

COMPONENTS FROM CREDENDA WORKS

A recent visit to one of the world's largest component factories, at Smethwick

SOME five years ago in the Credenda Works at Smethwick, Birmingham, where J. A. Phillips and Co. Ltd. were operating, one of the largest and most modern plating plants in Europe was established. They had come a long way from the day in 1892 when J. A. Phillips and E. W. Bohle started making cycle pedals in Newhall Street, Birmingham.

Now, within the aegis of the Raleigh Industries group, the Credenda Works almost without question ranks as the world's principal suppliers of components.

It is a magnificent factory, in itself a living testimony to cycling and cyclists throughout the world, a triumph of mechanisation and work study.

And what a fantastic range of components and the various types of each! Bells, bottom bracket axles and cups, cable brakes and pull-up varieties, including the cables and levers, head fittings, handlebar bends of varying types and extensions, fixed and adjustable, with expander bolts, all-metal pedals and rubbered types, hubs and hub spindles, wide-flange or small, spokes, nipples and washers, mudguards, seat pillars, spanners and many other items.

Raw Metals

In a recent visit to Credenda Works I started off by viewing the raw metals as they arrived, then witnessed the first operation, the cutting of various blanks—flat shapes—by the many blanking machines. These blanks moved on to the press shop where some 300 different machines, some quite small, others as large as a lorry, in ranks like soldiers—all with the

ultimate in safety precautions—stamped, drilled, pressed and in other ways gave the metal the basic shape of one or other of the components, or a part thereof. Commented expert guide, Harry Badham, to the effect that some three million items pass through each week! One machine was taking "half-crown" blanks and with six consecutive steps whilst passing them from left to right was turning them into small-flange hub caps in a matter of seconds—the machine could have been geared to do 11 such operations!

Electrically Welded

In the polishing shop the parts were then polished and otherwise prepared for plating. Handlebar bends were "surfaced" in a few seconds by machine as against minutes by old-fashioned hand polishing. And another machine was observed carrying out four operations at once—roughing, finishing, greasing and polishing—on the 3in. domed Celtonia hammer-type bell.

The handlebar building department was full of interest. After the appropriate lengths of tubing had been polished the centre lug was electrically welded on (in some cases the separately prepared centre lug being incorporated in the non-adjustable stem). A process of brazing and annealing, lasting up to 65 minutes, comes next. Cold bending to the familiar designs follows, preceding the plating process.

Chromium-plating is of an exceptionally high standard. The many conveyor-belt plants in effect do the work; racks are loaded with parts of all shapes and sizes, "seen" into the plant

and "taken out" at the end of the process. The real supervisors, however, are the laboratory staff who see to it that the various mixtures used are according to certain specifications in order that a high standard of plating is maintained.

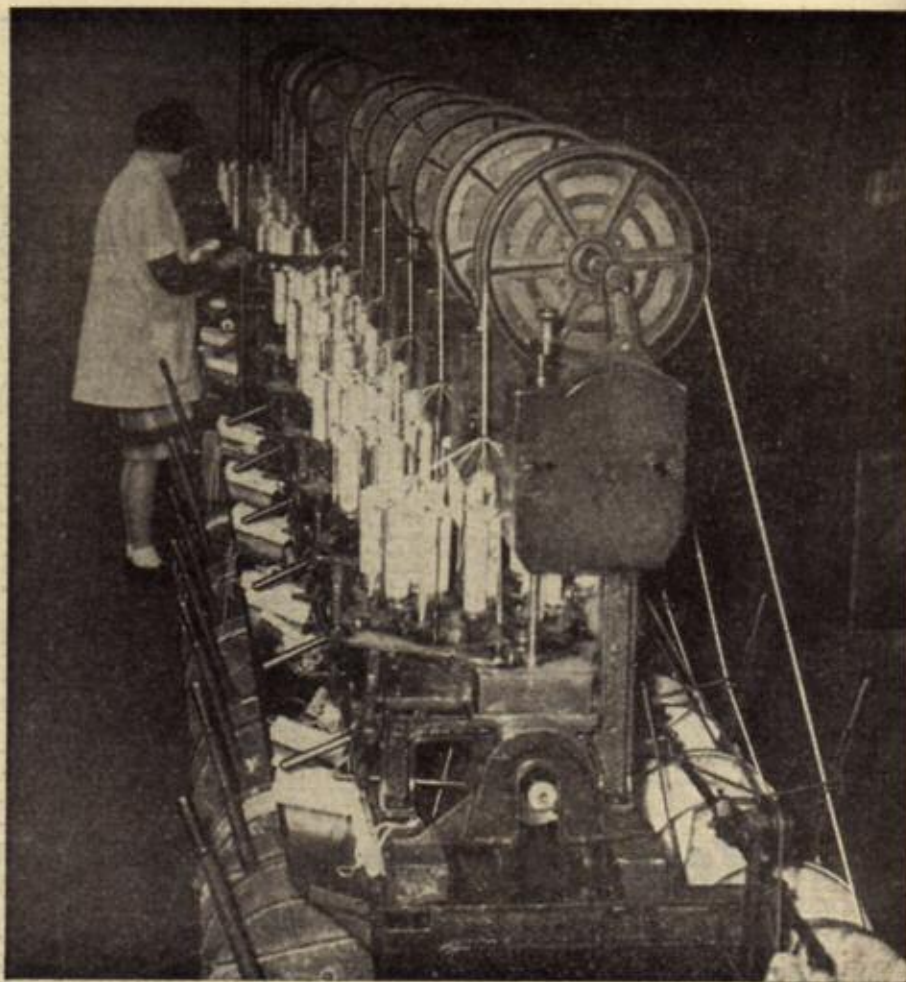
Handlebars to be fitted with pull-up brakes have an assembly line of their own. Screw-in stud units are fitted, levers, springs, plunger arms and rods attached. Front and rear brake assemblies are completed separately.

The manufacture of cable brakes was both intriguing and enlightening. I first watched the cables being made. Seven strands of fine wire are woven into one, then that one run through another machine which adds a further six strands; a third machine takes the 13-strand wire and adds another half a dozen strands. A cat has nine lives they say; this brake cable gives a cyclist 19 chances! The outer covering is produced by coiling section wire to form a flexible tube, which receives a "cotton jacket," involving threads from 16 bobbins, before it is finally covered with a waterproofing material.

Brake Assembly

In the cable brake assembly section this completed product is cut to the appropriate length—for the Vox Populi (the most widely used cable brake), Grand Vitesse, Grand Prix and other models—and nipples and other end fittings added, before assembly with the remainder of the brake for packing.

Hubs, their spindles, cones, locking nuts, cups, closure washers and lubricators, seemed



Brake cables receiving their cotton jackets.

a less complicated proposition, a great deal of their manufacture being in the pressing and machining processes. Others, like the large-flange Resilion Continental, with the barrel as one piece, the flanges separate. There are, in fact, five different Resilion hubs, one front and four rear. One is screwed for a derailleur 3-speed with $\frac{1}{2}$ in. chain, but it is suitable, too, for a 4-speed with $\frac{3}{8}$ in. chain; another screwed for a derailleur 4-speed with $\frac{1}{2}$ in. chain is also suitable for a 5-speed with a $\frac{3}{8}$ in. chain; one will take a cog and lock ring on both sides; another is single sided. The front hub is normally 32-holed, the rear ones 40-holed, but both front and rear—to complicate proceedings—can be supplied with 36-holed flanges.

Magic

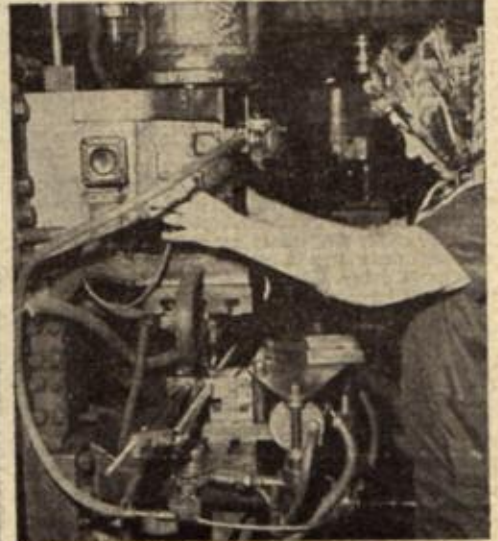
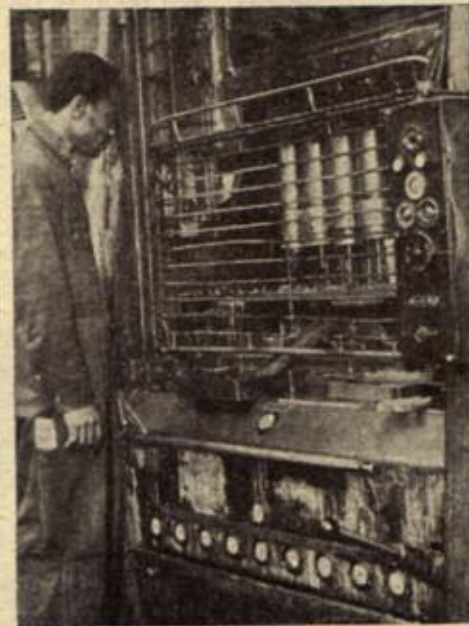
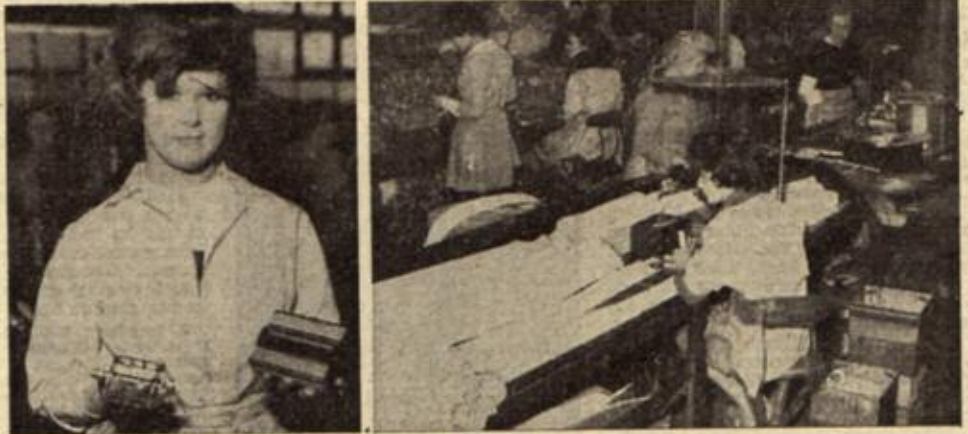
Spokes appear like magic from a machine which swallows a ceaseless strand of wire, its operation starting with a rough cut, then an exact one, a bent end which is pressed into a spoke head, then the other end is threaded before it emerges. The spokes are usually of 14 or 15 gauge, for 14in. to 28in. wheels, for Westwood or Endrick rims. Nipples and washers for these, plated, are produced on other machines.

Over a dozen bottom bracket axles are made at the Credenda Works, overall length varying from 4 $\frac{1}{2}$ in. to 5 $\frac{1}{2}$ in. Some allow for gear case clearance, others don't, but all take $\frac{1}{8}$ in. balls. Bracket cups are standard, with the left-hand thread one flanged, the right-hand thread one plain to take the lock ring.

For over 60 years the factory has been the largest manufacturer of cycle pedals in the world. Sixteen rubber-treaded models besides three heavy duty types, four metal-framed rubber-treaded ones and four all-metal ones are produced. Every type, in fact, except the platform racing variety. Ten differing rubber patterns for the all-rubber types, are made in widths of 3in., 3 $\frac{1}{2}$ in., 4in., 4 $\frac{1}{2}$ in. and 4 $\frac{3}{4}$ in. But whether heavy duty rubber or all-metal single-sided Resilion lightweight, all have adjustable bearings and $\frac{1}{2}$ in. balls. The night rider is specially catered for by four models fitted with reflectors.

A selection of flat tools is also produced, these including the combined spanner (with screwdriver), cone spanner-cum-tyre lever, combined spanner for head and bracket, and the "8-in-one." The first three, and a polished metal oilcan, are obtainable in a waterproof tool roll. **H.K.**

Below left, a contrast in pedals—the lightweight Credalux quill type and a heavy carrier model; right, a section of the cable brake assembly room.



Above, the centre lug being welded on the handlebar. Left, a machine which presses, cuts and drills hub caps.

SPRING AND SUMMER CLOTHING

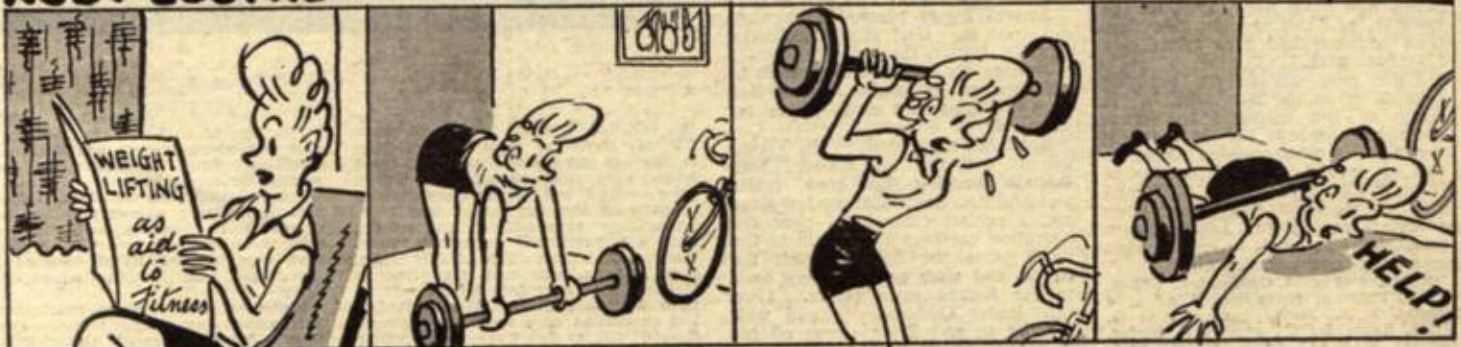
A special market survey of apparel for cyclists and moped riders will appear next week.

ALSO: Tony Hewson's Tips on Living Abroad to race.

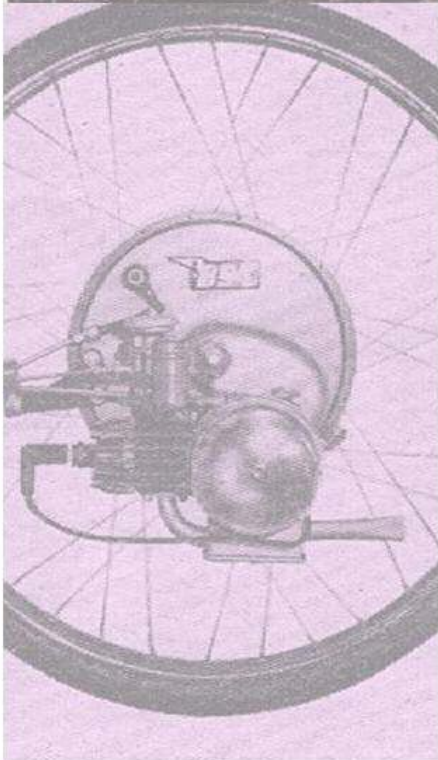
Bill Oakley In The Wilderness.

RUBY LUSTRE

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