THE
RALEIGH
CYCLISTS
HANDBOOK
of Maintenance
An authoritative guide on all
matters relating to cycling
Tells you
What to do!
Where to do it!!
How to do it!!!
THE RALEIGH

1/-
60 Pages
Over 30 Illustrations
The Raleigh Cycle Works at Nottingham, covering over 27½ acres of ground
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Foreword

The purpose of this book is to provide riders of Raleigh Cycles with a clear, concise and comprehensive guide to the pleasures of cycling and to the maintenance of their machines.

It is not a treatise on Cycle Repairs, but deals only with such adjustments that make all the difference between “just cycling” and pleasurable, easy riding.

The instructions are carefully and lucidly detailed in non-technical language, and are profusely illustrated with clear-cut drawings designed to show at a glance only that portion of the cycle to which the text refers.

The publishers have one aim only; to enable the users of their cycles, both the novice and the ‘old hand,’ to derive the utmost benefit from their Raleigh Cycle. By spending a few minutes a week on the details described in this book, riders are assured of years of trouble-free cycling.

F.K.

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Page Three
Raleigh Supremacy

In these enlightened days, when practically every cyclist is well on the way to being a mechanic, and is intelligent enough to choose his mount with technical discernment, it is of little avail for manufacturers to make excessive claims for their products which cannot be substantiated.

For many years, the word ‘Raleigh’ has been synonymous with everything that is good in cycling, and all those features upon which the keen, experienced clubman, the lone rider and the business user insist are to be found in the Raleigh.

For over sixty years ‘Raleigh’ have been under the same control and Management, during which time they have striven ceaselessly—by continued experiment and research—to enhance and maintain their reputation and it is a fact that every major improvement found in cycle design to-day, has been sponsored and developed in the Raleigh factories.

The key-stone of Raleigh supremacy is based on design, the choice of materials used and the willing co-operation of a band of skilled, enthusiastic craftsmen whose working life has been spent on fashioning bicycles of superlative finish and quality.

Meticulous care is exercised at every stage of Raleigh production, and only the best of raw materials are good enough to be embodied in a Raleigh All-steel Bicycle.

Most cycles look alike to the uninitiated, but a careful inspection of a Raleigh will reveal the special features that place it in a class of its own.

Take the classic appearance of the Fork Crown as an example. This component is of unparalleled design—a bold stroke of genius—being the only fork crown which of itself reinforces the fork blades at a point where the maximum strength is essential; furthermore, being made entirely of steel its strength and lightness are far superior to the normal crown made of malleable iron.

Then there is the all-important Bottom Bracket: the “heart of the cycle.” Though not striking to the eye it is an outstanding piece of engineering ingenuity, and is a unique feature of modern
cycle production. It is made without a seam from one piece of high quality sheet steel by numerous cold pressing operations, resulting in a bracket of uniform strength and lightness.

Four distinctive innovations developed and produced by Raleigh are: the “Dyno-Luxe” and the “Dynothree”—designed to give Car-Lighting on a bicycle; the Raleigh Front Fork Lock for security against cycle thieves, and the Raleigh Patent Special Section Rim. Designed to give great rigidity and strength, it is suitable for use with either Caliper or Pull-up Brakes with equal efficiency. The rim will remain true for an indefinite period under all riding conditions.

The Raleigh Brake mechanism is easily operated; responding smoothly to the lightest touch yet coupled with the essential ability to stop in an emergency without causing the rider any discomfort. It is light and extremely neat in appearance, showing evidence of the extreme care given to its design.

Further characteristic features of Raleigh cycles are the free-running hubs, whose bearing surfaces are highly finished to give long life. The pedals, bottom bracket and steering head bearings are of the same high standard, giving effortless running.

Other special features are Stainless Steel Rims and Spokes; the Raleigh chain wheel, and frame lugs of slender form but of extreme strength. The Chainguard or Gearcase are additional features giving maximum protection to the rider.

The quality of the steel is specified to critical limits in its chemical composition, and the subsequent heat treatment processes are under rigid laboratory control. Protective rust-proofing processes, together with the super-grade enamels and their application; the durable and sparkling Chromium plating processes, are all under scientific supervision. These are the factors which contribute to the superfine Raleigh finish which is the envy of the Cycle Industry.

Raleigh for ever search for better methods, better designs, better materials, and concentrate all their efforts on the production of a quality bicycle whose supremacy is recognised throughout the world.
The Lure of the Wheel
by F. J. URRY

The fact that so few people fail to consider a bicycle in terms of wonderment really detracts nothing from the miracle. The wonderment is there, both in its mechanical structure and the easy and delightful method of human travel. There is nothing like it, and nothing that can give so much for so little.

Let me endeavour to explain, as simply as I can, my enjoyment of cycling over the fairly long period of 56 years. It is not easy to do so in the short space available, and there are far more things I shall indicate than display, for cycling has so many specialized sides and having enjoyed them all, taking from the exercise in full measure its handiness and simplicitiee of travel, I have come, towards the end of a very happy life, to regard the pastime as the most remarkable, varied, cheapest, and most satisfying and free-est of all the 'games' man has yet invented. These facts from my point of view, are not so widely known as they should be; this game that can be played from infancy to old age, every hour of it adding some achievement, some enjoyment, some experience or some desirable memory to the chapter of living, should be understood; but because cycling is common and well within the reach of ordinary reasonably active people, the public has been inclined to take it for granted, rather than the modern embodiment of the fable of "The Seven League Boots". It is all that and more if you will allow it to be; it is the medium by which you can gather your own especial individualism and transport it in perfect freedom from the mundane affairs of life into the realms of grace and beauty.

THE NATURAL DESIRE. Today it is true that one can cycle from infancy to old age, and an early start in acquiring the art of balance and confidence in road usage is all to the good. For
road knowledge, allied to the confidence that patience imposes, is one of the major answers to our road problems; and so in my opinion parents are unwise to keep their offspring from a very natural desire to indulge in cycling at a time of life when youngsters are most susceptible to good influences. That however is in the nature of a political issue outside the scope of this little testimony to cycling, but it has a decided bearing on the measure of the demand made by the younger generation to join the ranks of happy riders, and to learn, from their early days onward not merely how to ride a bicycle (which seems to be born in them) but how to derive from that activity the joy of individualism in speed, stamina, health, observation and the glory always inherent in beauty. And that I think will be the main theme of this short treatise—beauty—an abstract thing which each one of us can make absolute in our personal approaches and more worthy of ourselves, because we acquire it as the result of energy as well as the exhilaration of travel. Never mind what the other fellow says to you, who, taking the line of least resistance, and possessing the wherewithal to afford it, goes rushing round the country in a car, seeing so little and missing so much. An old friend of mine, cycle touring with me in Scotland in 1943 said at the end of the journey:—“Well, I’ve been to Scotland in a car not less than thirty times, but I had never seen it until I came on this tour!” Don’t feel jealous of the motorist; all he has over you is speed, and the things he misses are exercise, time to stand and stare, scent and sound of the countryside and as often as not, fresh air. Actually you are a better individual because you are an actively capable one; and that fact always needs stressing to impress the simple truth upon the ostentatious.

THE HIGHEST Touring, in my opinion, is the highest form of pleasure cycling. To start on a holiday with a few maps, a minimum of spare raiment, a little cash and the freedom of a spell of linked days of joy is one of the finest refreshments that can come to an individual. Do not break into that desirable freedom by scheduling a touring journey with rigidity, for inelasticity in the days’
mileage imposes a form of self-sacrifice that is unnecessary in normal times. You cannot control the weather or the wind, but you can, and should, make decisions to suit your immediate condition, or gratify your desire to see a little more of a comely hamlet washing its walls in the mountain stream of a glorious valley. I have known many places that have cut a league or so from my day's mileage at the behest of a companion, or by my own desire to discover later that our intuition to stay and explore has given us a real reward. There are so many things by the way that the paper-conducted tourist misses—the man who travels with a schedule of miles and relies on the sign-posts—that the tale of them will never be told because they are as varied as the individuals who discover them. To change your regular habitation for new and beautiful scenes is to change more than mere environment, it is to change life, and once that habit is acquired it will last all your active life; give to it that vivid variety which is the be-all of travel, for it grants to you that sense of satisfaction of quiet achievement and perfect health that no tongue can tell. I can only hint at it; I bid you go, as I shall go again and again, whenever opportunity offers.

THE ODD HOURS. It is from this perfect expression of holiday cycle touring that I have found those hours of quiet enjoyment at the end of an urgent day. I live near a big city and work in its centre, but in less than half an hour I can be deep into the loveliness of the Warwickshire lanes because of a bicycle. How beautiful are those lanes in every season of the year; in the full glory of spring, in the thunder-floods of June with the little rivers dancing drunkenly and riotously down their shallow valleys, in the calm stubble-time of autumn, when "the blue smoke curls with mocking stealth afield," and in the pastel shades or stormy winter evenings when the foliage-shaded vision of yester-month stands boldly seen through the netting of stark branches; or under the pointed stars the owls hoot and the vagrant fox barks a challenge. Tea at the office, and a ride from 1 1/2 to 3 hours of perfect freedom, wherein you see and hear so much that is hidden from the city man. Such a lifetime habit naturally brings you country friends
who compliment your taste because you appreciate their lives and habits. This is the happy lot of the regular cyclist, the man who prefers to ride a bicycle to work, not merely because it is cheap, but for the better reasons that it is healthy, completely free of the timetable and always interesting.

FROM UTILITY  Let us look for a moment at that latter statement.

TO JOY.  What can anyone see in riding a bicycle over the same old route day in and day out? In the first place it seldom need be the same route, but the human failing which binds us to habits and a time-table still persists among utility riders, and it has been encouraged too much. Wrench yourselves from the structure of habits, for it is part of the reason behind the utility of “riding a bike” that will give the process variation. I can only tell you the simple truth that I get a lot of fun and sometimes vivid interest out of my daily riding. The fun is mainly obtained from the innumerable people along my routes who know me by sight, and comment when I am bestriding a new bicycle. They enquire of its quality, or desire to know where I am off to this week-end when my bag is obviously packed with the few necessities of cycle travel. My motoring friends pip a horn at me, my point policeman waves me on with a jolly salutation if the sun is shining, or a bad word on the weather if the traffic is splashing his drain-pipe overalls; my postman creases his rough-hewn face into a smile, and my military janitors at the entrances to big factories raise a hand and pass a word and a smile. It all helps to make a better day of it. And for vividness, I suppose I see more of the road problems in the activity of impatient perpetration than most people; and occasionally become involved in the mild manner of a witness in incidents that hang on the edge of ignorance and bad manners, or both. Cycling to the live and fit individual is never slow in the mental sense, but alert with easy action and quick thinking.

THE BEST OF  Such then are the habits of a regular cyclist, an all-the-year-round utility rider, a week-ender and a tourist. People often say to me: “I wonder you do not tire of riding;” the opposite is the fact, for the
more cycling I do the more I desire. Unfortunately many people are unable to so indulge a favourite pastime. My total runs to 8,000 miles a year—less than was once the case because time takes its slow revenge on activity—but if an individual has the will to be mildly athletic and venturesome, and combines in his make-up that love of country which should run like a leit-motif through a happy life, then I know of nothing so satisfyingly simple and healthily kind as cycling. Properly positioned on the right type of bicycle, with the unconscious attention formed by habit to the art of riding, the cyclist and his machine form a travel unit of illimitable range, at a speed of movement allowing the easy observance of interesting and beautiful things. The urgency of progression is at your own disposal, whether you sit on a gate and smoke, touch country life by way of a mouthful of talk with a farm worker, stop to refresh at an old-fashioned inn—just because it is old-fashioned—or measure your riding skill against the miles and the hours. It is all there, the splendour of ease or the self-satisfaction of speed. And in that fact lies the miracle of the bicycle; it quadruples the ordinary speed of your legs, and the longer the spell of activity and endurance the more vividly the cycling performance shines. Hundreds of times I have heard people say "cycling is no use to me". They are denying a miracle, self-evident to any observer; they are in the sense of bodily activity, travel heretics foregoing happy simplicity for raw ostentation, and probably risking health in the process. Men go through astonishing processes and pay astonishing prices for the possession, preservation and service of good health. I believe most sincerely that regular cycling, conducted as this booklet advises astride the best bicycle you can buy, is the greatest natural preserver of health known.

The advice given in this booklet on positioning, action and attention to the machine is sound, and I would only venture to add to it a few personal notes founded on experience. Do not imagine you will become an expert cyclist in a few miles of riding; you won’t, any more than you can acquire the art of golf or cricket by owning the tools of those games.
But the period of discovering that your attraction to cycling is much more than a passing fancy can be full of happiness if you will only take it easy, walk when the climbing hurts, stop and rest when you feel like it, and refresh with food and drink more frequently than your normal habits demand. After a dozen such easy journeys you will find cycling is beginning to give you all I claim for it. Still do not be too ambitious until you are certain of yourself, for a tired rider, like a tired walker, is indeed a weary man. In due course (the time is governed by regularity in riding) a hundred miles a day is simple if you happen to want the leagues. But before you lengthen your mileage be certain that your positioning is right, change it occasionally to test thoroughly its comfort, and in doing so I think you will find a handlebar setting with the grips level with the saddle to be easy and helpful. Gear moderately for ordinary riding, 64" normal for the average man, 60" for women, or slightly lower if, like me, you are growing old. My normal gear these days is 60" and with the aid of a 4-speed hub it is ideal. And one other important matter—your seating accommodation. Unless the saddle is comfortable at the end of a twenty miles ride, you will never be a happy cyclist. Change it, for there are saddles made to suit everyone, and if the type suitable for you costs a little more, as it may well do, remember you are buying joy of a very personal kind. Finally buy the very best bicycle you can get or afford, have it fitted with light tyres—for I tell you out of a long experience, that by doing so you will have purchased ease or speed (however you care to use them) and a reliability in performance integral with the highest perfection in engineering skill. That then is the story in epitome as I see it, and believing every word of it to be true I commend it to your favour.
Riding Position

THERE is no hard and fast rule governing the correct riding position, as this entirely depends upon the build and requirements of the individual. A few general hints, however, will help the uninitiated to determine the most comfortable riding position for themselves, and so add to the enjoyment of cycling. A sound general rule is so to adjust the position to disperse the weight of the rider’s body evenly over the three points of contact, i.e., handlebars, saddle and pedals.

Correct saddle height can be determined by the rider placing his heels on the pedals when at their lowest position, with the leg fully extended. This allows for a slight bend in the knee when pedalling with the ball of the foot on the pedal. The nose of the saddle should be about three inches behind a vertical line cutting through the centre of the bottom bracket; and the nose of the saddle tilted slightly upwards.

With the handlebar grips approximately in line with the top of the saddle, the rider should feel his weight is so balanced on the handlebars, thus preventing strain on the wrists and forearms.

We recommend riders to try their saddle at various heights and angles; moving it from or towards the handlebars until a suitable position is found.

Page Twelve
SAFETY HINTS

Ride with caution, drive with care, be tolerant with other road users and make the roads safe for all.

Every cyclist should be familiar with the Highway Code, which can be obtained from the N.C.U. Offices by sending a stamped addressed envelope.

Never rely on the "other man" to do the right thing—he may not.

Always signal your intention to turn, but make sure it is safe to do so.

Watch the movements of other traffic and when in doubt—stop.

Never try to make pedestrians or cyclists "wake up" by ringing your bell close to them. It is likely to fluster them and make them jump or swerve in front of you.

Always proceed carefully over cross-roads, even though you are on the major road.

Tamlines, man-hole covers and similar things call for additional care. Never attempt to take a narrow angle with tramlines. Man-hole covers sometimes protrude dangerously and, if it is necessary to ride over them, ride carefully and avoid the edges.

In wet weather particularly, never jam on your brakes, especially the front one. A gentle and firm pressure on the rear brake, helped where necessary by the front brake, is desirable. Remember rear wheel skids can often be corrected but front ones never.

Always remember that the courtesies of the road apply to everyone, and much trouble will be avoided upon a careful consideration of the other man's point of view.

You can't be too careful with children around.
For their safety and your own peace of mind, slow down.
Hints and Tips

TO CLEAN CHROMIUM. Dip a piece of rag in a solution of soft soap and hot water, wipe over, then polish by rubbing lightly with a clean rag and just a trace of oil. Chromium plating requires no other attention. Heavy rubbing should be avoided.

Do not use any kind of metal polish on chromium plated parts.

TO CLEAN ENAMEL. Remove all dirt with a wet rag taking good care not to scratch the enamel. Apply a good polish of the wax type and polish with a clean dry cloth. We recommend that the wax polish be used about once in three months.

TO CLEAN STAINLESS STEEL RIMS and SPOKES. Wash in soapy water, then rub over with a clean dry duster to polish.

FREE WHEEL. Dirt accumulates in the free wheel, so clean it out occasionally by injecting paraffin, afterwards lubricate with Raleigh 'All-purpose' Oil.

Heavy body oil or oil thinned down with paraffin will clog the free wheel mechanism. It is not necessary to remove the free wheel from the hub for cleaning purposes.

CHAIN. Oil the chain once a fortnight, using Raleigh 'All-purpose' Oil.

Occasionally thoroughly clean the chain. Remove it from the bicycle (see pages 17, 18) and wash in a paraffin bath. Dry with a clean rag, and then thoroughly lubricate by immersing in Raleigh 'All-purpose' Oil.

If the bicycle is fitted with a gear-case, occasionally insert about a teaspoonful of Raleigh 'All-purpose' Oil through the lubricator, slowly revolving the cranks so that the whole of the chain is evenly lubricated.

Whenever replacement parts are required, fit only Genuine RALEIGH Precision Tested SPARE PARTS.
To adjust the **Steering Head**

Slacken the locknut "A", gently turn the adjustment nut "B" clockwise until head turns freely without 'play', and tighten locknut "A". When tightening the adjustment nut "B" do not use excessive pressure as damage to the ballraces will result. If bicycle is fitted with a head clip (not illustrated) it is necessary to slacken the Head Clip Nut before proceeding as previous paragraph. This nut should be tightened after the steering head adjustment has been completed.

To adjust the **Pedals**

Check pedals for tightness in cranks at "A". Remove the dust-cap "C", slacken spindle nut "D" and with a pen-knife disengage the locking washer "E" from cone "F", tighten cone until all 'play' is removed; do not overtighten. Slacken the cone half a turn, refit locking washer "E" and tighten spindle nut "D". Pedal should spin freely after adjustment. Refit the dust-cap "C".
The Gearcase

If cycle is fitted with a Gearcase, it is necessary, before attempting adjustments shown on pages 17, 18, 20, 21, to remove Gearcase End Cap. To do this remove the screw or screws “A” (one on Roadster models, two on Sports models) Fig. 1, also remove the two slides “B” and end cap “C”, then proceed either as detailed on pages 17 and 18 or 20 and 21. After adjustments are completed replace end cap “C”, taking care to see that all lips fit inside the gearcase. Replace screws “A” and refit slides “B”. Rotate rear wheel to check free running. If disc “D” Fig. 2 is removed be sure to replace slide “E” in the uppermost position.

Page Sixteen
To adjust the Cranks, Bottom Bracket and Chain Drive

Invert bicycle, slacken rear axle nuts "A" and rear brake. On Roadster models slacken chain adjuster nuts "B" for about \( \frac{1}{2} \). Move wheel forward to allow chain to slacken. Take off "C" spring link on the chain, by forcing the ends of the "C" forward, remove the link plate and half link, finally remove the chain. Clean and lubricate as detailed on page 14. Hold pedal cranks in each hand, if loose, slack cotters "D" are apparent; drive them tight with a hammer, using hard-wood as a punch—damage will result otherwise. Re-tighten crank cotter nuts "E".

To adjust bottom bracket bearing (Fig. 2), slacken lockring "F". Firmly screw up the cup "G" without excessive pressure, then slacken about \( \frac{1}{8} \) of a turn and tighten lockring "F". Test bearing for free running.

Loop chain over freewheel and gear wheel. Fit the half link with the link plate and the "C" spring link on the outside—taking care to position the closed end of the spring link in the direction of rotation. The chain tension is correct when at point "H" it can be moved about \( \frac{1}{2} \). (See Fig. 1).
FIG 2

ROADSTER MODELS
Tighten adjuster nuts “B” (Fig. 1) until tension is correct, and wheel is central in chainstays and backstays. Tighten axle nuts “A”. Re-adjust rear brake (for details see pages 25 or 27).

SPORTS MODELS
Move wheel in direction of “X” (Fig. 1) by hand until the chain tension is correct. Tighten axle nut “A” on chainside only, set wheel central in chainstays and backstays, then tighten remaining axle nut “A”. Re-adjust the rear brake (for details see pages 28, 29).
To adjust the Front Wheel

ROADSTER MODELS
Slacken the axle nut "A" only on the adjusting cone side (left-hand), gently tighten cone "B" until 'play' is removed (do not over-tighten) then slacken the cone half a turn. Tighten the axle nut "A" at the same time centering wheel in forks. Spin wheel slowly. It should revolve freely without 'play'. If front wheel is removed from the forks, when re-inserting see that adjuster cone is on the left-hand side (opposite side to gear wheel).

SPORTS MODELS
Invert bicycle, slacken but do not remove axle nuts and washers "A"—remove wheel. Slacken locknut "C" and with a penknife disengage the locking washer "D" from cone "B", gently tighten cone until all 'play' is removed—do not overtighten. Slacken the cone half a turn, refit locking washer "D" and tighten locknut "C". Hold wheel by the axle, spin slowly. It should revolve freely without 'play'. Replace wheel in forks. Centre wheel in forks and tighten axle nuts "A".
To adjust the Rear Wheel

ROADSTER MODELS
Slacken axle nut "A" only on side opposite to freewheel. Gently tighten cone "B" until 'play' is removed (do not overtighten), then slacken cone half a turn. Tighten axle nut "A" at the same time centering wheel in chainstays and backstays. Spin wheel slowly. It should revolve freely without 'play'.

Whenever replacement parts are required, fit only Genuine RALEIGH Precision Tested SPARE PARTS
To adjust the Rear Wheel—continued

SPORTS MODELS

Invert bicycle, slacken, but do not remove axle nuts and washers “A”—remove wheel. Slacken locknut “C” and with a pen-knife, disengage the locking washer “D” from cone “B”; gently tighten cone until ‘play’ is removed—do not overtighten. Slacken the cone half a turn, refit locking washer “D” and tighten locknut “C”. Hold wheel by the axle, spin slowly. It should revolve freely without ‘play’. Replace wheel in bicycle, centre wheel in chainstays and backstays, tension chain correctly (pages 17 and 18), and tighten axle nuts “A”.

N.B. Sports models are fitted with the hub illustrated below, and Sports Light Roadster models with single freewheel hubs, but the instructions apply to both types.
To adjust the
Height of Saddle

Slacken nut "A", move saddle to required height then tighten nut "A". At least 2½" of the seat pillar should remain in the frame. For the correct position of the saddle, see page 12. The lateral position of the saddle may be adjusted by slackening nuts "B" on each side and sliding saddle chassis forward or backward as desired. If saddle is still too far forward, remove saddle and reverse the clip so that nuts "B" are at position "C" at rear of seat pillar, then slide saddle to the desired position. Tighten nuts "B" equally.

CARE OF SADDLE

LEATHER
A good quality saddle in regular use will always retain its flexibility and shape, and requires very little attention. If, however, a bicycle has been stored away for some time and the saddle top become dry or has been saturated with water, a good preservative will feed the fibres, and restore its suppleness. The best of its kind is Brooks' "PROOFIDE" but any good quality dubbin or neat's-foot oil will be found satisfactory. A small quantity should be applied to the surface of the leather with a soft brush or cloth. Two or three light applications are better than one heavy one. Wet leather should never be forcibly dried, but allowed to dry gradually in a normal atmosphere. It is a good plan to apply the dressing when the leather is wet. If it should ever become necessary the leather top can be stretched more tightly by adjusting the nut in the front of the saddle "D", but this must be done with caution. Too many turns of the nut may pull the saddle out of shape.

SPRING TOP
Saddles with a leather cloth and felt top must not be dressed in any way. They may be cleaned with warm water and soap.
To adjust the Height of Handlebar

SPORTS MODEL
Unscrew expander bolt "X" two complete turns and gently tap it down. Move handlebar to desired position and tighten expander bolt. At least 2\(\frac{1}{4}\)" of handlebar stem must remain in the fork steering tube.

If bicycle is fitted with a head clip (not illustrated) slacken head clip nut, move handlebar to the desired position and tighten head clip nut.

ROADSTER MODELS
Slacken the nuts "A" and "E" on the brake rods, unscrew the expander bolt "X" two complete turns and gently tap down. Move the handlebar to desired position, tighten expander bolt "X". At least 2\(\frac{1}{4}\)" of handlebar stem must remain in fork steering tube. Adjust front and rear brakes as detailed on pages 24 and 25 or 26 and 27.
To adjust the
Roadster Front Brake

Slacken nut “A”. Holding both brake shoes with left hand, raise the stirrup until brake blocks just clear rim (if worn, fit new blocks). With the right hand press the roller lever “B” to its lowest position, likewise the brake rod “C” then tighten nut “A”. Check the position of the fork clips “D” for safety.
To adjust the Roadster

Rear Brake

Slacken nuts “E” and “F”, move the brake stirrup until brake blocks just clear rim; retain this position (if worn, fit new blocks). Set the bottom bell crank “G” until it touches bottom bracket, and tighten nut “F”. Tension the brake rods at point “H” by raising brake tube with left hand. With the right hand press the roller lever “B” to its lowest position, likewise the brake rod “C” then tighten nut “E”. Check the position of the chainstay clips “D” for safety.
To adjust the Rod Operated Rear Hub Brake

(a) Tighten thumb nut "F" until brake just binds and slacken thumb nut "F" until rear wheel spins freely. Check Torque Arm Clip "J" for tightness. (Fig. 2).

(b) If the handlebar height is altered slacken nut "E" (Fig. 1), set bottom bell crank "G" (Fig. 2) until it almost touches the bottom bracket. Tighten thumb nut "F" (Fig. 2) until brake just binds, then slacken thumb nut "F" until wheel spins freely. With the right hand press roller lever "B" to its lowest position, likewise rod "C" (Fig. 1), with the left hand lightly tension the brake rods by slightly raising the bell crank at "H" and tighten nut "E". Re-check rear wheel for free running and check Torque Arm Clips "J" (Fig. 2) for tightness.
To adjust the

Caliper Front and Rear Brakes

Slacken the finger-nut "J". With the adjuster "K" set the brake blocks to just clear rim (if worn; fit new blocks). Re-tighten the finger-nut "J". If one brake block contacts the rim, lightly tap down the opposite side coil "L" of the brake spring, until clearance is equidistant. Set the brake blocks "M" to contact the rims so that they do not touch the tyre walls when brake is applied.

The above illustration is of the front brake, but the instructions apply to both front and rear Caliper brakes.
To adjust the Cable Operated Hub Brakes

For both front and rear brakes (Figs. 1 and 2) slacken nut “A”, turn adjuster “B” until brake just binds, then slacken adjuster “B” until the wheel spins freely. Tighten nut “A”.

On the Front Brake make sure the Torque Arm Clip “C” (Fig. 1) completely engages the Torque Arm and check for tightness.

On the Rear Brake check clip “D” (Fig. 2) for tightness.

For Bearing Adjustments see page 33.
Where to Lubricate

To Ensure sweet running and long life of wearing parts, lubricate once a fortnight all points shown on diagram.

On SPORTS MODELS lubricate the brake cables at both ends

Use RALEIGH 'ALL-PURPOSE' OIL — obtainable from any Raleigh dealer

Sturmey - Archer Hubs

Before using a new hub, or one that has been stored away for some time, inject one teaspoonful of Raleigh Oil and add from $\frac{1}{4}$ to $\frac{1}{2}$ this quantity once every fortnight afterwards. Oil through the lubricator in the shell and also the one on left-hand ball cup in F.C. and F.M. Hubs. Make sure that the lubricator hole is clear and that oil sinks into the hub. See that the cover is properly closed afterwards.
The Raleigh Front Fork Lock

THE LOCK
There are three positions in which the lock can be operated (see above). Two which lock the Front Fork at an angle to the frame, and the third, central position for use when parking the bicycle in the cycle rack. When parking the bicycle beside the curb, it is advisable to lock the cycle with the Front Wheel at an angle, and to see that the locking bolt is correctly housed in the hole of the locking plate. Never lock with bolt outside the plate, thereby exposing the locking bolt. Do not lubricate the key or lock. If oil gets into the lock mechanism, it may collect dust and grit which will impede its operation. All that is necessary is an occasional smear of oil on locking bolt.

THE KEY
Make a note of the key letter and number, as this must be quoted if re-placement is required. Take special care to avoid loss of key.

DO NOT RIDE OR LEAVE BICYCLE WITH KEY STILL IN THE LOCK.

Page Thirty-two
Sturmey-Archer Hub Gears and Internal Expanding Brakes

TYPES:

AW  ..  Standard Ratio  ..  ..  ..  ..  3 speed
AM  ..  Medium Ratio  ..  ..  ..  ..  3 speed
AB  ..  Standard Ratio with Hub Brake  ..  ..  3 speed
AT  ..  Standard Ratio with Hub Brake for Tandem 3 speed
FW  ..  Wide Ratio  ..  ..  ..  ..  4 speed
FM  ..  Medium Ratio  ..  ..  ..  ..  4 speed
FC (or AF)  Close Ratio  ..  ..  ..  ..  4 speed
BF  ..  Single Speed Front Brake Hub Solo
BR  ..  Single Speed Rear Brake Hub Solo
BFT  ..  Single Speed Front Brake Hub Tandem
BTR  ..  Single Speed Rear Brake Hub Tandem

BEARING ADJUSTMENT

All bearings are adjusted simultaneously by turning left-hand cone after loosening the locknut which must be locked again after adjustment. The bearings should be adjusted so that wheel revolves freely, with only a trace of side-play at rim.

For Variable Speed Hubs, the right-hand cone is set at Works and locked with a special washer. It should not be disturbed unnecessarily. The correct setting is—with the left-hand cone screwed right back, screw up the right-hand cone finger-tight as far as it will go, then slack back half a turn and lock with the special washer. Then adjust left-hand cone.

Single Speed Brake Hubs have a shoulder on the spindle against which the right-hand cone is screwed.

On Hubs fitted with Internal Expanding Brakes, the left-hand cone projects through the brake plate and over its flattened end is
fitted a thick washer with four notches (E. Fig. 1) by means of which it may be turned for bearing adjustment.

GEAR ADJUSTMENT
This is effected with the gear lever in the gear next to low gear, i.e., middle gear for three-speed and second gear for four-speed. One of the following types of adjustment is used.

TYPE 1
On three-speed Hubs types AW., AB., and AT. and earlier types of AM and AR adjustment indication is at the sprocket or right-hand side of the hub and can be observed through slots in axle nut. Adjustment is correct when the shoulder of the rod attached to the toggle chain is exactly level with end of axle as shown (A).

![Type 1 Diagram]

TYPE 2
On AF., FC., and FM. four-speed Hubs and later types of AM and AR three-speed Hubs, adjustment indication is by means of a rod projecting from left-hand end of axle, i.e., side of the Hub away from sprocket. Adjustment is correct when indicator rod is level with end of axle as shown (B).

![Type 2 Diagram]

If the gear adjustment is not correct proceed as follows:—set gear lever in position next to 'bottom', i.e., middle gear for 3-speed and second gear for 4-speed. Loosen small locknut securing knurled wire connection. Screw knurled connection in required direction until indicator is in its correct position relative to end of axle, according to the type of hub. Tighten small locknut.
If this does not give sufficient movement, the quadrant (or wire stop in trigger controls), can be moved along top tube in required direction until adjustment is approximately correct, adjusting finally by knurled connection as described above.

IMPORTANT
In the case of Hubs with Type 1 indication, before adjusting it is essential to check that indicating rod be screwed in as far as it will go and only unscrewed enough to line the chain with control wire.
In the case of Hubs with Type 2 indication, the indicator rod should be screwed up gently as far as it will go by means of a small screwdriver inserted in the slot provided, at the same time holding toggle chain against rotation.

Notes on Gear Maintenance
Keep gears correctly adjusted. If at any time gears slip, correct adjustment immediately as running in this condition wears the engaging dogs inside Hub.
Change gears smartly, just easing pressure on pedals whilst doing so. Slow gear changing may cause chipping of engaging dogs.
Do not unnecessarily dismantle Hub.
Keep bearings correctly adjusted.
Lubricate Hub regularly through lubricator on shell. On four-speed Hubs there is an additional lubricator on left-hand ball-cup.
About quarter to half teaspoonful once a fortnight is correct, rather more being required if the mileage covered is high.
Use Raleigh 'All-purpose' Oil. If this is not available a good quality thin machine oil may be used. Never use thick oil or grease, as either will cause the paws to stick. The quadrant or trigger, together with pulley, also require an occasional drop of oil. It is important that axle nuts are tight enough to prevent axle from rotating in frame slots. Special serrated washers are fitted on Sports Models to prevent wheel slipping forward.
**Sturmey-Archer Hub Gear Data**

<table>
<thead>
<tr>
<th>Hub Type</th>
<th>Description</th>
<th>Low Ratios</th>
<th>High Ratios</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>First</td>
<td>Second</td>
</tr>
<tr>
<td>A.W.</td>
<td>3-speed Wide Ratio</td>
<td>.75</td>
<td>1</td>
</tr>
<tr>
<td>A.B.</td>
<td>3-speed Wide Ratio with Solo Hub Brake</td>
<td>.75</td>
<td>1</td>
</tr>
<tr>
<td>A.T.</td>
<td>3-speed Wide Ratio with Tandem Hub Brake</td>
<td>.75</td>
<td>1</td>
</tr>
<tr>
<td>A.M.</td>
<td>3-speed Medium Ratio</td>
<td>1.265</td>
<td>1</td>
</tr>
<tr>
<td>F.W.</td>
<td>4-speed Wide Ratio</td>
<td>.666</td>
<td>.79</td>
</tr>
<tr>
<td>F.M.</td>
<td>4-speed Medium Ratio</td>
<td>.666</td>
<td>.857</td>
</tr>
<tr>
<td>F.C.</td>
<td>4-speed Close Ratio</td>
<td>.75</td>
<td>.9</td>
</tr>
</tbody>
</table>

**NOTE**—The figure "1" denotes direct drive.

**Gear Ratios and Gear Calculations**

To Calculate the Direct Drive, or Normal Gear:

Multiply the number of teeth on Crank Chainwheel by size of rear wheel (in inches); then divide the result by number of teeth on Hub Sprocket.

To Calculate other Gears:

Multiply the Direct Drive (or Normal Gear) by the decimal figure to be found from the table above under the required gear and opposite the type of hub in question.

Example—for A.M. type hub:

- Crank Chainwheel ... 46 teeth
- Hub Sprocket ... 16 teeth
- Rear Wheel size ... 26 inch

Normal Gear (Direct Drive) equals 46 times 26, divided by 16, i.e., 74.7", or $\frac{46 \times 26}{16} = 74.7"$.

Low Gear ... 74.7 times .865 equals 64.8".
High Gear ... 74.7 times 1.155 equals 86.2".

To determine how far the bicycle will travel as a result of one revolution of the pedals, multiply the appropriate gear figure by 3.14. Example 74.7 x 3.14 = 211.6" or 17 ft. 8 ins.
## Sturmey-Archer Gear Ratio Table for Wide Ratio 4-Speed Hub

**TYPE FW**

<table>
<thead>
<tr>
<th>No. of Teeth on Hub</th>
<th>No. of Teeth on Bracket</th>
<th>26 inch Wheels</th>
<th>28 inch Wheels</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1 (Low)</td>
<td>2</td>
</tr>
<tr>
<td>40</td>
<td>16</td>
<td>43:3</td>
<td>51:3</td>
</tr>
<tr>
<td></td>
<td>17</td>
<td>40:8</td>
<td>48:3</td>
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<tr>
<td></td>
<td>18</td>
<td>38:5</td>
<td>45:7</td>
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<td></td>
<td>20</td>
<td>34:7</td>
<td>41:1</td>
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<td>42</td>
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<td>38:3</td>
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<td>46:9</td>
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<td>41:6</td>
<td>49:3</td>
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<td>50</td>
<td>16</td>
<td>54:2</td>
<td>64:2</td>
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<td>17</td>
<td>51:0</td>
<td>60:4</td>
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<td>48:1</td>
<td>57:0</td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>43:3</td>
<td>51:3</td>
</tr>
</tbody>
</table>

Page Thirty-seven
# Sturmey-Archer Gear Ratio Tables

**for AW, AB, AT**

## 3-SPEED STANDARD WIDE RATIO HUBS

<table>
<thead>
<tr>
<th>No. of Teeth on Bracket Chain Wheel</th>
<th>No. of Teeth on Hub Sprocket</th>
<th>26 inch Wheels</th>
<th>28 inch Wheels</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Low</td>
<td>Middle</td>
</tr>
<tr>
<td>40</td>
<td>16</td>
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<td>17</td>
<td>57.4</td>
<td>76.5</td>
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</tr>
<tr>
<td></td>
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<td>48.8</td>
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</tbody>
</table>
The Patent Dynohub
(8 and 12 VOLT TYPES)
with
LIGHTWEIGHT (H.F.) or DE LUXE (H.F.B.)
HEADLAMPS and REAR LAMP

MAINTENANCE INSTRUCTIONS

DYNOHUB
Keep cone locknuts and axle nuts tight and see that terminals do not touch fork ends.

HEADLAMP
Keep fixing nut tight, but do not attempt to adjust angle of lamp without first loosening this nut. The De Luxe (H.F.B.) lamp is fitted with flat 4½ volt battery. Long battery contact should touch long contact strip from switch and short battery contact should touch short contact attached to dynamo and tail lamp terminal (marked D.T.). Remove battery as soon as it is exhausted to avoid corrosion inside lamp.

REAR LAMP
This is fitted to rear stay and need not be earthed. Type TL8 for 8v set and type TL12 for 12v set.

WIRING
H.F. LAMP
One hub terminal to Red Headlamp terminal.
Other Hub terminal to Rear Lamp terminal.
Rear Lamp clip screw to Black Headlamp terminal.
H.F.B. LAMP

Hub terminals to headlamp terminals D and DT.
Lamp terminal DT to Rear Lamp terminal.
Lamp terminal T to Rear Lamp Clip Screw.

BULBS

Only correct bulbs give satisfactory lighting. They are:

H.F. & H.F.B. Lamps

12 volt
HEAD 12 volt -23 amp.
REAR 2·5 volt -25 amp.

8 volt
HEAD 8 volt -15 amp.
REAR 1·5 volt -15 amp.

H.F.B. Lamp only PILOT 2·5 volt -3 amp. 1·5 volt -15 amp.

The bulbs are wired in series.
For access to bulbs, headlamp front opens on pressing release button. The rear lamp dome unscrews.
Bulbs must always be screwed home to ensure contact.

SWITCH

The H.F. lamp requires ¼ turn to switch on. The H.F.B. lamp requires ¼ turn to D for dynamo lighting or ¼ turn to B for battery lighting.

BEARING ADJUSTMENT

The cone on dynamo side is fixed and its locknut must be kept tight. Wheel bearings are adjusted by loosening locknut on opposite side to dynamo and turning cone next to it till only a trace of sideplay is felt at rim. Then re-tighten locknut.
The Patent Dynohub
(6 VOLT FRONT WHEEL FITTING)
and
The Patent Dynothree
(6 VOLT DYNAMO and 3 SPEED GEAR COMBINED)
with
NEW PATTERN HEADLAMP
(Type H.F. 63 Operating from Dyno direct
Type H.F. 62 Operating from Accumulator Unit)
also TAIL LIGHT (T.L.6)

MAINTENANCE INSTRUCTIONS

HUBS
Keep cone locknuts and axle nuts tight and see that terminals do not touch fork ends. In the case of front wheel Dynohub—fit wheel with Dyno on right-hand (off) side.

HEADLAMP
This may be fitted to a special lamp bracket, or by an adaptor to standard lamp bracket. Do not attempt to adjust angle of lamp without first loosening fixing nut. When setting has been determined keep fixing nut tight.

REAR LAMP
This is fitted to rear stay and need not be earthed except in the case of Dynothree when fitted with Accumulator Unit.

WIRING for Lamp Type H.F. 63 (operating from Dyno direct)
In this set wiring connections are inside lamp, wires enter lamp through a hole in fixing bracket. To reach terminals, the lamp front is removed by undoing small screw at bottom clip.
Illustration (page 42) shows flex connections to lamp switch.
One hub terminal to upper L.H. switch terminal.

Other hub terminal to lower switch terminal.

Upper R.H. switch terminal to Rear Lamp terminal.

Lower switch terminal to Rear Lamp clip screw.

(For wiring of Lamp H.F.62 — operating from Accumulator Unit — see page 44.

BULBS

Only bulbs of correct rating are satisfactory. They are:—

HEAD 6 volt · 3 amp. REAR 6 volt · 04 amp.

(The bulbs are wired in parallel)

For access to bulbs, headlamp front is removed by undoing small screw at bottom clip. Rear lamp dome unscrews.

SWITCH

This lies below lamp and moves across it, giving “Off” and “On”. “On” position is towards right when seated on bicycle.

BEARING ADJUSTMENT

In both the 6 volt Dynohub and Dynothree the cone on opposite side to Dynamo (i.e., left-hand in the case of front wheel Dyno and right-hand rear) is a fixture and should not be moved.
Wheel bearings are adjusted by loosening locknut on Dyno side and turning the notched washer next to it (which turns the cone) till only a trace of side ‘play’ is felt at rim. Then retighten locknut.

GEAR ADJUSTMENT (For Dynothree only)
After wheel has been fitted in frame, indicator should first be screwed up finger tight, then turned back just far enough to allow chain to line up with control wire. It should never be necessary to unscrew it more than one half turn for this purpose. This is necessary before adjustment may be checked. To adjust gear control, first place gear lever in normal position. Then unscrew locknut on screwed connection, at chain end of hub, and adjust knurled connection fitted to wire, until shoulder on indicator screw is level with end of axle. This can be seen through slots in R.H. Nut. If this method gives insufficient adjustment, further adjustment can be obtained by sliding clip on top tube control, or fulcrum clip in the case of handlebar control along top tube in required direction.

LUBRICATION
The Dyno has no bearings of its own and only the hub bearings or gears require lubricating. In the case of the front hub, a few drops of oil once a fortnight is adequate. For the Dynothree it is necessary to lubricate the gears as in the case of ordinary variable hub gears, i.e., quarter to half teaspoonful every fortnight. Use Raleigh ‘All-purpose’ Oil.

IMPORTANT WARNING
Should it ever be necessary to separate the armature from the magnet a “keeper ring” for magnet must be used.

AT ALL TIMES THERE MUST BE IRON WITHIN THE MAGNET

This applies to ALL Dynohub magnets.
The Dyno-Luxe
All Electric Lighting Unit
combining
6 VOLT DRY ACCUMULATOR, DYNOHUB
AND VARIABLE GEAR

ACCUMULATOR
MAINTENANCE INSTRUCTIONS

THE BATTERY UNIT
This comprises a Rectifier and three 2 volt Dry Accumulators carried in a tubular container attached to the seat tube. This is earthed to the frame at the lower fixing lug. The current for the lamps is drawn from this battery, so providing steady illumination, even if the bicycle is stationary.

WIRING
(for Headlamp, Type H.F. 62)
The two hub terminals to two outer terminals under cap of battery case.
Centre terminal of battery case to upper L.H. Switch terminal.
Upper R.H. Switch terminal to Rear Lamp terminal.
Note—The rear lamp clip when used with this Accumulator Unit must be earthed to seat stay.

BULBS
Only bulbs of correct rating should be used. They are:
HEAD 6 volt ·2 amp. REAR 6 volt ·04 amp.
The bulbs are wired in parallel.

Page Forty-four
The 2 volt
Dry Accumulator

MAINTENANCE INSTRUCTIONS

The three cells must be "topped up" with distilled water fortnightly in summer and monthly in winter. To remove batteries from container, first detach Rectifier unit complete (bayonet fitting) and push batteries up through top of container by pressure on loose domed base plate in bottom of container. To "top-up," remove rubber cap from each cell, add distilled water until upper white surface remains moist; shake out excess water; wipe each cell dry and replace stopper. Keep the cells and casing clean. All contacts should be clean and bright, and liberally smeared with vaseline. Any Raleigh Agent will re-charge a run-down accumulator. Maximum charging rate .25 amp., for ten hours. Should any water run down between the insulating sleeve and the lead outer container, the sleeve should be removed and the water dried out. Always make sure that the sleeves are on the cells before replacing them in the battery container, and see that the loose domed base plate is in place at the bottom of container—dome upwards.

Page Forty-five
Apart from an occasional spot of oil, the Trigger Control requires no attention, but should it be necessary to renew wire through wear, proceed as follows.

TO REMOVE CONTROL WIRE

Fig. 1

Detach complete control from handlebar.

Pull outer cable clear of ferrule on casing (A).

Full trigger back until nipple appears at casing cut-away (B).

Pass inner wire through ferrule slots, and push pawl inwards past wire (C). The pawl spring may now be removed (D).

Push inner wire through until enough slack is given to allow nipple to be removed from hole (E).

Withdraw wire complete.

TO REPLACE CONTROL WIRE

Fig. 2

Pass wire, nipple first, through hole in front of casing and between pawl and ratchet until enough is through to allow nipple to be inserted in ratchet plate. The ratchet plate hole must be opposite cut-away in casing (F).

Pull slack wire back.

Fit pawl spring and push pawl upwards with a small screwdriver, until lever and ratchet plate can be pushed under it (G).

Pull wire taut, pass it through ferrule slot, and push outer cable into ferrule (H). Fix cable stop on top tube at other end of Outer Cable.
Care of Tyres and Rims

CORRECT RIM SIZES. Wired type tyres (in which the edges are inextensible) can only be fitted to the rims for which they are designed. All covers are marked with the standard description of the rims for which they are intended. This standard description will be found stamped on the rims near the valve hole.

INFLATION PRESSURES. To obtain maximum mileage from the tyres they should be inflated hard. Running a tyre in an under-inflated condition causes rapid tread wear and early failure of the casing. A particular feature of under-inflation is rapid wear on the sides of the tread leaving the centre proud. A correctly inflated tyre has a much lower rolling resistance than a soft tyre and less energy has to be used to propel the bicycle.

USE OF BRAKES. Do not take full advantage of efficient brakes except in emergencies, because any slippage between the tyre and the road means that the rubber is being ground away from the tyre tread.

OIL AND PARAFFIN: Care should be taken when cleaning and lubricating that oil and paraffin are not allowed to come into contact with any portion of the tyre, nor to run along the spokes and reach the tube through the spoke holes in the rim. Both oil and paraffin have a definitely adverse effect upon rubber, the action being almost instantaneous.

WAR GRADE TYRES. These tyres now contain synthetic rubber which is a substitute for the real thing to meet an emergency. They cannot be expected to give the same performance as natural rubber tyres, and as they are more liable to failure from abuse they require careful treatment in service if reasonably good performance is to be obtained.

CARE OF RIMS. Rust and grease should be removed from rims, and it is advisable to re-enamel rims occasionally. If it becomes necessary to fit new spokes, closely examine the spoke heads for any sharp points; these should be filed down level with the top of the nipple and neatly rounded off. See that the correct width of tape is used—there is a narrow one for narrow section rims and a rather wider one for standard section rims. The buckle of the rim tape should be immediately over the valve hole.
FITTING. See that the rim tape is correctly positioned in the centre of the rim and is not loose. Then slightly inflate the inner tube and place it within the cover. Next presenting the tyre to the rim, pass the valve through the rim tape buckle and the valve hole and push the first wire edge on to the rim; this will come over quite easily. Now commence to fit the second wire edge at a point diametrically opposite the valve position. Keep the wire edge at this point down in the well of the rim and gradually place the wire edge of the cover into position, working a little on each side and keeping the wires as far as possible in the rim well. The last few inches may be gently levered over with a small cycle lever or even pushed over by hand. Next, inflate a little and make quite certain that the cover is now correctly seated on the shoulders of the rim. This can be done by pushing the cover away from the rim with the fingers. When released, the cover should spring back on to the rim shoulder. Now fully inflate and then tighten the rim nut. By spinning the tyre, any unevenness in rotation will indicate that the cover is not correctly seated. This is an additional check.

REMOVAL. Completely deflate by removal of all valve parts. Push the two wire edges off the shoulder of the rim right down into the well. Next, by means of a small cycle lever, lift a portion of the wire edge near the valve over the side of the rim. The remainder will then come over quite easily. Now remove the inner tube; the cover can then be removed without difficulty.

REMOVAL FOR REPAIR. When the position of the puncture or damage is known, it is only necessary to remove a portion of one side of the cover. The damaged portion of the tube can then be drawn out. Examine the cover and remove the puncturing object. After repair, replace the tube carefully, very slightly inflate, and refit the cover. If the tube has to be removed entirely, dismount one side of the cover only, replacing the tube and refitting the cover after repair. Proceed similarly when fitting a new tube in a used cover. Do not remove the rear wheel inner tube for repair on the chain side of the bicycle: it might get smeared with oil.

RALEIGH REPAIR OUTFIT. This handy little outfit, complete with patches, solution, chalk, canvas, etc., is available from all Raleigh dealers.
Open Sesame

by HAROLD ELEY.

WHEN one buys a bicycle, the purchase is much more than a trading deal or transaction. One does not merely buy so much steel, rubber, leather, and other component parts. The truth is that the purchase is a kind of passport to out-of-door joys in excelsis, for the bicycle is the open-sesame indeed to enjoyment of the great and priceless heritage of the countryside. The great immemorial roads which cross England like so many broad ribbons; the little bye-ways which lead to friendly villages; the hillroads, where the going may be hard but the rewards are great; the tangled lanes where in summer the trees meet overhead in sweet green canopies, and where in winter those same trees are gaunt sentinels, beauteous still in their nakedness . . . these are the pleasant prospects which lie before the cyclist, and it must be remembered, no road user is more free and unfettered than he who rides a bicycle! No "parking" problems! No running short of fuel! No barring of a road because it is too narrow! The cyclist has the complete freedom, and all Britain lies before him . . . to explore, to traverse as slowly or as quickly as he will, to unfold to him, if he has but the discerning eye and open heart, all her rich treasures of scene and history. Let us, then, be aware of our heritage, and regard our cycle as much more than an ingenious machine which will convey us from "A" to "B". It is our "magic carpet" . . . and regarding it as such, let us wander, in the pleasure of an "easy chair" tour, through some of the good country which is ours . . . whether we go north, south, east, or west.

Now, as an old cyclist, and one with a deep love for England, I know how devoted are the disciples of the west country! For them, one may talk of the quiet delights of East Anglia in vain . . . they hark back, in the chat over a mug of ale in an inn, to the grandeur of Devon, the rolling expanse of Exmoor,
the rocky coast of Cornwall . . . and dismiss my eulogies of Suffolk, and the Fenlands, with scorn. Then, there are the ardent southerners—who, with Hilaire Belloc, rejoice in Sussex-by-the-Sea, and will have none of my enthusiasm for the north; the stone walls of grey Derbyshire have no appeal for them; they will have it that on my tours in Durham and Northumberland, I had nothing but grey skies and perpetual rain! In vain do I tell them of the delights of parts of Lancashire, of the joys of the Wharfedale country, of the unsurpassed magnificence of Durham Cathedral . . . they implore me to go south, and find my treasures on the Downs. Well, it is good that England is so varied, and good that all of us do not ask for the same type of country . . . let it remain that for one, the South Downs; for another, the quiet lands of Suffolk where Constable painted, and asked for nothing better than a placid stream, an old mill, a lane down which a hay-cart rumbled; for another, the wild moorland road, with the curlews crying overhead, and the mists coming down from the mountains; and for yet another, the leafy lanes of Warwickshire, peopled, in fancy, by all the characters of Shakespeare . . . or, maybe, the orchards of Worcester or Hereford. The scene is there for us, wherever we may ride, and our country is so rich and varied that always there is beauty, romance, and bits of history peeping out from churches, taverns, castles and manor-houses . . .

On a day in June, when the sun was warm to my back, and I was riding towards ancient Lichfield, little city of Doctor Johnson, and beloved by me because of its small but exquisitely lovely cathedral, I met a cyclist and rode for some miles with him along the main road from Burton-on-Trent. We fell to talking of cycles and cycling . . . and I was glad that he was one of the wise fraternity who know that a cycle is more than a machine . . . he appreciated my reference to my own mount as my "magic carpet". And as we chatted, I found that he was a man who earned his living in a big city, and was tired of toil, and telephones, and the whirl of modern industrial life. "I am an escapist" he said, and he had found, in his cycle, the easy way out of his problems and complexes, and was seeking new health and new poise by riding in the good land of Staffordshire—purposing to visit some relations in the little
town of Rugeley. I told him that Rugeley, in the main, meant for me Palmer the Poisoner . . . but he assured me that it had other claims to fame, and that anyway, he had known it as a boy, and loved its streets, and was looking forward to walking in them, with all the good companions of boyhood days beside him . . . in spirit maybe, but when one visits the scenes of childhood, it is surprising how real and solid those spirits can become! And so we rode together . . . two cyclists both seeking peace, and pleasure, and forgetfulness. The sun withdrew behind some threatening clouds, but we did not mind, for to the real cyclist, every weather-phase is welcome, and it is possible to find as much beauty in the road shining with rain, as in the road hot with dust. Past tall farm-houses, built in the severe Georgian style so common in Staffordshire; past little wayside inns, rejoicing in good names like “The Dun Cow” and “The Squirrel and Magpie” and “The Five Bells”; past one or two old churches, with ancient thick-set yew-trees flanking the path to the door; past country children picking flowers from the tangled hedge-rows, reaching up to the pink-and-white dog-roses which lined the tops of the hedges like garlands. And as we rode, the frets and fumes of life slipped away, and we began to sing. And here let me say that I am always amazed that so few riders sing as they go! True, one does sometimes pass a cyclist who, for the sheer joy of living, greets the birds, and the cows and the sheep with snatches of happy song . . . but it is rare. That man from Rugeley and I sang as we rode along, and presently, when we came to an inn that looked more inviting than the rest, we dismounted, and entered “The Green Man”—and, in a little room where a grandfather clock ticked solemnly on the wall, flanked by pictures of old-time boxing giants like Fitzsimmons, and Heenan, and Corbett, we drank good Staffordshire ale, and I told my friend that I was quite an enthusiast for Staffordshire, often correcting that common and quite wrong impression that the county is nothing but grime and smoke—the Potteries in the north vying with the Black Country in the south for ugliness and sordid scenes. But he did not need telling that in the middle belt of the county, there was good country indeed. And so, as we smoked and sipped our ale, we talked of

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the loveliness of the Manifold Valley, of that part of exquisite Dovedale which (surprisingly to many) is not in Derbyshire, but in Staffs. We chatted of the breweries of Burton, and I told my friend of the antiquity of that renowned Metropolis of Beer... reminding him that the remains of a Monastery still stood on the banks of the Trent, and that, in former times, the town was a centre of the tape industry. We talked of Lichfield, and I was glad that he was familiar with "The Lady of Cathedrals" and a lover of the glorious West Front. Together, we roamed in fancy through many Staffordshire villages—Hanbury, and Needwood on the edge of the once-mighty forest; of Hoar Cross, with its gorgeous village church, so wonderfully enriched by the munificence of the Meynell family; and Sudbury, where the noble Hall, original seat of the Vernons, is visible so plainly from the road. It was a good time that we spent in that village inn, and the sort of time which I always associate with cycling... because when one cycles for pleasure, all sorts of surprise pleasures slip into one's day in the saddle. It is all part of the happy companionship of the road, peculiar to cycling, and an essential part of it. Later in the day, we parted... my friend to renew the memories of his boyhood, myself to draw again some of the delights of old Lichfield...

I have recorded some of the memories of a day in June, but they are only a few out of a rich treasure-house! My mind goes back to a notable trip to Central Wales... to the unspoilt beauty of Radnorshire and Montgomery. It was in early autumn, and I have visions still of the glory of the rowan-trees on the hillsides, with their berries gleaming like rubies in the sun; I recall wandering through the pleasant little town of Llanidloes; I recollect spending some time by the mighty water-plant at Elan Valley... that epic work of engineering which ensures that the teeming population of Birmingham gets a full and pure water supply. If you do not know Central Wales, and have always been faithful to North Wales and Snowdonia, I commend you to take a tour through Radnor and Montgomery... for there you will
find scenes of real beauty; the hand of industry has left no ugly scars on the lovely scene; all is green and peaceful, and the compact little Welsh sheep graze unmolested on the hills, and nowhere have I found a more varied assortment of butterflies... but when I talk of butterflies, I know that I am on dangerous ground, for not everyone shares my love for entomology, and I realise that to many good cyclists, the man who goes out equipped with butterfly net and specimen-case, is but a "bug-hunter"—to be scorned and pitied. So, I will leave the butterflies of those lanes and fields in Central Wales to themselves, and get back on to the winding road... now taking me, as I look back over the years, to homely Hertfordshire where I have had some good rides, and seen some truly pleasant places. Hertfordshire, like Suffolk, is not for the rider who craves for scenic grandeur... for rocky gorges, and rugged heights; it is truly, in the words of gentle Charles Lamb, "homely"—and as such, will appeal to many. Remembrances come of walking my machine through the crooked streets of Saint Albans, where, if I mistake not, there is the very oldest inn in all England... the "Fighting Cocks". Whether it really is the oldest, I am not going to say... for the "oldest inn", like the "prettiest village", has many claimants. But Saint Albans is fascinating, and so is Hertford itself. And I must be preaching to the converted when I speak of the good features of Baldock, and Hitchin, and old Bishops Stortford... where, in the vicarage, the great Cecil Rhodes was born.

I have been rambling... but that is what I set out to do! Rambling among the fair fields of cycling memories, and I hope that any rider who reads these notes, will find a new urge to seek new touring grounds—to explore—to seek out the romance which is inherent in almost every road, and village, and old town in this blessed island. It is the way to transform the bike into the magic carpet to which I have referred.

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Modern Woman's Way to Health

by AUDREY ALLIS

"There must be something in this cycling", say so many of my friends, girls of all ages from fifteen to thirty-five, "you get such fun out of it, you look so terrifically fit, and you never seem bored or at a loose end, yet somehow I don't think I would get the enjoyment from cycling that girls like you do".

"Girls like me!" That's just it—all girls are "like" me; I'm typical of the modern woman, make no pretence to frills or inhibitions, and love cycling for what it is, the easy and pleasant gateway to a real enjoyment of life. My enthusiasm for riding a bicycle has communicated itself to hundreds of women of my acquaintance once they have realised that there is nothing undignified or tiring in cycling and that the fair sex can and do derive real lasting pleasure from the pastime. Pleasure, plus a definite gain in health and a knowledge that an easy way to continued fitness, lies within the reach of every woman so handily and cheaply.

May I say what cycling has done for me? It has performed no miracles, but it has done for me what it can do for any normal woman; it brought me through an extremely depressing period of "gawky" girlhood into what I may confidently claim is a state of regular good health, utter absence of "nerves", and a figure that persists in staying slim!

Until I "took up" cycling seriously I recall only too well that my body, from top to toe, was, as candid friends expressed it, a "proper mess". My hair was abundant but lifeless, my complexion was as muddy a one as ever a girl had to put up with, I was inclined to round shoulders, and my figure settled down to being so dumpy and mature that I realised something had to be done about it.

It was at this time that my casual cycling became a regular part of my daily life, plus week-end leisure. Friends at work and
those made at evening classes, together with a realisation how very handy my bicycle was to go to and from work, for shopping and visiting people where other transport was awkward or sparse, caused my mileage to mount, and I found myself cycling a few miles every day. I found something else: I was looking better and felt brighter, my hair was beginning to show some interest in life, and that awful skin of mine was growing very much better!

Unconsciously, I was "doing something about it!" My nebulous plans for seeing a doctor, getting a change of job or something equally drastic now became unnecessary. The regular, happy miles had resulted in a general toning-up of my face and body. Need I say that I have no intention of giving up such pleasant "medicine?"

I am happy to generalise on the benefits that feminine cyclists can derive, but to get the best service from a bicycle and complete freedom from any feeling of awkwardness the machine you choose must be comfortable and easy to ride, in short, it must "fit" you.

What kind of a frame should you have? You don't know, perhaps, so look yourself over. Your height, or more correctly leg measurement, is the chief factor to bear in mind, irrespective of whether your bicycle is to be of the modern twin straight tube design or the still popular loop frame. Personally, I much prefer the twin tube idea; it makes for greater rigidity, I find, is easy to mount and dismount from, is light in weight and has a feeling of liveliness and smartness that appeals to all ladies.

Twin tubes or loop, a small frame should be chosen rather than a large one; it is easy to pull up a saddle pin an inch or more, but undue stretching to reach the pedals can be definitely harmful. A rough and ready method is to take the inside leg measurement and deduct ten inches from it—the answer gives the frame size you should choose, nothing higher. My frame is 20 in., and it is rare that a lady cyclist wants anything bigger than 21 ins.

The saddle is a most important fitment; it can make or mar any person's cycling enjoyment. After much experiment I have found the type of seat that appears ideal for lady riders. This saddle is not ultra-luxurious in the matter of springing (I find a tendency to roll about when the saddle bristles with coils) but gives slightly when pressed hard with the hand. The peak is narrow—length of peak is immaterial as one never sits on it—but the base,
the part where important muscles rest, is of fairly generous width.

So many would-be cyclists say to me, “If I buy a bicycle I know it will leave the factory in tip-top condition and won’t require any attention whatsoever for a long time. Then the day will come when adjustment of the wheels, cranks or brakes will be necessary, and I don’t know the first thing about how to use a spanner or where to look for a squeak or a rattle”.

They are saying word for word what I’ve had to confess myself over a period of years! I’m not mechanically minded and I’m afraid nothing will make me that way, but I can read! No publication of recent months has given me such easy-to-understand information as that given in the maintenance section of this book, and I am confident that the greatest self-confessed “duffer” will be able to keep her machine in good running order by referring to that section.

Hands may get soiled when oiling or cleaning, but soap and water will quickly restore them to beauty; or any of the “grease dissolving” products on the market, obtainable at practically any hardware store or cycle shop, will clean your hands in a jiffy.

With the modern British-made bicycle, there is no “danger” when cycling in traffic or on popular holiday roads. With their excellent brakes, small, well-designed frames, any girl can start away on her new cycle free of fear that she will be “let down” or that other traffic will harass her.

There is still plenty of room on British highways for all forms of transport, and a lady’s bicycle of modern design (the emphasis on “modern” is important) is in no one’s way and is a handy, handsome mount always under control. Dismounting is a neat, quick operation at any time, the small frame and consequent “low” position enabling the feet to be placed to the ground without fuss or wobble.

What to wear when cycling is another point for a lady. When riding with friends in the summer holidays I wear shorts and a khaki shirt with sleeves rolled, but during the week I am a “utility” rider and dress accordingly. I’ve tried plus-fours, divided skirts and one or two ideas peculiarly my own, but I find nothing is so comfortable, yet smart, as a costume skirt of generous weight. On really boisterous days I have worn clips attached to the hem, but nine days out of ten the skirt shows no tendency to blow up.
over my knees, and for everyday cycling such a skirt, with the addition of a blouse of any material and a short coat, is ideal.

I prefer flat shoes for cycling, but using my machine daily to get to work I ride in ordinary footwear and wear gauntlets if the weather is cold. I find that cycling on the bitterest day keeps my body delightfully warm once I get started and beyond a layer of something across my chest (wool, scarf or even newspaper) I wear nothing extra in the winter months... the pleasant rhythm of cycling takes care of my health completely!

An ordinary raincoat or "mac" suffices in the wet, plus a scarf square unless the rain is heavy, in which case an oilskin hat ("sou'-wester") proves useful. Such a hat rolls up no bigger than a short round ruler and goes in my pocket when not in use.

The pastime of cycling pleases me so much that I find it much more than a handy means of shopping, getting to work and calling on friends or business acquaintances. After a week within office walls, with only the daily cycle ride to blow the cobwebs away, I want something to buck me up and make me feel "on top of the world". My bicycle! On a Sunday morning I look out into the sunlit street and the breeze seems to whisper, "It's not far to the country and cycling means you can start from your doorstep without a thought for buses or trains!"

Few women have no domestic ties of some sort and I am no exception. Nevertheless, if I have only a few hours of leisure on Sunday I spend them cycling. Just an easy "potter" along roads not far from home, leaving a main highway if I see a signpost pointing invitingly to a village with an unfamiliar name, stopping for a cup of tea at one of the many little cafes with which our countryside is sprinkled, sitting on a gate or on a bridge, breathing in good fresh air, then just as easy a ride home. Mileage is nothing, it is the pleasure derived and the things seen along the road that bring happiness.

The modern bicycle is trouble-free, roads are good, and no rider need feel tired after a day awheel, if moderation has been the watchword. No matter how robust a girl may be or how eager she may feel to pedal at top speed, steady riding wins all along the line. On arrival home it is usual to feel a little muscle-ache, but that quickly disappears and a sound night's sleep results in a grand feeling of well-being on waking.

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Britain is an ideal country for cycling, having no extremes of temperature, and there can be few women who do not look graceful on a bicycle, provided they take a little trouble to choose a model that suits their build. When riding one should not have to stretch to reach the handlebars, but the arms should be just slightly bent at the elbows, and correct height of saddle can be gauged by placing the heels on the pedals (whilst on the bicycle and leaning against a wall or supported by a friend) and pedalling slowly backwards. You should just be able to do so.

If the women of Britain—YOU!—will ride a bicycle regularly, you will find it pleasurable, handy, safe, and an undoubted passport to health, beauty and happiness. I do not exaggerate in my enthusiasm, for I have many interests apart from cycling; yet I say without fear of contradiction that riding a bicycle regularly has enabled me to keep well and to have a glad outlook on life.

I want to stress one simple fact. I am no "racer," nor am I a super-tourist collecting thousands of miles yearly. I am just a girl you would pass in the street, riding a bicycle, but I think you would turn round and say, "That young woman looks a picture of health. It must be cycling that does it!"

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To calculate the gear, multiply the diameter (in inches) of the gear wheel and the number of teeth in the chain wheel, and divide by the number of teeth in the hub chain ring.
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Page Fifty-nine
Raleigh “All-Purpose” Oil

A non-corrosive oil of reasonable body with clinging properties is necessary for ordinary bicycle bearings, but a light lubricant is essential to ensure efficient operation of the finer mechanism of Sturmey-Archer Hubs.

In the past, two separate oils have been necessary to meet these individual requirements, but Raleigh chemists, after considerable experimental work and extensive tests, have evolved one blend of oil which will fully meet both requirements.

This entirely new lubricant—RALEIGH “ALL-PURPOSE” OIL—is of very high grade and embodies special qualities. It is free from acid and will withstand arduous duty over long periods of use. Whilst being a non-oxidising free running oil it clings to bearing surfaces and has high film strength without gum. It will reach all surfaces of the fine mechanism of the Sturmey-Archer Hubs without impeding operation of the pawls.

RALEIGH “ALL-PURPOSE” OIL is only available in special new type triangular tins containing seven fluid ounces and is sold by all Raleigh Dealers.

Cyclists will specially appreciate the convenience of this single lubricant serving “all purposes.”

DRY-ACCUMULATORS

used in conjunction with the famous Dynohub, perfected by Raleigh technicians, have made possible all the advantages of car-lighting on a cycle—

Just one further illustration of how an accumulator which dispenses with all free or jelly acid can be applied to the services of the public.

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VARLEY DRY ACCUMULATORS, LTD
BY-PASS ROAD, BARKING, ESSEX

Page Sixty
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BROOKS Saddles

J.B. BROOKS AND COMPANY LIMITED - BIRMINGHAM
They go well together . . .

the Raleigh all-steel cycle

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