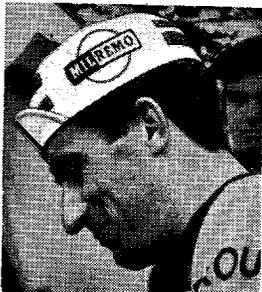
You are going to race on a stripped-down lightweight, so why not train on one?

You should simulate racing conditions. I always train on 'tubs' and on a bike which is near identical to my racing iron. Of course commonsense means the addition of mudguards to combat foul weather—although if it is raining when you plan to leave then it is better not to go out—it is preferable to lose a few miles than to lose a week due to a cold. Of course roller riding is the answer in bad weather.

Gears will be lower too, a close-ratio arrangement being ideal. I would recommend gears of between 50 and 78 inches. I have always trained on sprints and tubs and can see no sense in doing otherwise—the theory of riding a heavy bike for training 'Then it will feel easier when you race on a light one' is just a big fallacy.

MASSED START





So, your training bike is ready, but how do you plan to dress—shorts and open-necked shirt? If you do, then you are asking for trouble. Always wear long trousers or plusses for training. The knees are very vulnerable and should be kept both warm and dry—a little capsicum rubbed into them will help this. In cold weather wear a pair of long woolly 'combs' even if you have to borrow Grandpa's. Wear a woollen undervest next to the skin for warmth, unless it irritates, but your top garments at least should be wool. Besides being warm, wool can hold up to half of its own weight of water without feeling damp—and it breathes.

Forget anoraks and windcheaters, they not only seal out the wind but make you sweat without allowing the air to carry it away. A racing jersey worn under your top woollies makes a useful wind-break and provides pockets to carry the food you should take with you, but don't wear it next to the skin as the colour may run and cause a rash. Remember to wear enough, it is better to feel too warm than cold, after all you can always take one sweater off if it gets too hot.

Right, the bike is ready and you are ready too, now how to train? Most English riders tend to overdo things, either by going too far or too fast.

Pre-season training should start in February with a thirty mile ride on Tuesday, Wednesday and Thursday evenings and forty miles on Saturday and Sunday, building up to thirty-five mile rides on weekdays from Monday to Thursday, rest on Friday and sixty-five miles on Saturday and Sunday.

Of course racing is the best kind of training and, during the season, evening events are invaluable.

You should accustom yourself to being able to race several days running, with no ill effects. To do this you must be fit and will need plenty of the right foods and plenty of good sleep.

When training do not flog yourself uphill, gear down, ride steadily. Avoid big gears at all costs, especially early season when they can strain ligaments.

When you get home, have a shower or rub yourself down with eau-de-cologne which serves the double purpose of closing the pores and thus colds, and also being very refreshing.

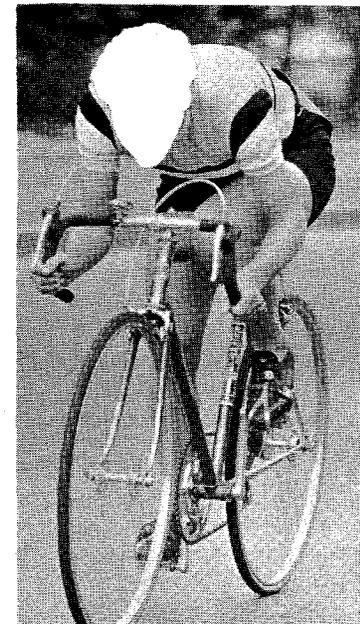
You need not be a hermit, in fact you can lead a near normal life. All that is needed is a little self-discipline to avoid harmful excesses, and determination to reach the top.

If your heart and mind are in the bike game, and you give yourself a fair chance, then perhaps one day you could join the handful of British pros in the fight to establish our country as a top cycling Nation.

But at the very least you will know that you are getting the most out of the sport. You will not need excuses because you will have the satisfaction of knowing that you are giving of your best.

ANONYMOUS BRITISH CYCLIST'S 'ABC' OF CYCLING

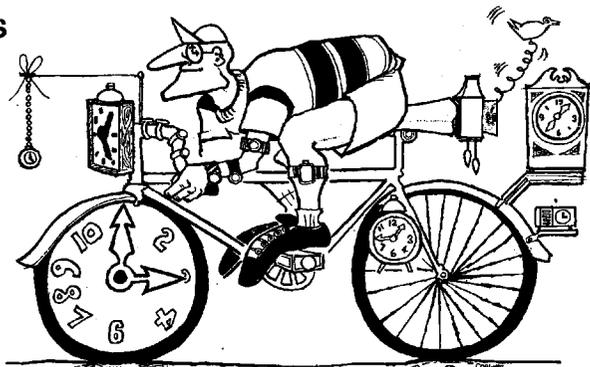
The advice printed here is written by one of Britain's leading ladies, whose name for obvious reasons we cannot reveal. The advice is the result of years of enjoyable cycling and should be the 'A' to 'Z' guide for every rider who aspires to the title of Champion.



- A** is for **ACTIVITIES**, of which cycling is the best—what other hobby has such a diversity of interests? Be it touring, club runs, camping, hostelling, time trialling, road or track racing—the bicycle caters for all.
- B** is for **BEARINGS** which must be kept adjusted, clean and lubricated—light oil for wheels and pedals—light grease for bottom bracket and headset.
- C** is for **CYCLIST**—be one and not just an 'athlete on wheels'—its more fun.
- D** is for **DOPE**—the biggest one is the rider who uses it.
- E** is for **EQUIPMENT**—choose the type most suited to your needs and pocket—look after it—check it weekly.
- F** is for **FITNESS** for which you must train—each one according to his/her need—for me this is riding a bicycle 40/50 miles each evening Monday to Thursday, 40 miles on Saturday and 80/100 miles plus a race on Sunday—all training done on 70" gear at about 18-20 m.p.h.
- G** is for **GEARS**—clean and lubricate weekly—check that wire and keep these jockey wheels adjusted—it's too late in the middle of an event.
- H** is for **HYGIENE**—both dental and personal are important to a healthy body.
- I** is for **IMMERSION** in water, a thing I never do during the racing season—try a shower or rub down instead—Eau-de-Cologne is marvellous.
- J** is for **JOY**—the feeling one gets when fit and riding the bicycle.
- K** is for **KEEN** and efficient brakes—check those inner wires and blocks—your life could depend on them.
- L** is for **LIGHTS**—see and be seen—I always use a dynamo in winter.
- M** is for **MUDGUARDS**—except for racing, I can see no excuse for subjecting your body and bicycle bearings to wheel spray.

- N** is for **NUTRITION**—intelligent eating rather than dieting is my recipe—grilled meat, salads, fresh and dried fruit, cheese and honey, all help to form a good nucleus.
- O** is for **OIL**—a must for every free running machine—don't forget the chain.
- P** is for **POSITION** on the bicycle—comfort is my first essential and works out for me approximately as follows:
 Frame size=8" less than inside leg measurement.
 Saddle height=inside leg measurement plus 7%.
 Reach from saddle centre to front of handlebar throw=inside arm measurement to fingertips plus 7%.
 Saddle nose is 1½" behind bottom bracket spindle.
 Toeclip length allows for ball of foot to be a fraction forward of pedal spindle.
 Handlebars are 1" lower than saddle.
- Q** is for **QUERIES**—ask the experienced riders' views, then adapt to your own requirements.
- R** is for **ROLLERS** which help you to beat the fog, smog, and ice of winter evenings—I ride the gear bike on a 70" gear.
- S** is for **SHOES, SOCKS and SHORTS** which should be close fitting, clean, comfortable and good quality.
- T** is for **TYRES**—choose the type most suited to your needs and look after them—ensure tubulars are well stuck on—check weekly for flints and cuts—keep inflated; hard for riding and lightly during storage.
- U** is for the **UNsung** praises of cycling—let everyone know that you are a Cyclist and proud of it.
- V** is for **VICTORY**—which should be the aim of every sporting cyclist—work for it—it doesn't come easy.
- W** is for **WILLPOWER**—keeps you going when its hurting—cultivate it.
- X** is for **eXtra** care you must take in your appearance and behaviour when on the bicycle.
- Y** is for **YOUNGSTERS**—encourage them to take up cycling.
- Zzz** is for the sleep you require if all this isn't going to be wasted effort.

TIME TRIALS



Ron RECOMMENDS



A lifetime of Cycling and over 30 years of service in the Cycle Trade I suppose gives me some right to air my knowledge although I can promise you that in this varied sport of ours one never fails to find someone with a second opinion that differs from your own. I hope, however, that the following recommendations on the choice and care of equipment, added to the advice in the preceding pages by the Champions, will help you to enjoy your cycling even more.

INDEX

1. Care of Clothing
2. Care of Shoes
3. Hints on Wheel Building
4. Choice and care of Tubular Tyres
5. Equipment suggestions
6. Guarantee Complaints.

1. CARE OF CLOTHING

Good quality clothing is not cheap but it will repay the expense over and over again both in comfort and efficiency. Buy the best you can afford at all times and then follow these hints on care after use—they will ensure you get value for your money.

For long Road Races it is preferable to use a Wool Jersey, the modern Continental types in fine quality offer little wind resistance. Racing Shorts too are most important and should be the best you can afford and, of course, Mitts and Shoes should have good ventilation to allow them to breathe and to avoid any retention of water.

(a) Acrilan Garments

Hand wash or Machine wash for two minutes in cold water using a liquid detergent. Rinse thoroughly in cold water. Do not wring or squeeze. Smooth creases by hand while wet. Hang by waist band to dry. If required, slight ironing using a cool iron and light pressure allowed.

(b) Cotton Articles

Hand wash in warm water using a good soap powder. Rinse in clean cold water.

(c) Rayon/Cotton

With all coloured garments we recommend dry cleaning for best results.

(d) Rayon/Wool

Dry cleaning is recommended.

(e) Wool Garments

Dry cleaning is again recommended, but as an alternative woollens can be washed if the following recommendations are followed:

- * Use lukewarm suds from a good soap powder, seeing that they are completely dissolved. Never boil woollens.
- * Squeeze out all surplus gently—do not soak, rub or wring.
- * Rinse thoroughly in several changes of clean, cold or lukewarm water.
- * Dry on a flat surface so ensuring the garment is not pulled out of shape, away from direct heat or sunshine.
- * Press with iron at wool setting using a damp cloth.

(f) **Bri-Nylon**

Récommendations as for WOOL, pressing is not necessary.

(g) **Helanca Nylon**

Use warm water and some neutral soap or detergent to wash—do not wring. Hang up to dry away from heat or direct sunlight. Do not iron. Remove stains of

- (1) grease—with a good spot cleaner
- (2) tea, coffee, grass, tomato, pear—with water, soda and a pinch of salt
- (3) grape or peach juice—with water and a few drops of bleaching solution.

(h) **Chamois Leather**

Care of your racing shorts should be your first consideration and in particular the preservation of the chamois insert. Handwash after every race in warm soapy water and then stretch the leather back to shape and allow to dry. In no case use hot water or detergents.

2. CARE OF SHOES

First remember cycling shoes are not ordinary shoes and therefore they need special care. Watch these points and you will enjoy better foot comfort so important to the cyclist.

- (a) Avoid walking in the lighter shoes designed solely for racing.
- (b) Always keep the shoes free from mud and use a good make of shoe polish before every outing.
- (c) After using the shoes in wet weather be careful to remove any dirt by brushing and then dry slowly in a medium temperature. Never dry before a fire of any kind. Insert a newspaper inside or preferably use shoe trees. A little neatsfoot oil should be run into the welts.
- (d) Be sure to have your shoes repaired by a competent repairer.

SPECIAL NOTE:

To complete the protection of your cycling shoes we recommend the fitting of shoe plates. Not only will they improve your pedalling power considerably, but they will protect the light shoe soles.

For correct shoe plate fitting—first use the shoes without plates, thus marking the position of the pedal plates—now fit the plates with the slot approximately 1/16" back from the mark on the shoe sole. This will ensure a small gap between the toeclip and shoe toe and will prevent the toeclip cutting into the leather.

3. HINTS ON WHEEL BUILDING

Wheels are best built by experts so seek out the man with experience.

Remember to always buy the best you can afford it will repay you over and over again with improved performance. Here are a few hints that you should always remember.

RIMS

Whether for high pressures or "sprints" I choose duralumin every time for the simple reason that dural is not only rustless but above all lighter than steel. Remember reducing the "revolving" weight of a cycle as opposed to "dead" weight is the easiest way to increase speed.

For **Massed Start** racing or **Sprinting** I recommend the slightly heavier **MILREMO "Giro"** or the **MAVIC "Piste"** rims both made with watertight built-in ferrules. The former rim was used by last year's Tour de France winner and the **MAVIC** products too have an unrivalled record both in World and Olympic Championships over many years.

The built-in nipple housings give the extra rigidity required during those violent "out of the saddle" jumps.

The above two rims are also the obvious choice for **long distance Time Trials** but for **Short Time Trials** and **Track Pursuing** a lighter rim is possible and may just make that few seconds difference between winning or losing. The ultra-light **MILREMO "Scheeren"** wood-insert dural rims have proved that providing they are carefully built that they are the fastest. More British competition records both road and track have been broken in recent years on cycles using these rims—and Continental "aces" like **GIMONDI** use them in races against the watch. These rims which require special long nipples, and you can have these in ultra-light dural too, have the elastic feel of all-wood rims but with the advantages of duralumin.

For **Medium distance Time Trials** and **Criteriaums** I suggest that the **MAVIC "Monthery"** rim will give you excellent satisfaction being both light and rigid. For the rider who can afford only one pair of sprints to cover all events he should choose this rim or the reliable **MILREMO "Giro"**.

If you can afford it buy a second pair of "sprints" even if they are second hand and use them for training or riding to events and so save your best wheels for actual racing. This will avoid continual changes of tubular tyres.

Of course it is less trouble if you use "high pressures" for your training wheels. There are now many excellent H.P. lightweight dural rims available ranging from the economical **MILREMO "Club"** to the luxury **MILREMO "Super Champion"** with rigid web construction. The latter fitted with the handmade **MILREMO "Super Champion"** ultra light H.P. wired-on covers have almost the same feel as sprints.

HUBS

Here again dural is now the first choice for the discriminating rider, and the solid centre one-piece type of barrel is to be preferred. Use a single sided rear hub wherever possible. Large flange hubs will help to counteract whip, particularly on the front wheel during sprinting. Quick release hubs are a must for all types of road racing—large flange then for rigidity and small flange for comfort on long rides. My own preference for track use is **CAMPAGNOLO** but for the road there is no need to look further than the **ZEUS** range or even the more economical **MILREMO**. In 1970 **ZEUS** too will have new Super Track Hubs with special fixed sprockets made in a new metal weighing only 1/3rd of that of steel.

SPOKES

Good quality double-butted ^{170 kg} spokes are to be preferred in stainless steel if possible and we always use **ROBERGEL** in our workshops following the lead of most of the top Continental "pro" riders who cannot above all risk wheel trouble. The gauge will depend on the rider's weight—under 11 stone riders can use 15/16G but heavier riders, or those with a "tearaway" riding style should use the stronger 14/16G, at least on the driving side.

For touring cycles carrying luggage it is always advisable to use 14/16G at least for the rear wheel.

Tied and soldered crossings will stiffen your wheels but at the same time add a little to the revolving weight.

HUB AND RIM DRILLINGS

The tendency in recent years has been to reduce the number of spokes used without any consideration for rigidity or safety.

I agree that the 40-hole drilling which has been common practice in Britain for rear wheels is probably erring too much on the side of safety and I welcome the more convenient standardisation of 36 for front and rear on popular sports cycles. But before reducing to 32, 28 or even 24 spokes which is now the choice of some racers it is well to remember that the ultra-light wheels and reduced spoking adopted by many Continental aces are often only used for one particular event and should not be taken as acceptable for a full season's racing programme.

Before choosing your drillings therefore give careful consideration to your weight, style and type of cycling you are going to do.

A general guide for the average weight rider would be as follows:

Type of Cycling	Front Wheel	Rear Wheel
Touring (carrying luggage at the rear)	32	40
Club riding	36	36
Road Racing	36	36
*Short time trials and pursuits	28-32	28-32
Medium and long distance TTs.	36	36
Track sprinting	36	32-36

*24 spokes for championships by lighter regular pedallers.



Scene during the 1969 TOUR de FRANCE. The last word in service!

ASSEMBLY

Good wheel material can be ruined by bad building, so be sure your wheel builder knows his job. Insist on correct lacing with a left and right hand side—outside spokes going left, inside spokes going to the right.

Remember also it is essential to see that wheels are built with the rims central over the outer faces of the cone locking washers and that the hubs fit exactly into front forks or rear ends without either springing them apart or squeezing them together.

By the way—have your wheels re-built every season—it will repay you with trouble free-wheeling.

4. CHOICE AND CARE OF TUBULAR TYRES

Tubular Tyres or "tubs" as they are popularly called in Great Britain ("singles" in Australia and "sew-ups" in the U.S.A.) together with the special "sprints", that is the special rims that go with them, have improved vastly over recent years and have certainly contributed more than any other factor in the current record performance of both road and track riders. The saving in "rolling" weight of light wheels as opposed to the "dead" weight of the rest of the cycle is important and should not be ignored by any cyclist and even tourists can now be seen using some of the excellent vulcanised tubular tyres that are on the market. However, tubulars need careful choosing—fitting—inflation—preservation and, I hope therefore that both novices and experts alike will find something in these hints that will be practical and useful.

CHOOSING THE RIGHT TYRE

1. It is difficult to recommend any particular tyre for a specific event when consideration of weather, road surface, weight of rider, etc. have to be allowed for. However, the Table of Recommendations in the Technical Data Section should give a rough guide to the buyer. Obviously the higher priced tyres will give you a better performance but this should not deter you from using our cheaper tyres—all have been thoroughly tested.
2. Choose a tyre with a rubber base tape for all kinds of road riding or training. A hasty roadside tyre change usually results in the parting of a cotton base tape from the tyre itself.
3. Use a heavier tyre on the front wheel—a burst front tyre is harder to get under control than the rear. A lighter rear tyre also aids a quicker getaway.
4. Do not fit large section tyres on to narrow section rims.
5. For preference your tyre should have "matured" several months before use, and remember—for Track work use Silk for cement, Cotton for wood—paralatax tread for front, black tread for rear wheel.

FITTING THE TYRE

More tyre trouble and accidents are caused through incorrect fitting of tubular tyres than is realised. You owe it to your fellow road users and yourself to take the utmost care in fitting even Training tubulars. Observe these rules carefully.

6. Be sure that the rim bed is serrated to ensure a good gripping surface.
7. Check that spoke heads are filed down and there are no rough edges to the ferrules.
8. Make sure the rim is perfectly clean and the bed is free of Makers polishing soap, oil, grease or old cement. Use a rag soaked in a solvent such as petrol.
9. Apply on, two or preferably three even coatings of cement over the whole of the rim bed, taking good care to keep it off the rim sides. Use "**Mastice Gutta**" for road and "**Gomma Lacca**" for track tyres or the new **VITTORIA** super white cement suitable for both types (one coat only of the latter is sufficient).
10. Be sure your hands are clean and dry before handling the tyre.
11. If the tyre base tape appears to be worn fit a good quality rim tape to the rim—**JANTEX** or **BOYAULAST** adhesive both sides is recommended. Overlap the join and cut the valve hole.
12. Coat the adhesive rim tape with a good uniform layer of rim cement.
13. Allow the cement to dry at room temperature for at least one hour.
14. Warm the tyre to room temperature and then apply a coat of rim cement to the base tape allowing time to get tacky. Hand-made tyres may need pre-stretching before fitting but this must only be done very carefully and evenly.
15. Insert the valve, locking with the rim nut, so ensuring that the valve is in a vertical position and also preventing any loosening of the tyre base nut.
16. Carefully work the tyre on to the rim with both hands, partially inflate and then centre it perfectly. Be sure there is a uniform tension round the whole circumference.
17. Inflate the tyre to the pressure required only after 2 to 3 hours. Double this period for light track tyres.
18. To obtain maximum adhesion leave for as long as practicable (minimum 24 hours) before using.



Ron Kitching
Service Car at
Harrogate
MILK RACE Stage
Finish
C. Peters (L.)
D. Benn (R.).

INFLATING THE TYRE

19. If a flexible pump connection is used when inflating be sure it is for Presta valves and be sure not to over-tighten.
20. If a push-on quick-fit pump adaptor is used grip the tyre and rim with the thumb and so relieve undue pressure against the valve "stalk". This can so easily be damaged by rough use.
21. To remove give a sharp blow on the pump—do not waggle the adaptor off the valve.
22. Under-inflation may give a more comfortable ride but it also causes the fabric to be overstretched resulting in tread twisting and possible blow-out of the tube. It also causes "creeping" with consequent valve trouble.
23. Over-inflation causes bouncing with not only a loss of friction on the road but also it causes fabric fatigue. (See tyre pressure recommendation.)
24. Due to having thin inner tubes "tubs" lose air faster than wired-on tyres and should therefore have pressures checked daily. If the "tub" is filled by a CO₂ pump gas cylinder the gas escapes even quicker than air. The nitrogen however, used in the MILREMO racing pressure pump has the reverse effect and can be recommended for "tubs".

PRESERVATION 保存

25. After use check carefully for any cuts or swelling—if the "tubs" are wet and dirty wipe clean and dry.
26. Tyres when not in use should be carefully cleaned, kept fitted on the rim, lightly inflated and preferably stored in a dark and dry place.
27. During winter keep as above in a dark place with a cool well ventilated temperature, after sprinkling with talc.
28. Remember that oil—grease—solvents and excessive heat will damage the tyre. Be careful to avoid friction or damage from straps or burrs in the surface of the rim.
29. If your cycle is only temporarily out of use, hang it up in the dark so that the weight is not on the same portion of the tyre.

CARRYING YOUR SPARE TYRE

30. Fold up carefully with the tread to the outside. Wrap in a sheet of plastic cloth (MILREMO make a good one) and attach the saddle frame with a tubular tyre carrier. Recommended are the VITTORIA "Fulmine" or ZEUS Q.R. or the VAR "Porte-boyaux".
31. If, however, you have lightly cemented the spare's base tape it is recommended to fold with the tread inside.
32. Periodically remove the spare, inflate overnight and deflate again and refold varying the folds.

OTHER USEFUL HINTS ON TUBULAR TYRES

33. Check tyre adhesion before every ride, particularly to ensure that the cement has not dried out.
34. Avoid changing your tubulars—it is better to have an extra pair of cheaper wheels for training or riding to and from events. Changing tubulars means another slow process of re-cementing the rims.
35. Never use brand new tyres for an event. Try them for at least 50 miles first.
36. Use wheel covers when transporting the cycle by car or train, so avoiding any friction to the tyres.
37. Check for protruding spoke heads after each wheel truing and remember a badly buckled wheel causes uneven braking thus excessive tyre wear.
38. During hot weather give the walls of the tubular a light coating of solution from time to time. Keep tyres out of the sun as much as possible especially when stationary.
39. Use thorn or flint catchers always but if you do find your tyre tread is cut, clean the cut free of dirt and grease and fill with a tread stopping compound. Bad cuts should be filled by a competent repairer and the same advice applies to the fitting of new base tapes and all major repairs.

TYRE PRESSURES

40. The higher the pressure the better the security or grip and also the greater the speed, but road surface and the weight of the rider however, must influence your final choice which should be somewhere within this range:

	lbs. per sq. inch	Front	Rear	
TRAINING		85-90	95-100	ound/inch ²
ROAD Time Trials	" " " "	90-105	100-120	
ROAD Massed Start	" " " "	85-100	95-110	
TRACK Hard	" " " "	100-135	115-150	調整
TRACK Grass	" " " "	65-85	75-95	

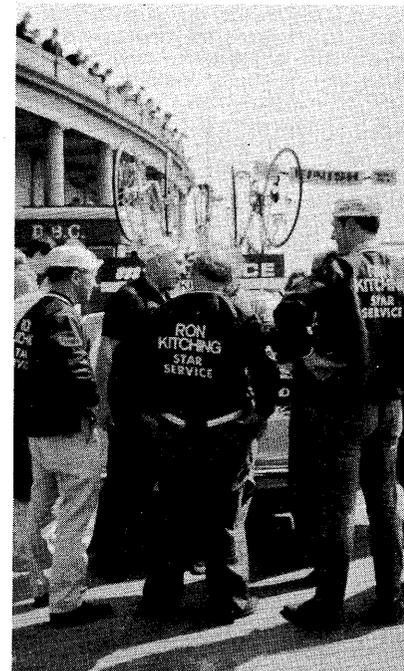
In conclusion—if the above recommendations are carefully followed in every detail your tubular should last for several seasons and should wear out through use and use alone. If properly stored it will not deteriorate except over a very long period.

$$1 \text{ lb one pound} = 0.453 \text{ kg} \quad 1.0336 \text{ kg/cm}^2$$

$$254^2 = 64516 \quad (1 \text{ in}^2 = 6.4516 \text{ cm}^2)$$

$$1 \text{ lbw} = 0.45359243 \text{ kgw}$$

$$1 \text{ lbw/in}^2 = 0.07031 \text{ kgw/cm}^2$$



MILK RACE Finish at Blackpool. Ron Kitching discusses affairs with his Service Team.

5. EQUIPMENT SUGGESTIONS

It would be easy for me to devote this article to a recommendation of the most expensive equipment available, but whereas the saying that you only get what you pay for applies to cycle equipment as in most things I would also say that the beginner can still enjoy his early cycling even though it may be done on a cheaper mass-produced machine. The fact that later he will most probably appreciate and buy better fittings goes without saying.

No, my task here is to recommend equipment that I have found both reliable and at the same time good value. The choice available today is vast so confine yourself to the products of those firms with a good reputation and that does not necessarily mean those who spend most on publicity. Successes in Continental racing can mean more out of your pocket and into that of the "pro" riders and whereas I well know the value of race proved equipment many firms are still producing good articles without this increasingly heavy expense which must eventually be passed on to the user.

Now I am presuming in this article that I am preaching to the converted—that is, that you have gone through the stages of owning a juvenile cycle and possibly later have tried one of the small wheel balloon tyre models and that you have now reached the stage where you know why the intelligent modern clubman, tourist and racer alike chooses the orthodox type of machine that has been proved for many years now in races like the Tour de France, to be the one to give you the best return for your effort. This is the type of cycle I recommend and most of the fittings in this catalogue are for the standard racing machine with plenty of alternative suggestions to suit your own particular riding need.

CHOOSING THE FRAME

This is the most important and expensive part of the cyclists' equipment and its choosing should be the result of much careful thought. An experienced rider will have his own ideas of frame size, wheel base, fork rake, etc., to suit his particular purpose, but the novice would be well advised when buying a frame to take along with him an experienced clubman or to seek the advice of one of the many dealers known for their interest in the sport.

It has been the practice in Great Britain for many years now to follow the current "fashion" as regards size, wheel base and angles, and frame builders have been asked to make all kinds of frame designs totally unsuited to the customer's needs.

The Continental rider, however, is different. He visits a first-class builder, requests a frame to his own choice of size (usually 10 ins. less than his inside leg measurement), states his type of cycling need (track, road, touring, etc.), and leaves the rest to the man who knows best. The good Continental or British frame will be found to be designed with the top tube length, fork rake, angles, etc., made to a standard "pattern" varying according to the seat tube length giving the best results based on long experience.

For general purposes use the modern frame which is normally made with angle of 72° seat tube varying slightly with height.

Light butted tubing is a must and **REYNOLDS 531** or **COLUMBUS** tubes for racing and **DURIFORT** for touring cannot be improved upon. In the brazing section you will see that types of fork crowns are available to suit all purposes. Fork ends should be solid forged by **CAMPAGNOLO** or **ZEUS** and lugs are preferred to welding with **BOCAMA** the most accurate.

For track racing the frame angles will be steeper (approx. 75°/73°) and the wheel base shorter—39/40" against the 40/42" for road racing.

A complete range of frames at prices to suit all pockets from the well-known marques of **ANQUETIL**, **BERTIN**, **CINELLI**, **GEMINIANI**, **ZEUS** are described on other pages and they are all backed with first class reputations. There are, of course, also many bespoke frame builders in Britain who will sell you a first class product. To complete your frame I have listed in the Section 7 suggestions for full cycle specifications at various prices.

To help you to choose your accessories here are a few observations on each particular fitting commencing with the important subject of transmission.

GEARS

No accessory has progressed in design faster than the derailleur gear and the modern rider, thanks also to the introduction of the double and triple chainwheels and multiple freewheel, now has a choice of a range of up to 18 ratios! Although the 6-speed freewheel was commercialised in 1962 most of the Road racing classics are still won today with a combination of double chainwheels and 5-speed freewheel and this choice of 10 speeds should be sufficient for any rider's needs. My personal choice for racing is the new **ZEUS** "Criterium" gear with all steel mechanism as light in weight as the **CAMPAGNOLO** dural "Record" and for touring the new **HURET** "Touring" gear with a capacity of 34 teeth or the "Super Touring" with 43 teeth must be first choice. Good results can be obtained too with the many excellent although cheaper products on the market and the **TRIPLEX** range offers probably the best value with a modern and practical design of mechanism. Be sure to check the capacity of your gear mechanism before using wide ratio freewheels and chainwheels.

FREEWHEELS

For a long time little choice was available in the quality of multiple freewheels but at long last the importance of this accessory has been realised and more expensive but much improved alternatives are now being manufactured. The first improvement was to spline the body and so make it easily removable without damage by the use of special tools. The **MILREMO** "All Star" is splined and competitively priced and should meet normal requirements but for the Stage Racer or Super Tourist who has need of a wide range of cogs with frequent changes the **MILREMO** "Alpine" is a **must**. The first-class quality, design and practicality of this set in its presentation pouch puts it a long way ahead of all others. I do not recommend the 6-speed freewheels—with double chainwheels, 10 ratios should be sufficient and in any case their use complicates race service wheel changes.

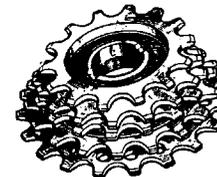
CHAINS

The $\frac{1}{2} \times \frac{3}{32}$ chain is necessary for all derailleur gears and in particular for use with multiple chainwheels. It is also popular now with single gear road riders and for track pursuits giving a smoother ride. The heavier bloc chain is still necessary for track sprinting due to its responsiveness to every "kick", but should not be used on the road due to it being easily affected by the weather. British chains made by **RENOLD** hold their popularity by virtue of their excellent quality although the Italian **REGINA** finds favour with many racers. Chains from Eastern Europe and Japan are making inroads into the market but I prefer the **IRIS** Chain if economy is of prime consideration.

CRANKS

Your choice is steel or dural with the former always attached to the bracket axle by cotters and the latter always in cotterless pattern, i.e. fitted on to a tapered spline and secured by a large axle end bolt. **MILREMO** make a choice of several models in chrome steel both with standard 3 or 5 pin chainwheel fixing and all can be recommended as good value but, of course, dural cranks are to be preferred if only for the saving in weight.

Crank Length—there is a choice now of several lengths (T.A. offer no less than 9 variations from 160 mm to 180 mm) but 170 mm is undoubtedly the most popular. You can experiment with longer cranks for hill climbs, time trials, or pursuing and with shorter cranks for sprinting or roller racing where faster pedalling is needed but generally variations from 170 mm are only made when the rider is either very tall or very short or has a distinct style as a "pedaller" or "pusher". Dural cotterless cranks are obviously not as strong as steel and there have been breakages from time to time. My own experience of selling all makes leads me to recommend T.A. or **ZEUS** as the most reliable and as rigid as steel with the latter make having to date an unblemished non-breaking record. Both these makes have recently introduced racing crank sets to accommodate chainwheels from 36 teeth upwards and **ZEUS** have also solved the problem of axle end dust caps, which always seem to be either missing or damaged, by dispensing with them altogether! The **ZEUS** axle end bolt is made flush with the crank face, larger in diameter and with chrome plated finish, thus making the dust cap unnecessary and at the same time improving accessibility.



CHAINWHEELS

Choice of gearing, whether for touring or racing, has always been the most controversial subject amongst cyclists and is the main target of the cycling world in the constant striving to improve the bicycle mechanically to parallel the physical preparation of the athlete who must surely now have reached the stage where further improvement will be difficult to maintain.

When I first introduced **T.A.** duralumin chainwheels in the late 1940s I found it difficult to convince riders of their advantages—less chain wear, rustless properties, accurate and quieter running and above all in the reduction of revolving weight. The main improvement however, came with the opportunity, by virtue of the first unparallelled range of ring sizes provided by **T.A.** (26-68 teeth in singles, doubles and triples) to experiment gear ratios and so provide our cycling champions with better return for their energy output. **T.A.** with their classic 5-pin cranks and enormous range of rings from 26 teeth upwards is still my recommendation for touring and club riding, backed always by their instant availability at sensible prices.

For racing the main developments have been with double chainwheels used at first with close ratios of 46/49, and extending to wider ratios as front and rear gear change mechanisms improved in design. A call for wider ratios compelled **CAMPAGNOLO** to introduce their new "Record" set changed to take rings from 42 to 57. However, both **T.A.** with their new 3-pin "Professionnel" set and **ZEUS** with their new "Criterium (E)" set have gone better and with cranks having rigid arms that will accommodate rings from 36 teeth upwards have opened up the possibility of a revolutionary set of gear ratios that must benefit all cyclist sportsmen.

Look at the practical advantages offered by double chainwheel combinations varying from 36 to 54 teeth as opposed to the classical ones of 44 to 54 teeth traditionally used by riders often under orders of team managers.

1. The smaller inside ring enables a reduction in freewheel sprocket sizes and with a close ratio block of say, 14, 15, 16, 17, 19 gear changes can be made without upsetting pedalling rhythm, the interruption of which is the cause of fatigue both muscular and cardiac.
2. The reduction of the dimensions of the elements of transmission—chainwheels, chain and sprockets results in an appreciable saving in weight.
3. The same reduction also increases mechanical efficiency by the fact that a smaller number of teeth on chainwheel and sprocket are engaged by the chain.

To understand better the possible combinations made available with the new **T.A.** and **ZEUS** crank sets study the following comparative tables as applied to various cycling competitions.

<i>Suggested application</i>	<i>Chainwheel combination</i>	<i>Freewheel ratios</i>	<i>Resulting Gear Ratios</i>
Road Racing	Usual	44 } 53 }	22/20/18/16/14 { 54, 59-4, 66, 74-3, 84-9 65, 71-5, 79-5, 89-4, 102-2
Road Racing	ZEUS or TA	38 } 53 }	19/17/16/15/14 { 54, 60-3, 64, 68-4, 73-3 75-3, 84-1, 89-4, 95-4, 102-2
Mountains	Usual	44 } 53 }	24/21/18/16/14 { 49-5, 56-6, 66, 74-3, 84-9 59-6, 68-1, 79-5, 89-4, 102-2
Mountains	ZEUS or TA	38 } 53 }	21/19/17/15/14 { 48-9, 54, 60-3, 68-4, 73-3 68-1, 75-3, 84-1, 95-4, 102-2
criteriums or T.T.'s	Usual	44 } 53 }	20/18/16/15/14 { 59-4, 66, 74-3, 79-2, 84-9 71-5, 79-5, 89-4, 95-4, 102-2
criteriums or T.T.'s	ZEUS or TA	40 } 53 }	18/16/15/14/13 { 60, 67-5, 72, 77-1, 83-1 79-5, 89-4, 95-4, 102-2, 110

Examination of the charts above will show the following: **ZEUS** or **T.A.** combination for Road Racing gives an almost arithmetical progression over the 10 speeds with no duplication as opposed to the usual irregular arrangement.

ZEUS or **T.A.** combination for mountain stages offers a greater number of ratios in the lower range—an obvious advantage to those who are not climbing specialists. Four ratios with an average increase of 6-5 between 48-9 and 68-4 against the usual average of 8-25.

ZEUS or **T.A.** combination for Time Trials with 40T inner ring gives the same gears as the usual combination but uses only 4 of the sprockets. Therefore a 13T can be used and the need for a 6-speed freewheel with its heavier weight, alignment difficulties, loss of interchangeability, etc. is avoided.

In all cases therefore, it will be seen that the use of inner rings of 40T and less enables the cyclist to maintain rhythm and at the same time have at his disposal an adequate range of gears.

For the single chainwheel user and in particular for specialist races such as roller competitions, **T.A.** will provide that extra large chainring even above the regular 68T size to special order. For Cyclo-Cross events both **T.A.** and **ZEUS** make the special single rings with chainguard surrounds in duralumin.

PEDALS

There is a very wide range of pedals to choose from but the choice can be quickly narrowed by deciding whether you wish to have all steel, all dural, or the favourite of the racer—steel frame with dural forged barrel. The latter made by both **CAMPAGNOLO** and **ZEUS** is available either in road or track pattern and is certainly worth the extra expense. However, the **MILREMO** "Super Competition" dural quill pedal would be my second choice and costs much less and lower down the price scale there is a large range from both **MILREMO** and **LYOTARD** of chrome and dural pedals, all of which fill a need at competitive prices. The **LYOTARD** "Platform" pedal retains its popularity and like many of their models is now available with longer axles for thicker dural cranks.

Good quality Toeclips and Toestraps are essential for maximum pedalling power with **MILREMO** and **CHRISTOPHE** chrome on copper toeclips the best and the **MILREMO** range of chrome leather toestraps answering the problem of foot security. Fit the **MILREMO** "Pull Stop" plastic tostrap end buttons and **MILREMO** "Rapido" ultralight plastic pedal tongues to complete the set—the latter are ideal for pedals not already made with tongues fitted and enable the foot to engage into the toeclip quickly and they weigh practically nothing. Finally the shoeplates are essential for all serious cycling and here the **T.A.** range of 5 models covers every need.

PUMPS

For touring and general riding there is no problem. A wide range of reliable plastic pumps is on the market and **BLUEMELS**, **MILREMO** or **REG**, all offer good value.

Racing, however, demands something better and the ultimate must be the new **REG** "Super Corsa" model. This pump has everything—length, strength, appearance, lightness, practicality. The built-in quickfit racing adaptor with incorporated frame rest and separate ultralight top cup eliminates the use of the heavy screw-in metal **CAMPAGNOLO** type of adaptor and horn rest and also the extra chrome top cup. The **REG** product saves both weight and money with improved looks and performance.

SADDLES

I was the first to introduce and recommend the Nylon Plastic-Saddle and at the outset many were the objectors who disagreed with my observations. Today thousands of satisfied users endorse my early confidence. Here are the features of the original **UNICA**, often copied but never equalled, and this is the make of saddle you will invariably find on your favourite champion's bike and remember the saddle is the one accessory a rider chooses from personal desire. The **UNICA** with its firm polished top (covered in smooth leather or chamois if you wish) allows a quick change of position without friction and consequently the risk of saddle sores is obviated. Nylon, being a non-organic material that does not harbour germs eliminates the risk of boils. The firm top and sides of the **UNICA** improves pedalling style and gives better control of the machine. Also there is a considerable saving in weight always a prime consideration to the cyclist.

For those who wish to have a Nylon saddle but cannot afford the **UNICA** I can recommend the **MILREMO** seamless as being of excellent quality and good value.

However, there are still those who prefer to use leather and here there has been progress too. **IDEALE**, in conjunction with **DANIEL REBOUR**, the world's most experienced technical cycling journalist, has designed and produced a leather saddle acknowledged as the world's best. The **SC90 RODEE MAIN**, as it is known, is made with first quality leather and is of perfect shape and requires no breaking-in! Available with a chrome or duralumin frame in the latter form complete with dural all-positions clip it weighs only 17½ ozs.

Compare this weight with other makes of "professional" saddles. Finally, be careful to avoid leather saddles with proud and oversize rivets across the top—they are bound to cause you discomfort.

SADDLE PILLARS

The racing man now demands the modern micro-adjusting dural pillar that dispenses with the need of a saddle clip and offers a combination of position accuracy, security plus weight saving. The **NITOR** is the lightest, the **ZEUS** which is slightly cheaper to buy than **CAMPAGNOLO** also offers in addition to the standard 2-wire model, one to fit the alloy girder frame of the **IDEALE SC90** saddle, making the perfect ultralight leather saddle combination.

BRAKES

These should be caliper and in duralumin and there is a wide choice of makers in this field all with excellent claims. Fashion fluctuates between side-pull and centre-pull and it is difficult to say which design is best, but since I was the first to introduce the "Racer" design centre-pull some years ago I think I will give this my vote but with the proviso that you choose the superb duralumin model made by **ZEUS**. Either model "Alfa" or "Super Alfa" will give excellent results. Italian brakes are popular naturally due to their sponsorship of the professional riders but whether the high cost of the new **CAMPAGNOLO** is justified must be debatable. The other two popular makes from Italy, **BALILLA** and **UNIVERSAL**, are good value and the button cable quick release built into the hooded racer level of the **BALILLA** is without doubt the most efficient in use. **WEINMANN** have possibly the best polished finish and this always shows to advantage on a new machine.

Check that the stirrup depth is correct for your frame, especially with the Italian models as their design is often shallower for close clearance frames. The **MILREMO** articulated "Pouliquen" incorporated brake block and shoe is worth fitting if only to avoid the possible brake block loss during wheel changing. For touring the "Guidonnet" levers used with the 3-position **MILREMO** or **TITAN** handlebars are the ideal solution to easy braking when riding with hands on the "tops".

HANDLEBARS

Use dural for Road and steel for Track. Road bars should be shoulder width and "square" so as to obtain a good top position and the correct brake lever hood setting. There is a vast choice but my favourites are the **MILREMO** "Franco Belge" or "Renforce" (similar pattern but with an internal reinforcing sleeve insert to give extra rigidity), from Italy the **T.T.T.** range of models or the Belgian world champions choice now for many years the **TITAN** "Maes/Kint" with external engraved reinforcing sleeve.

For touring use one of the 3-position bars—**TITAN** "Sercu" or **MILREMO** "Randonneur". Track bars can be less square and so save weight and the **CINELLI** and **TITAN** will satisfy your track requirements. Be sure the bar ends are safely plugged. **MILREMO** "Astro" expanding plastic are a must for all road machines, used with cool plastic tape and the **VITTORIA** rubber cushioned end caps used with non-slip twill tape for track bars are my own recommendation. Remember to tape the bars from the ends towards the centres to avoid rucking.

HANDLEBAR STEM

This is probably the most important accessory on the cycle as its failure can cause a very serious accident. For this reason I would recommend using only proved articles. The **MILREMO** range of Stems is made in duralumin and hundreds of thousands have been used now for many years without complaint and even though they are economically priced they represent not only first-class and reliable quality but are attractively designed also.

For racing the **T.T.T.** and **CINELLI** forged dural stems are becoming popular and despite being slightly heavier offer great rigidity, especially in the longer lengths. Many road riders, however, using long stems on rough road surfaces prefer steel stems and the **TITAN** famous dural bars on chrome stem is probably the best combination. This stem is also available with an "invisible" expander bolt head tightened by an Allen Key but remember these keys are not always as effective as a good box spanner applied to the old type of bolt. Once again my advice for track is chrome steel and the **TITAN** and **CINELLI** models are my favourites.

WHEELS

I have already dealt with the important question of wheels in earlier pages and it only remains for me now to say that I hope you have found something in these hints of value and that as a result you may enjoy even happier cycling.

Remember good equipment deserves good care. Be sure therefore that your cycle is correctly assembled with all ball-bearing races properly adjusted. **MOLYKOTE G Paste** will increase the life of all bearing surfaces and a thin smear of this is recommended to be used also on the four flats of steel cotterless crank axles before the fitting of alloy cranks. Fitting to a dry steel axle allows the alloy crank to move several microns resulting in the alloy becoming abraded and oxidised and eventually forming an acid paste which eats into the steel. This acidity will enter the minutest flaw or even scratch and cause a crack to develop and finally a possible break. Remember to lock up the axle end bolt tightly after the greasing and re-tighten again after 100 miles or so riding. **'MOLYKOTE G Paste'** is available in 2 oz. tubes and can be used with advantage on all friction surfaces.

HILL CLIMBS

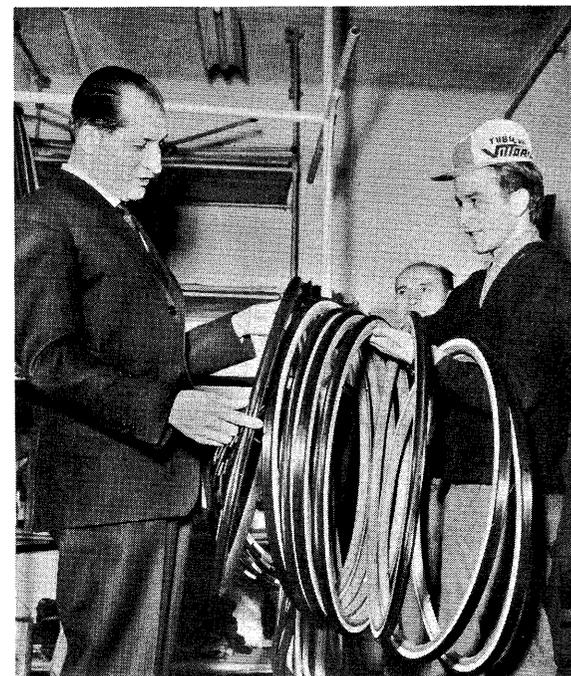
Use a slightly longer and stiffer crank than usual and this will give increased leverage and enable a higher gear to be used. **MILREMO, T.A.** or **ZEUS** cranks are available in longer lengths. This change could also be effected for championship pursuing on ultra fast tracks and should result in improved performance.

CYCLO-CROSS RACING

Carrying up the "agony" section will be easier with the lightest of equipment, therefore use dural wherever possible, and, of course, the **UNICA** Ultra-light Waterproof Saddle is a necessity. The **MILREMO** "Giro" reinforced sprint rims will be more suitable than the lighter models over the rocky sections. Either the **T.A.** or **ZEUS** Cyclo-Cross Chainwheels will prevent chain derailment and save precious seconds whereas the **MILREMO** "Rapido" Pedal Tongues will enable the foot to engage into the toeclip quicker on re-mounting, the latter fitment is ideal for use by tourists also.

ROLLER RACING

For the "race to nowhere", **T.A.** will provide that outsize chainring (over 68 teeth if you wish—we have supplied a 96!) and shorter crank lengths for fast pedalling. **MILREMO** also have 6½" crank lengths in both 3 and 5 pin models. The Roller Racing stars ride on the tops for better breathing and the fitting of two **MILREMO** "Arresta" Handlebar Rests will aid comfort and give a better pull.

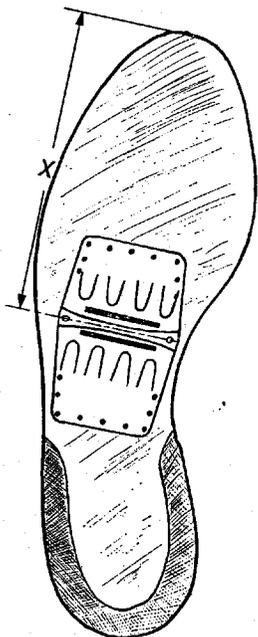
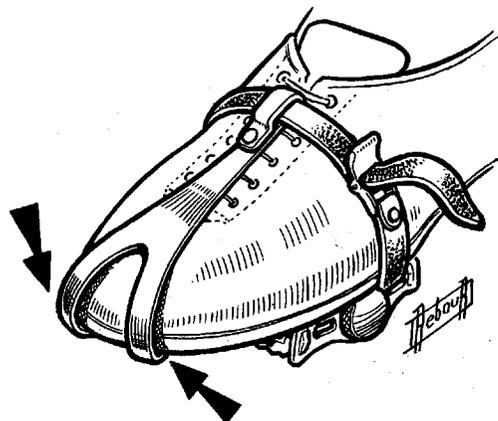


GINO BARTALI—winner of the Tour de France 1938 and 1948 chooses well matured VITTORIA Tubulars for his racing team.

Correct gearing will enable any racer or even tourist to climb almost any hill without effort but only if toeclips and straps and above all shoe plates are correctly fitted. The use of these three accessories combined ensures a perfect liaison between rider and machine.

Shoe plates should be fitted so as to allow a small gap between clip and shoe toecap thus avoiding unpleasant friction and possible injury during long rides.

The table below will show beginners how to fit shoe plates on to the shoe sole according to the size of shoe and length of toeclip. Pedal end plates which are too thick for the shoeplate slots should be filed as required.



Toeclip length	British Shoe Size	Distance from shoe toe to plate slot (X)	
		Centimetres	Inches
Short	3	9.5—10	3 $\frac{1}{2}$ —3 $\frac{1}{2}$
	4	10—10.5	3 $\frac{1}{8}$ —4 $\frac{1}{8}$
	5	10.5—11	4 $\frac{1}{8}$ —4 $\frac{1}{4}$
	6	11—11.5	4 $\frac{1}{4}$ —4 $\frac{1}{2}$
Medium	7	11.5—12	4 $\frac{1}{2}$ —4 $\frac{3}{4}$
	8	12—12.5	4 $\frac{3}{4}$ —4 $\frac{5}{8}$
Long	9	12.5—13	4 $\frac{5}{8}$ —5 $\frac{1}{8}$
	10	13—13.5	5 $\frac{1}{8}$ —5 $\frac{1}{4}$
Long with spacing washers between clip and pedal	11	13.5—14	5 $\frac{1}{4}$ —5 $\frac{3}{4}$
	12	14—14.5	5 $\frac{3}{4}$ —5 $\frac{7}{8}$
	13	14.5—15	5 $\frac{7}{8}$ —5 $\frac{3}{4}$
	14	15—15.5	5 $\frac{3}{4}$ —6 $\frac{1}{4}$

6. GUARANTEE COMPLAINTS

In view of all the advice given and I hope taken from the preceding pages, there really should be no need for me to write any comments on complaints. However, although the amount of goods returned as "faulty" is not a worrying percentage, from an analysis of these returns it would seem as though a few comments could be of benefit.

In these days of our less penuric society a lot of expensive equipment is in use. Some of it in experienced hands and some of it in in-experienced. Some of the experienced hands do not give the care and attention they should and some of the experienced hands lavish every care and attention on their equipment. Consequently, those "faulty" returns come to us from a wide variety of user.

In an attempt to make faster times many riders are using equipment in conditions far beyond those for which it was designed. Here are a few typical examples of goods returned under complaint.

- Customer buys a tubular tyre Saturday evening—returns on Monday with the remark "I only did 15 miles on it—look its flat". Now there are many questions which could be asked here, among them—was it stuck on properly, or even stuck on at all. Remember a tubular without adhesive may "pull" the valve in the first few yards. Or could it be just a normal puncture? Look through the tubular tyre recommendations and ask yourself whether you really did take every reasonable care both in choice, fitting and in use.

- Customer buys an alloy crank set and six months later return with the remark "Left hand crank has a crack radiating from the pedal thread" (and the odds are against it being the R.H. crank).

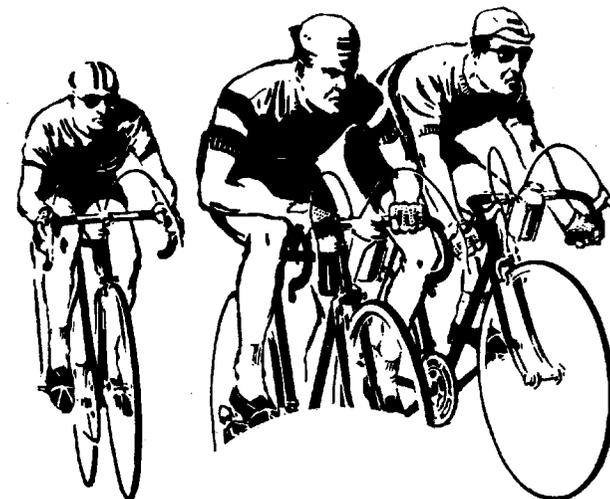
The important question this time—during these six months has he never caught the pedal on the ground?—NEVER? Such a happening may cause damage not immediately apparent. It may cause damage whereby a later and possibly minor recurrence is blamed for the break. Agreed he has paid good money and is all the more disappointed—but is striking the ground "normal wear and tear"?

- Father buys his young son a pair of "sprints" and six weeks later he returns with them in a parcel containing one pair in fifty separate pieces! Did the son tell father he was champion of the local schoolboys criterium series held each evening in the local park and that it included crossing numerous footpath edges? If not no wonder father was irate.

Now no manufacturer or his agent will reject an article faulty by virtue of manufacturing defect. In fact, in cases of doubt he may reach a compromise. Nevertheless, I would suggest that before returning any article under complaint you do a little heart searching and ask yourself—was my choice of equipment the right one for the purpose I have used it for? (I have known 7 oz. rims and 6 oz. tubulars returned by cyclo cross racers under complaint!), has the accessory or equipment been serviced in a proper manner?

If you still consider you have a genuine complaint return the article to your supplier with full details and the true story.

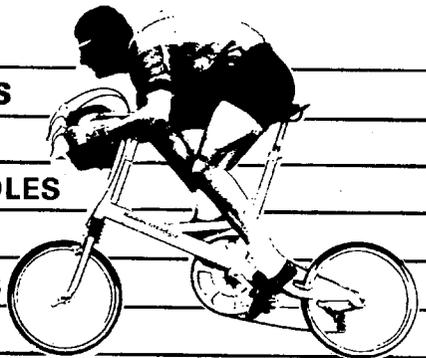
In the end, though, the manufacturer is the one to resolve any dispute and he seeks our co-operation and yours to effect a satisfactory end to such matters.



ACCESSORIES FOR MOULTONS

HUBS · RIMS · TUBULARS · SADDLES

GEARS · CHAINWHEELS · BRAKES



ACCESSORIES FOR MOULTONS

The only small wheel cycle that has proved itself able to approach the performance of the orthodox cycle is the **MOULTON** due to its unique and patented suspension which allows the use of narrower rims and tyres.

Special ultra-light fittings have been made and details of these are included in the accessory pages.

MILREMO will modernise your Moulton.

Tubulars. Three special models, all with tread recommended by **MOULTON**—ribbed centre with file pattern sides.

Juniors-Standard 6½ ozs. Suitable for training.

Juniors-Record 6 ozs. suitable for time trials.

Juniors-Invulnerable 6 ozs. Suitable for road racing.

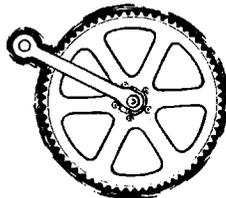
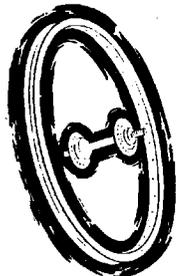
Rims Model M-Club is a wired-on HP section rim to fit the new HP tyre. In duralumin drilled 28/28.

Model M-Weltmeister is a wood insert sprint rim to fit the special **Milremo** tubulars.

And to complete the modernisation of your **MOULTON** fit:

T.A.—the world's best transmission **Dural Crank Set** complete (9 crank lengths available).

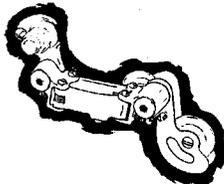
With **Dural Chainwheel** 51-68 teeth. (Sizes above 68 teeth—priced at rate per each tooth.)



BALILLA Corsa 61 dural centre-pull brakes with quick-release levers and rubber hoods.

GIAN ROBERT. The gear with the maximum wrap-round, ideal for **Moulton** design.

UNICA the lightest of saddle tops.

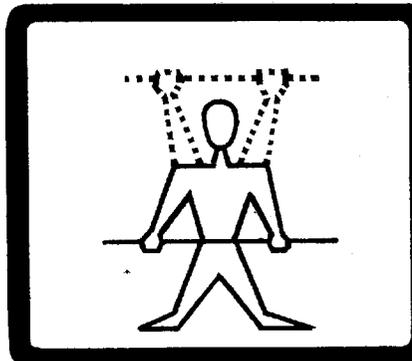


Recommended by RON KITCHING

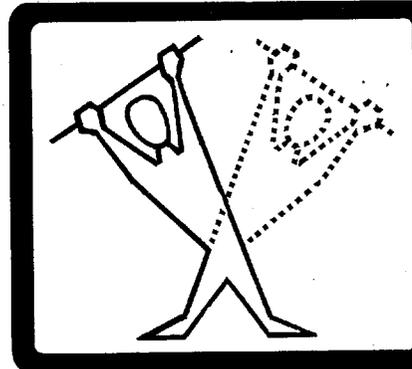
The Cycling Centre,
Harrogate, Telephone 85414.

FREE GIFT DEPARTMENT!

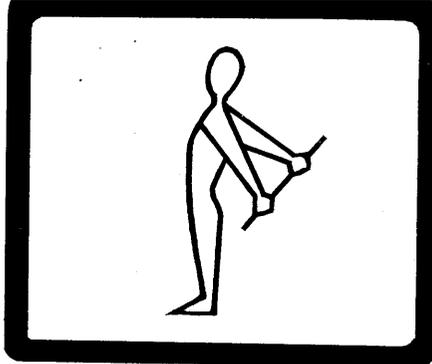
Even **RON KITCHING** cannot sell you fitness, but practice of these six exercises will greatly benefit anyone who has hitherto relied solely on cycling. They can be made as hard or as easy as necessary by the amount of concentration put into them, and thus are self-adjusting to the amount of energy available. Daily practice is desirable—just before retiring is the most suitable time—but Nos. 1 and 3 should be practised at odd moments during the day, without the stick but with one hand clasped over the other. Marcel Laurent who won **BORDEAUX-PARIS** twice, used No. 3 and a variation of No. 1 during that event to relax from the racing crouch.



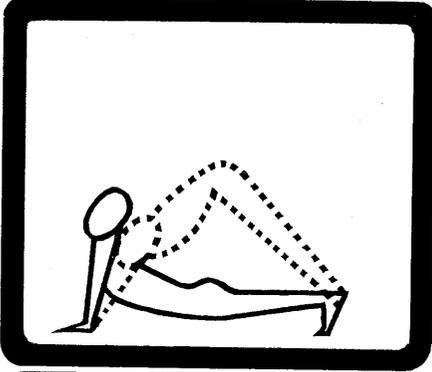
1. Stand erect with the hands grasping a length of brush handle shoulder width apart, and with locked arms **PULL OUTWARD STRONGLY**. Then while inhaling fully and maintaining the outward pull, take the stick in a semi-circle to arms length overhead. Hold the position with full lungs for two seconds, then lower the stick in a semi-circle to the starting position **BREATHING OUT FULLY**. Relax momentarily and repeat 12 times. This will lift and develop the rib-box, stretch the shoulder muscles and improve posture.



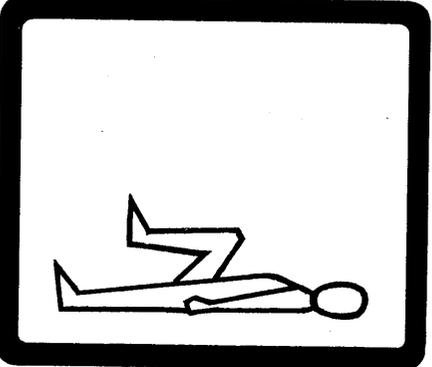
2. In the half-way position of Ex. 1 with the stick overhead, hands pulling outward, bend over from side to side as far as possible. Ten times each side, 20 counts altogether. This will take fat from the sides of the waist, develop the spinal muscles and stretch and develop the muscles used in breathing.



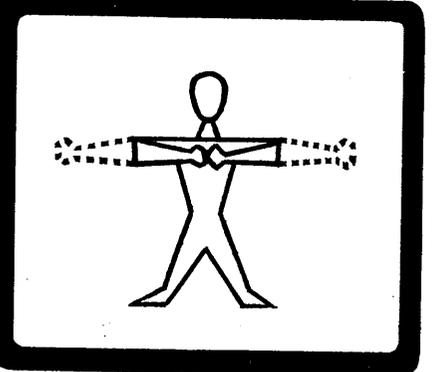
3. With the stick held behind the back, knuckles to the rear and arms locked, pull apart strongly and carry the stick in an arc as far away from the body as possible, at the same time inhaling fully. Hold it, relax, let the arms sink to the commencing position and repeat 12 times. This strengthens the muscles at the back of the upper arms and shoulders and expands the chest. It also flattens any incipient 'hump'.



4. With body supported on hands and feet, straighten the arms, thrust the chest forward and bend the head back: the mid-section should be just touching the ground and the lungs should be full. Without moving hands or feet and breathing out fully, swing the mid-section as high as possible, keeping the legs and arms straight and bending the head forward. Hold this inverted 'V' position for 2 seconds, swing back to the starting position with a full inhalation: relax and repeat 10 times. **CONCENTRATE ON THIS EXERCISE** if your time is limited—it is a favourite of the Indian wrestlers and a 'course' in itself.



5. Lie face upwards with the legs stretched out and feet together. Bend the right leg and bring the knee as close to the chest as possible. Hold it, then reverse the position of the legs 20 times **WITHOUT LETTING THE HEELS TOUCH THE GROUND**. This is one of the best abdominal exercises for cyclists, better than sit-ups or stiff-leg raises: it supple the hips and buttocks, without cramping the abdominals.



6. Stand erect with finger tips touching in front of the chest and elbows level with the shoulders. Thrust the chest forward and keeping the elbows high, press the arms back once, twice and then fling the arms straight and as far back as possible. The sequence is **PRESS — PRESS — FLING; PRESS — PRESS — FLING**; for as long as you like! A good relaxing exercise, and fine for warming-up on cold mornings.

TIME TRIALING or unpaced riding against the watch remains Britain's most popular amateur cycling sport with thousands of participants every week at all distances from 10 miles to 24 hours.

Pictured here are three riders who have recently broken through record barriers.

Photographs by Bernard Thompson.



BERYL BURTON—Morley C.C.

(2 hours—50 miles—actual 1.55.4 (1969))
 (4 hours—100 miles—actual 3.55.5 (1968))
 (275 miles in 12 hours—actual 277.25 mls. (1967)).
443.6 km

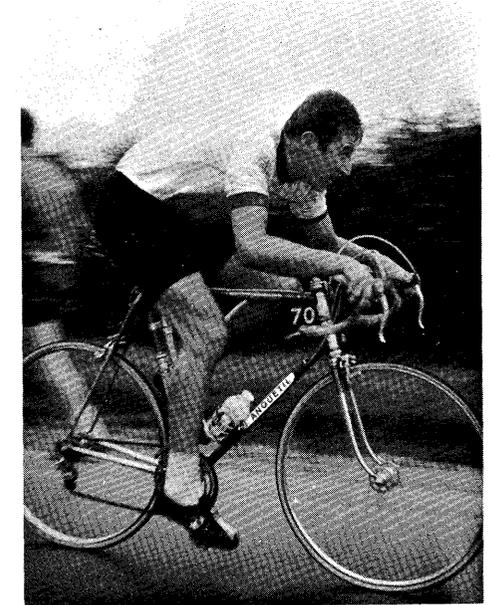
ROY CROMACK—Clifton C.C.

(500 miles in 24 hours—actual distance 507 miles 1969)).
811.2 km



JOHN WATSON—Clifton C.C.

(280 miles in 12 hours—actual distance *457 km* 281.87 miles 1969)).

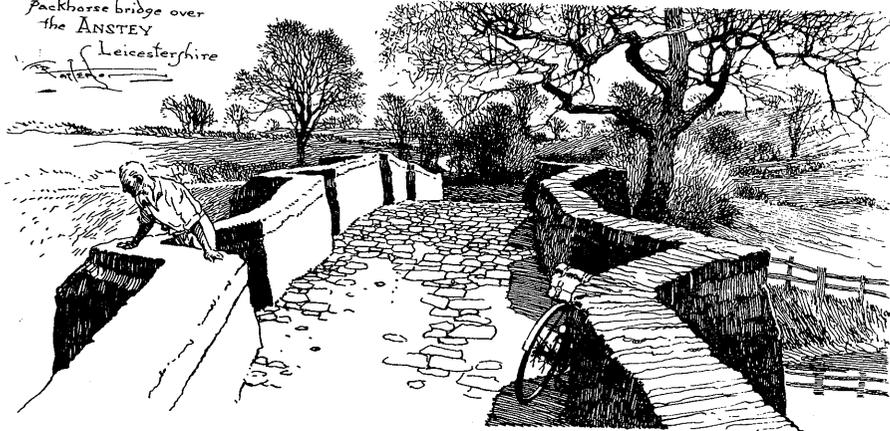


CYCLE TOURING

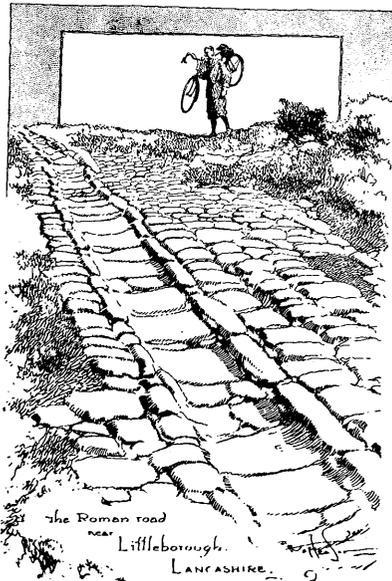
Thanks to the efforts of the **CYCLISTS' TOURING CLUB**, formed at Harrogate nearly 100 years ago, touring still provides enjoyment for thousands of cyclists young and old.

Here are three sketches by the inimitable **Frank Patterson** which serve to illustrate the pleasures of cycle touring.

Packhorse bridge over
the ANSTEY
Leicestershire



Three paved roadways but
how different, and truthful,
in character.



$19/32 \quad 15.08 \div 15 \quad 1/2 \quad 12.7 \div 13 \quad 7/4 - 11.125 \div 11$
 $11/32 \quad 8.73 \div 9 \quad 5/4 \quad 7.9375 \div 8$

- USA TRA (The Tire and Rim Association)
- British S.M.A.T. (The Society of Motor Manufacturers and Traders Ltd.)
- Deutsche DIN (Deutsche Industrie Normen)
- French B.N.A. (Bureau des Normes de L'automobile)

**TECHNICAL
DATA**



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