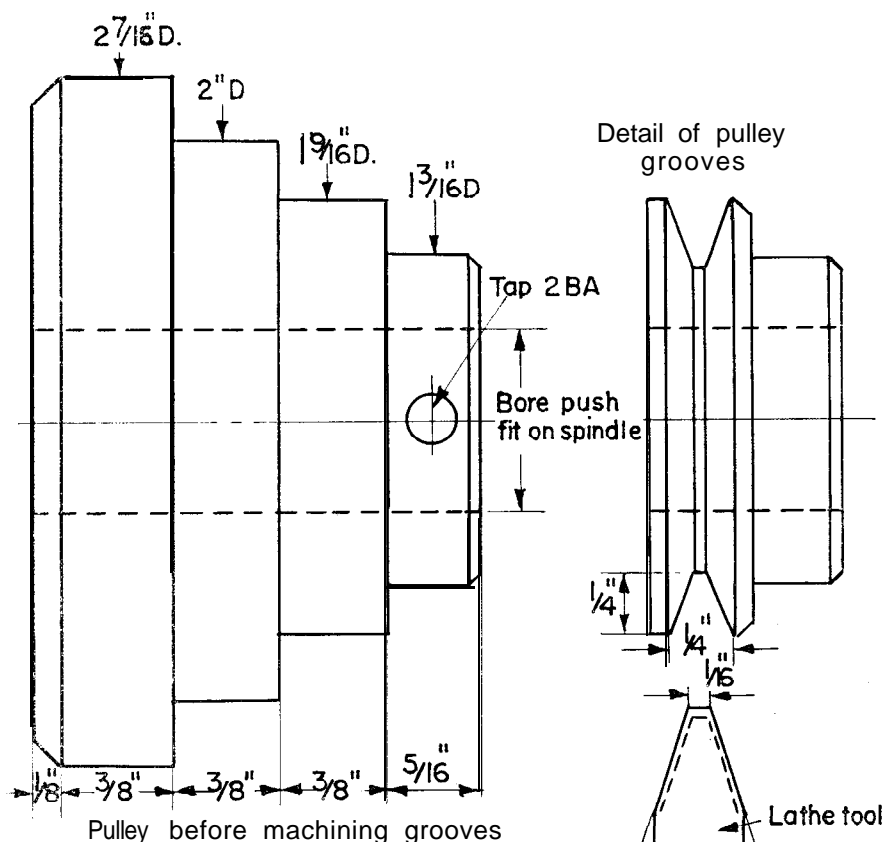
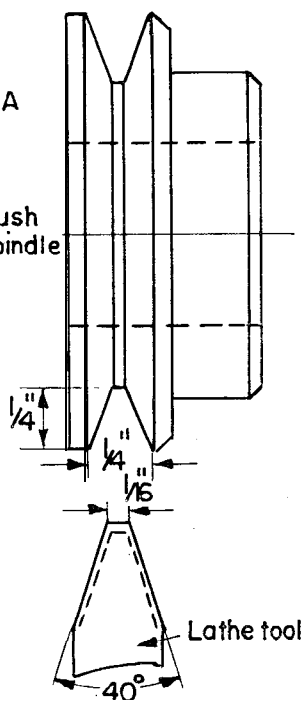


FITTING THE HEADSTOCK AND MACHINING THE TAILSTOCK CASTING



11 CONE PULLEY MS or CI

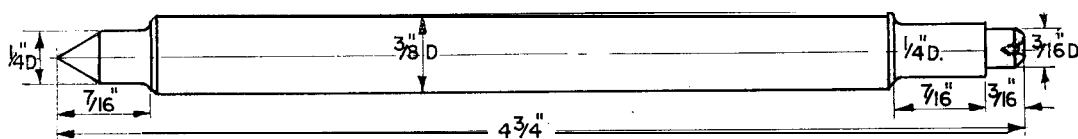
Detail of pulley grooves



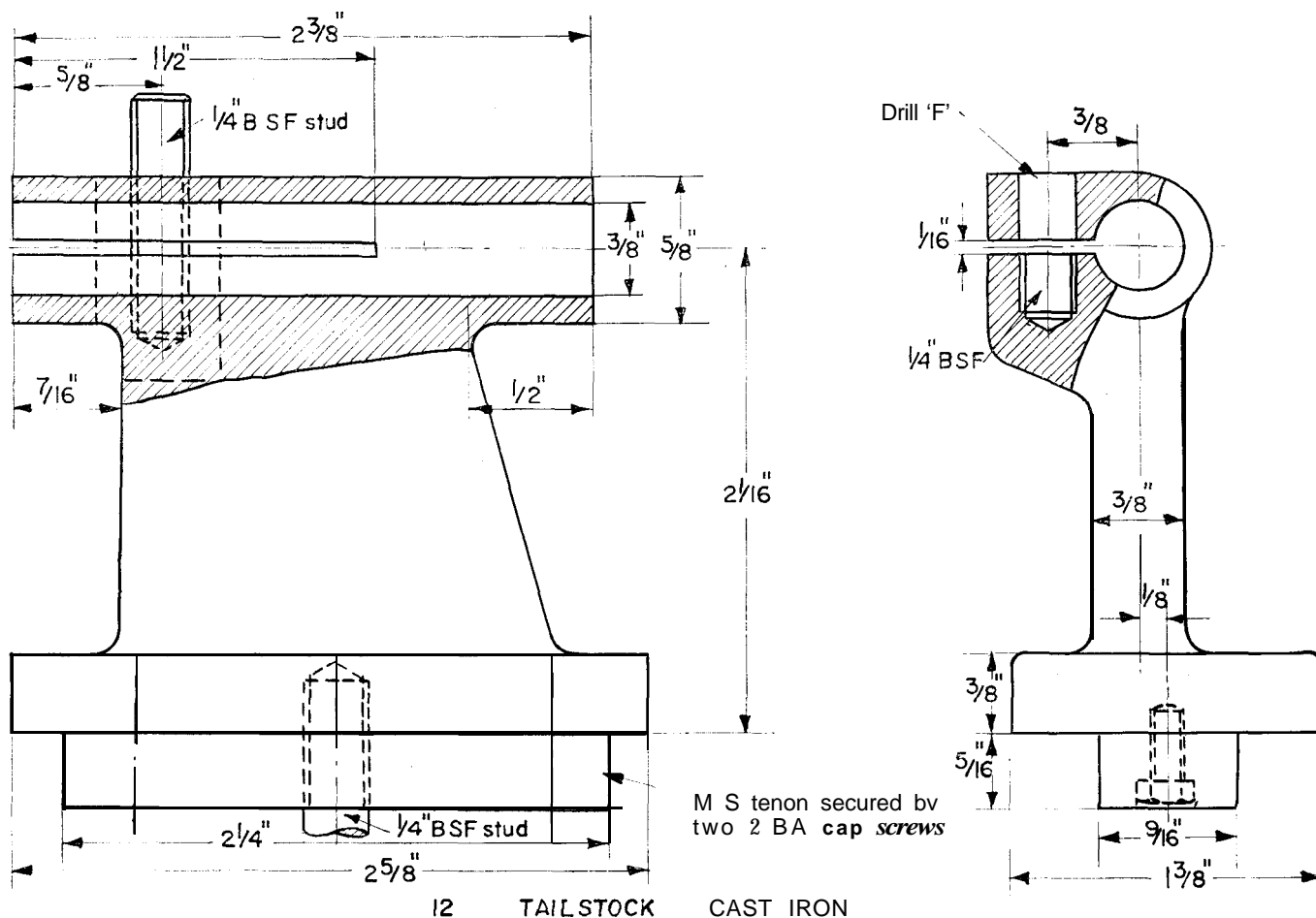
ATTACHMENT of the headstock to the bed is simple. There are two holes in the distance piece (3). Two 1/4 in. BSF studs pass through these and clamp the headstock to the bed. I have not found that a positive locating device, such as a tenon, is necessary. You will need a test bar to get the headstock bearings in line with the bed, and we can also use it to align the tailstock.

Prepare a piece of bar 3/4 in. dia. and 6 in. long and mount it between centres. Turn one end down to 0.375 in. dia. for a length of 2-1/2 in. The remaining part of the bar should be turned to fit snugly in the headstock bearings. When assembled it will form a dummy mandrel, but in place of the collet nose you will have a 3/8 in. dia. bar 2-1/2 in. long. Clamp the headstock to the bed, lining it up approximately straight by eye.

Now locate your surface gauge with the two guide pins pushed down, so that they contact one of the inner scraped surfaces of the bed. Mount the indicator on the gauge and slide it along to test for parallelism, as shown in the diagram. At first you will find that the dummy mandrel is not parallel with the bed, and the clamp which holds the headstock will have to be slackened, and the appropriate adjustment made by trial and error. If, as the indicator is moved along, you get



13 RUNNER SILVER STEEL



a deviation of anything up to, say, 0.005 in., check that the clamps are tight and drill and tap two holes in the headstock, using the holes in the bed as a jig.

Reassemble with 1/4 in. BSF studs, and again test with the indicator. You have plenty of adjustment, because the studs are 1/4 in. dia. in 17/64 in. holes. This time you should aim at a much better result. No deviation at all is good, 0.001 in. is satisfactory for the average run of work, and even if it is as high as 0.003 in. you will still have a fine little lathe, which will give years of service. I think, however, that there will be many readers who would think you a slovenly fellow if you accept an error of more than about 0.0005 in. The errors here should only be slight; they can be rectified by scraping the base of the headstock to tilt it up or down a minute amount.

I do not know if my Myford is exceptional, but I have a note recording no error at all in this test, and I bored my headstock by mounting it directly on to the cross-slide. No packing of any kind was used and this explains

the choice of the 2-1/16 in. dimension for the centre height.

The tailstock

Make a pattern of the tailstock, and while the casting is being made, prepare the tenon. It should be a close fit between the front and rear members of the bed and any tightness should be eased with a scraper. The upper surface which contacts the tailstock should also be scraped flat. You will see from the drawing (12) that the tenon is secured by two 2 BA cap screws, and it would be well if you counterbore for the screwheads a little larger than is usual so that, if necessary, slight adjustment can be made on assembly.

When the casting is ready, machine or hand-tool the base flat and mark out the position of the 3/8 in. bore in the usual way. Mount the casting as before on the lathe topslide and if packing has to be used, note that it must be precisely the same as that used in boring the headstock. When all is ready, feed the casting *on to* a centre drill held in the chuck. The drill must run true and 'must make a countersink

deep enough to accept a 1/4 in. drill. Change over to a 7/32 in. drill and carefully feed the work until the drill has penetrated about 1/2 in.

Now mount a 1/4 in. end mill in the chuck, using a four-jaw if necessary to obtain true running, and feed the casting on to the cutter, thus opening up the hole. The speed of the lathe should be reduced to about 200 r.p.m. You now have a true start for drilling right through the casting with a 1/4 in. drill. Be careful not to feed the work too rapidly, and back out the drill frequently to clear the swarf. We have to remember that cast iron is not homogeneous and a local hard spot will try to make the drill deviate. This is more likely to happen if you feed the work too fast.

A letter U drill should now be set up with no more than 1/2 in. protruding from the chuck and the hole enlarged. Then pull the drill out another 1/2 in. and in this manner progressively widen and deepen the hole ready for reaming 3/8 in. This last operation can be started in the lathe, but it would be wise to finish by hand. The casting should

now be offered up to the dummy mandrel fitted in the headstock, and the tenon pushed into position from beneath the bed. Fix the two together with toolmaker's small clamps at either end and drill and tap for the cap screws. You will probably have to do a little scraping here and there during this assembly, and it will take longer for you to get it right than it takes me to describe it.

Slitting of the head and tailstocks can now be done with a slitting saw mounted in the lathe and a suitable size is one having a diameter of 4 in. and a thickness of 1/16 in. The saw will make a neat parallel cut, and inserts of brass can be fitted in the headstock as shown in diagram (6). If a slitting saw is not available, then hand methods will be quite satisfactory.

Drawing (13) shows the tailstock "runner." It should be of silver steel and only the extreme ends need to be hardened. The female end is used frequently in certain classes of work, and an application in model engineering, which springs to mind, is the turning of the slender valve stems for a model petrol engine. Jobs like this are easy on a small instrument lathe.

The work we have done so far must be completed by making a few simple items, such as a clamp lever for the tailstock barrel and a clamp handle and clamping plate to secure the tailstock to the bed. In fact, if you were to obtain a hand graver from one of the horological suppliers and make up a simple T-rest, the lathe is now operational.

Simple power unit

No elaborate power transmission system is necessary, for quite a small motor will drive the lathe directly with a round leather belt. A top speed of approximately 2,000 r.p.m. is useful. Many books on clockmaking explain how to turn with a graver, and a few experiments with this tool will soon lead to proficiency. I have seen an old instrument maker turn out a small shouldered screw (just the sort of thing employed on a locomotive lubricating pump), in less time than I take to grind a tool and pack it up to centre-height in a slide-rest.

The scope of the lathe in its present state can also be widened by having some means of drilling from the tailstock. Small chucks of the Jacob's type can be obtained, having a maximum capacity of 5/32 in., and can readily be fixed on a 3/8 in. shaft to fit the tailstock bore. □

SMALL LINE BUT NOT A MINIATURE

Mr V. Boyd-Carpenter, well known in model railway circles, has supplemented Mr James Webster's recent article "Steam in the Sunshine Isle" with some facts from his own intimate knowledge of the railway scene in Jersey.

The railway that ran from St Helier (Weighbridge) to Corbiere did not start from a miniature station. It was a large one with four tracks, two platform faces, a four-stall locomotive depot, a coal stage, two stores, a carriage shop, a traverser, one siding, a level crossing, a branch to the harbour, twelve sets of points, a refreshment room, booking office, waiting-room and bookstall. The buildings are stone and are now used by the Jersey Motor Transport Co., an offshoot of the railway company, as offices, works and stores. The staff in 1915 was 21.

There was no such railway as the Jersey Railway; its correct title was The Jersey Railways and Tramways Ltd.

The stations were by no means miniature on the rest of the line. They were, in order from St Helier West Park, First Tower, Millbrook, Bel-Royal, Beaumont, La Haule Halt, St Aubin, Pont Marquet, Don Bridge, Blanchés Banques, La Moye and Corbiere. The distances of them, reading from St Helier outwards, were $\frac{1}{2}$, $1\frac{1}{4}$, 2, $2\frac{1}{2}$, 3, $3\frac{1}{2}$, $3\frac{3}{4}$, 5, 6, $6\frac{1}{2}$, $7\frac{1}{4}$ and 8 $\frac{1}{4}$. There were sidings at First Tower and Beaumont. Millbrook had a siding and a passing track, two platforms and an overbridge, plus the only lever frame.

St. Aubin was the largest station, with a roof covering three tracks and two platforms. There was a siding into the road on the landward side, an inspection pit, a carriage shed and 3rd platform on the seaward side known as the Corbiere platform, a large circulating area, a 15-bedroomed hotel, and a pond between the platforms with fish and fountain. The "tiny" tunnel, was about 250 yards long and high enough for the Germans to use as a valuable military store at one time, till it returned to use as a railroad tunnel.

The distance given by your corres-

pondent is incorrect, it being 8-1/4 miles, but the total trackage was nearly 13 miles as there were large quarries at La Moye and Corbiere.

The Jersey Eastern Railway Ltd started from Snow Hill station and the distance to Gorey Pier was 6-1/2 miles. The JER did close in the early 30s owing to bus competition, but the JRT did not. It owned most of the buses and the reason why it closed in 1938 was because a fire at St Aubin station destroyed most of the carriages which **were** stored there after the season and the cost of replacement was too high.

Full details of the scrapping of the JER can be gleaned from Mr Bonsor's book, published by Oakwood Press recently, but none of the engines were other than broken up, except the Sentinel railcar that went to a quarry in Surrey. None ever heated a greenhouse. The JER was 4 ft 8 1/2 in. gauge and most of the carriages came from the NLR and the LNWR originally.

The JRT was scrapped in 1938 and I happened to be the person responsible for the saving of the nameplates, numbers, starting clocks, and so on, half of which are now in the Railway Museum, York, and the other half in Weighbridge Station, at St. Helier.

The date, 1929, given as the date when trains ceased is not correct, as I drove No. 1 of the JRT on 28 July 1938, and that was the very last day that the engines were in steam, except for one railcar that Geoffrey Cohen used in the scrapping to bring down the rails for shipment.

The island saw railroads again under the German Occupation. These were working until about a year after the release of the Island, so that it is only about 18 years since the last trains ran, to be exact.

The heaviest locomotive No. 5 **La Moye** weighed nearly 30 tons, the longest coach No. 23 was 52 ft and carried 86 people but, I recall at rush times over 120 Victoria College boys travelling in it. Vacuum brakes were fitted to all locomotives and passenger stock, which boasted electric light, screw couplers, and side chains. Both lines offered first and second classes.