CORRESPONDENCE

SIR,

Dockyard Machinery—Forty Years in Retrospect

In response to Captain Ingram's suggestion in his letter published in Volume 8, No. 3 of the *Journal*, referring to Mr. Spencer's article which appeared in the previous issue, I have had unearthed such facts as are available regarding the old wells at Sheerness Dockyard.

There were two wells, named the Navy Well and the New Well, which were, as far as can be ascertained, sunk about 1850 and 1864 respectively, and the following brief descriptions may be of interest :—

The Navy Well was 7 ft 6 in. in diameter for the first 50 ft from ground level, the wall being 1 ft 11 in thick ; and 6 ft. in diameter for the next 285 ft, with a wall thickness of 9 in. A 6 in spring pipe was located from 253 ft to 363 ft from ground level.

It is a matter for regret that no information is available regarding the pumping machinery originally installed, but in 1904 new pumping machinery was fitted, the contractor being Messrs. Fullerton, Hodgart and Barclay. This machinery consisted of two sets of compound steam engines, jet condensing and driving, through gearing and beam gear, a central three throw, single acting, pumping unit.

Particulars of these engines and pumps were :—

Steam Pressure	125 lb/sq in
Steam Cylinders	H.P. 7½ in diameter ; L.P. 14 in diameter
Stroke	9 in
Maximum Revolutions of engines	100 per minute
Number of Barrels ..	3
Diameter of Barrels ..	6 in
Stroke of Plungers ..	2 ft 9 in
Maximum Revolutions of Pumps	About 20 per minute.

The pumps were located at about 230 ft below ground level, and the output obtained on trial in 1905 was 18·18 tons per hour.

By 1944, the output had fallen to some 3½ tons per hour, when the station was closed down as a pumping unit.

The New Well was 6 ft 6 in. in diameter, being cast iron lined for the first 100 ft and brick lined for the next 230 ft. A 9 in spring pipe was located from 230 ft to 570 ft from ground level, and originally there was an unlined bore in chalk extending to 980 ft from ground level. This was eventually plugged at 585 ft from ground level.

As in the case of the Navy Well, no information is available of the original pumping machinery, but in 1898 new machinery was installed, the contractor being Messrs. Hayward, Tyler and Company. This machinery, as in the other well, consisted of two sets of compound steam engines, jet condensing and driving, through gearing and beam gear, a central three throw single acting pumping unit.

Particulars of these engines and pumps were as follows :—

Steam Pressure	100 lb/sq in
Steam Cyclinders	10 in H.P. ; 17½ in L.P; Stroke 14 in
Horse Power	30
Maximum Revolutions ..	100 per minute
Number of Barrels ..	3
Diameter of Barrels ..	7½ in
Stroke of Plungers ..	2 ft 9 in
Maximum Revolutions ..	About 20 per minute

The pumps were located at 170 ft from ground level. There is no record of the actual output of the well in 1898, but in 1937 the output was about 9 tons per hour. The unit was eventually closed down in 1939.

The foregoing two wells were replaced in 1939 and 1944, by two new bore holes on adjacent sites, known as Le Grand New Well and Paddock Well.

The *Le Grand New Well* consists of 12 in diameter steel tube to 600 ft below ground level, the pumping unit being of a 15-stage turbo pump 1,400 r.p.m. driven by 20 h.p. motor at ground level. The pump is located at about 270 ft from ground level, the driving shaft being co-axial in the 7 in bore rising main, The vertical driving shaft is fitted with spiral grooved, rubber lined bearings, at each pipe joint of the rising main.

The output of this well is some 4,000 to 4,300 gallons per hour, and has given good service, as it is operated daily without attention, and experience has shown that it requires removal for inspection and refit every five years. This is carried out by the machinery contractor, Messrs. Le Grand Sutcliff and Gell, who installed the plant.

The *Paddock Well* also consisted of a 12 in diameter steel tube to some 376 ft below ground level, with a 6 in steel tube from 320 ft to 446 ft from ground level, the lowest 56 ft of the latter being perforated.

The pumping machinery consists of a multi-stage submersible pump sited at some 300 ft from ground level, the power required being supplied by a D.C. driven alternator, the Yard power being 200 volt D.C.

The output of this well in 1944 was 1,400 gallons per hour.

From the foregoing, it will be seen that some progress has been made in the water supplies for Sheerness Yard, the new plant occupying much less space than the old, and with considerable saving both as regards maintenance and operating costs. It is pointed out, however, that modernization of water pumping machinery does not necessarily mean increased water supplies, as the pumps can only obtain the water ' made ' in the underground strata, and pumping levels have to be maintained. This was the case in the Paddock Well, where the yield was disappointly low.

(*Sgd.*) K. H. SMITH,
Captain, R.N.

SIR,

Without a Plumber

As Captain of a ship which is half-leader to a division of five frigates, none of which has an Engineer Officer, I have no compunction in waylaying one of the copies of the *Journal of Naval Engineering* on its way to the Engineer's Office. The other goes direct to the Chief E.R.A. I read the *Journal* with the greatest interest even if my understanding of the articles is in inverse proportion to their technicality.

It is some eighteen months since Engineer Officers were withdrawn from *Castle* Class frigates, and it may be of interest to engineer officers to know how the experiment has worked.

Technically there can be no doubt that the Chief E.R.As. selected for the resultant charge jobs have put up an excellent performance. There has been no reduction in the ships' availability, and in some ships, including my own, the Chief E.R.As. have embarked on planned maintenance with an intelligence and a readiness to accept new ideas which do them great credit. In one or two ships there has been a just perceptible drop in the standard of boiler-room and engine-room cleanliness.

The disadvantages briefly are :—

(*a*) that a Chief E.R.A. is slightly more reluctant to forewarn the Commanding Officer of possible impending defects than is an Engineer Officer, who has the advantage of daily social contact with his Captain.

(*b*) that the divisional officer for the largest department in the ship is a non-technician (in each case the First Lieutenant). As a submariner this has never horrified me, and if it is an disadvantage to the engine-room ratings it is wholely beneficial to the First Lieutenant, who is in a far better position than formerly to adjudicate between the requirements of different departments. As a result of the determination of the Chief E.R.A. that the system should be made to work, the M.(E)s in this ship set the pace for a well-dressed ship's company.

(*c*) that, while S.264s are written and signed by an officer, much of the material for them must be provided by a rating. My own view is that if the First Lieutenant (and the Captain) take a real interest in the department, this is no disaster.

(*d*) that the relationship between Coxswain and Chief E.R.A. may become strained. This will not happen if they are both worth their salt and officers support the status of both. Accommodating these two senior ratings together (in the Sick Bay) has worked very well in this ship.

(*e*) that the extraneous duties undertaken by the former Engineer Officer fall heavily on other ship's officers—naval storekeeping and mess duties being the most noteworthy. This might have proved a serious disadvantage but for the fact that the ships have been treated generously by N.A.2.S.L.

(*f*) that wardrooms miss the company of the Engineer Officer. This is a loss which all wardrooms have felt and to which there is no answer.

In short, while we would like our Engineer Officers back, the Chief E.R.As. have proved their worth and undoubtedly benefit from the enhanced responsibility.

(*Sgd.*) N. F. CARRINGTON,
Commander, R.N.