H.M. DOCKYARD, HONG KONG

TOWARDS THE END

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BY

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Within the next two years, a great change will take place in the scene and skyline of that area of Victoria, Hong Kong, so well known to many, which contains H.M.S. *Tamar* and H.M. Dockyard. Already many of the Dockyard's buildings are shells, internally gutted and soon to be handed over for demolition, while outside the boat slip is a pile of broken bricks, and only two cranes out of the original seven remain for future use. It has been the responsibility of the Chief Engineer to carry out the work of clearing the buildings of machinery except that the Constructive Department have dealt with those in their own shops. Now that most of it is completed this article is being written in order to describe briefly some of the more interesting technical problems that the task presented. Before doing so however a brief outline of the overall problem is relevant.

The announcement of the closure of H.M. Dockyard, Hong Kong, in November, 1957, set two main tasks for C.E. Department. The first was to effect a planned and orderly run down of personnel, amounting to some 700 locally employed workmen. This required a programme which would allow a diminishing amount of ship and other refitting work to continue up to March, 1959, while dismantling and disposal of machinery proceeded, and so the maximum possible number of men were found alternative employment; those who found employment for themselves left when they wished. The second task was to dismantle and dispose of about 1850 items of Yard machinery. Concurrently a third task has been the build up of the new workshops for the new Naval Base in the shops previously occupied by the Superintending Electrical Engineer. This has included designing from scratch and building a rig for off-loading, and handling for inspection and repair, the electric mine sweeping cables from the I.M.S.s of the Hong Kong Flotilla.

As a result of the Japanese occupation much re-equipping of the Yard had taken place since 1945. Because such equipment was of value elsewhere a list containing 900 odd items was compiled, which detailed all machinery which was categorized by the users as modern and in good condition. This list was circulated by the Admiralty to all H.M. dockyards who then made their bids for the items which they wanted. In all 300 items of Yard machinery, ranging from 5-ton Portal type cranes to bench type grinding machines and special purpose tanks, have been shipped to other dockyards. This necessitated the manufacture of a large number of packing cases and has occupied the greater part of the cargo space of the store carrier R.F.A. *Bacchus* for two round trips.

Of the other machinery, 280 items remain in the new Base or have been transferred to the Army and about 1300 items of varying age and condition have been sold locally, in general at quite reasonable prices. Much has undoubtedly gone to scrap, but, though it may tear the heart to see a 200-ton press or a propeller shaft lathe being split asunder by hammer and chisel, the cash return to the Crown even in such cases has amounted to between £16 and £19 per ton for ferrous material. It is debatable whether any better return would have been obtained by shipment for sale elsewhere.

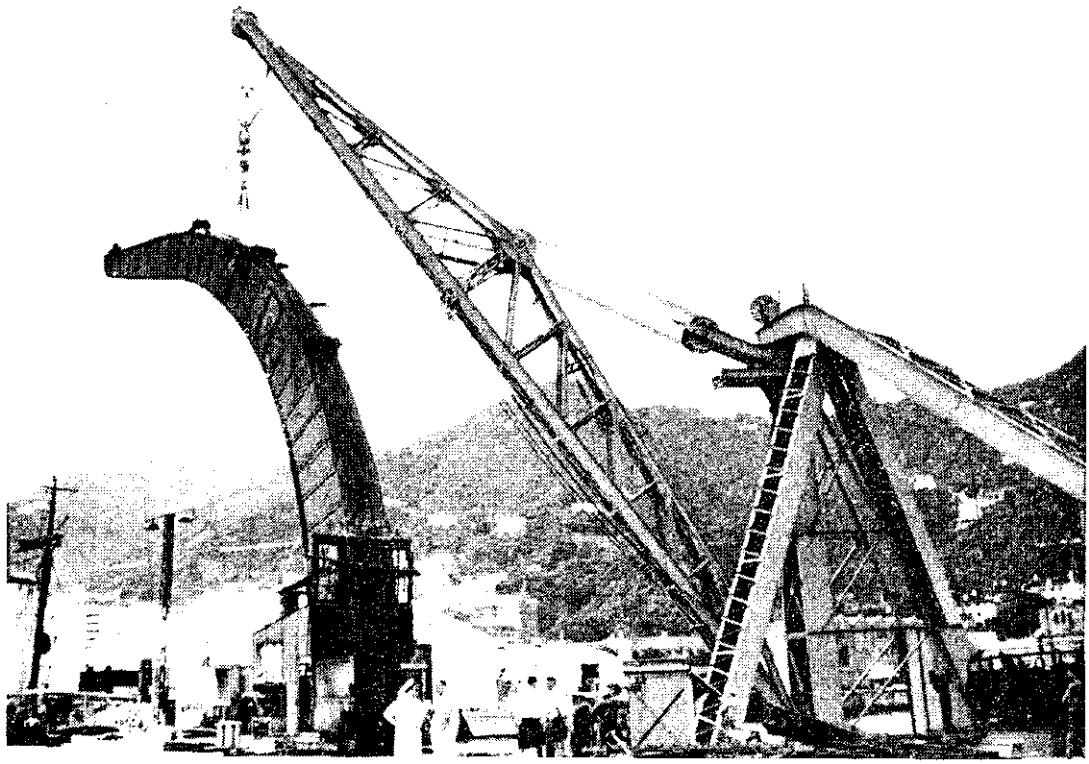

FIG. 1—CRANE WITH PART OF CAB REMOVED

Uprooting one machine tool is much like the next so that it has rather naturally been the dismantling of the larger items that has posed interesting problems. Of these the dismantling of two of the gooseneck cranes has been the most interesting ; the third gooseneck, a crane of 50 tons lifting capacity on the East Wall, remains to provide heavy lifting facilities for the Naval Base.

The 20-Ton Gooseneck Cranes

FIG. 1 shows the general construction of this type of crane. It consists of a gooseneck of tapering rectangular section, which is largest where it passes through the cab-cum-machinery house. At ground level the structure is located by a ring which rotates on both horizontal and vertical rollers. Below ground level the rectangular section continues vertically downwards tapering towards the bottom of the well which contains it. The well, which is lined with cast iron plates, is 30 feet deep and 10 feet in diameter. At the bottom the foot of the crane structure rests on a circular roller path and is located by a plain pintle bearing. The strength structure of the crane is made almost entirely of half-inch plate.

Because of their age and construction there was obviously no sale for the cranes so that their destination was for scrap. Demolition was therefore best effected by cutting up, the removal of the jib above the cab being the principal problem. The following methods were considered but were not adopted :—

(*a*) To emulate the previous fellings of sheer legs and drop the jib into the basin. The unsymmetrically shaped jib would have been liable to have followed a dangerous path in falling; would have been difficult to release quickly without having men close to it ; and not being watertight, it would have sunk into the mud in the basin. In short, common sense overruled natural desires for the spectacular.

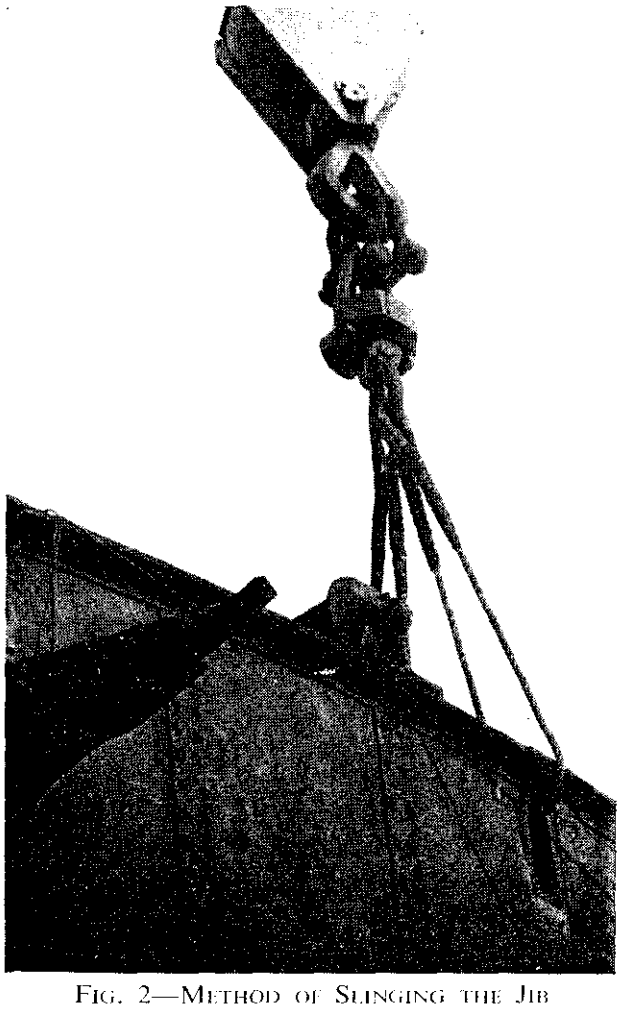

FIG. 2—METHOD OF SLINGING THE JIB

(*b*) To take the whole thing out in one piece. The total weight to be lifted, about 75 tons, was well beyond the capacity of the floating crane available and selection of the point of lift for correct balance would have been most difficult.

(*c*) To cut the jib off in sections. This would have been a slow operation involving difficult cutting positions, lengthy periods of suspension of the sections during cutting from a floating crane whose control was not sufficiently sensitive to be able to adjust for tide, etc., with any degree of safety.

(*d*) To cut the jib above the cab and lift it off. It would have been difficult to ensure that the men cutting the plating were safe from sudden movement of the jib caused by movement of the lift at the moment of breaking free.

The final plan which was adopted therefore was to support the jib by the floating crane, cut through the side plating, then the back plating and then, by reducing the lift of the floating crane, allow the gooseneck to bend about the front plating until the free end touched the ground. The front plating could then be burnt through and the whole section lowered to the ground.

The first step in this process was to estimate the weight and centre of gravity of the section of the jib to be removed. From a survey the drawing office estimated the weight as 25 tons and they calculated the vertical line of the centre of gravity, as standing with the small end on the ground. Slinging above the c.g. presented a problem because of the construction and angle of slope of the section of the jib in the line of the c.g. After consideration of various methods of wrapping wires round and securing them, the drawing office devised the method illustrated in FIG. 2. This consisted of cutting holes in the plating adjacent to the angle irons and straps forming the top corners of the box section of the jib and welding fabricated steel fairleads into them. These fairleads located the slings positively throughout the period of cutting through the jib, and during the lowering when the jib was turning relative to the slings.

Having cut the holes in the jib and welded in the fairleads the side plating of the jib section was cut through. The following day the gooseneck was slung from the floating crane with a 30 tons Duckham's weighing machine in the lift. The lift was then adjusted to between 26 and 28 tons, by reading the Duckham with binoculars, and held at that reading while the back plating was burnt through. This ensured that the section being cut did not spring open and injure the work-

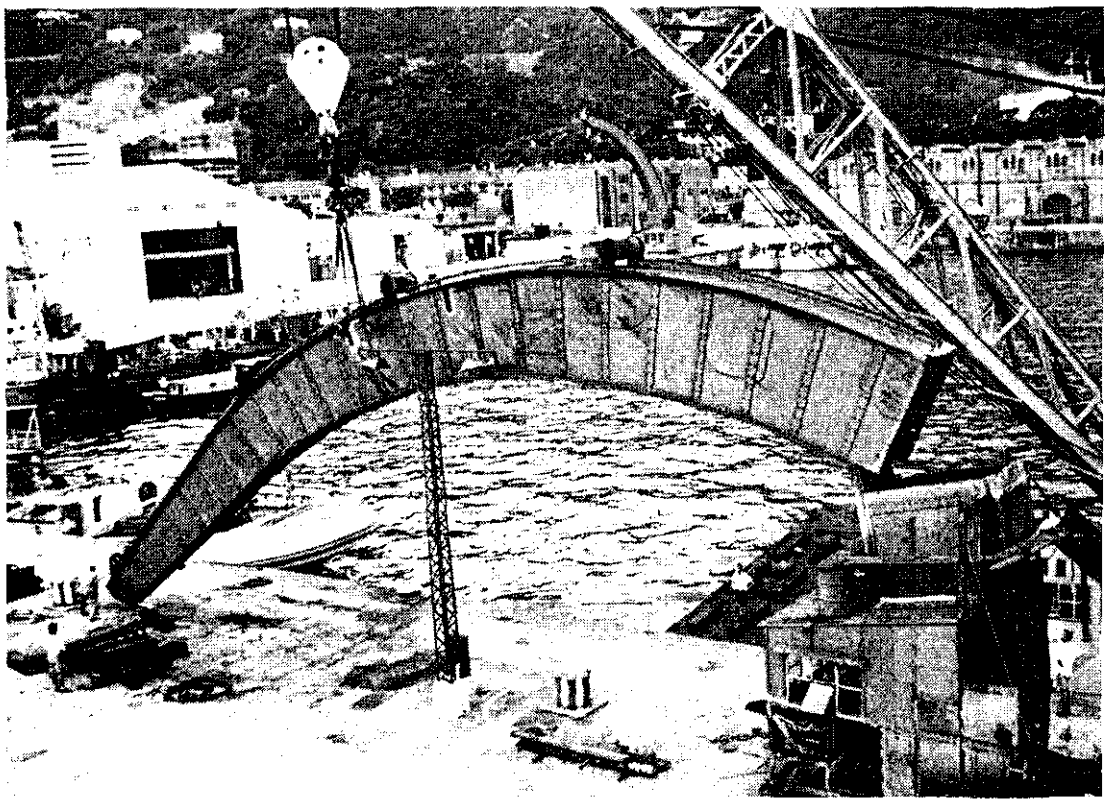

FIG. 3—ALL BUT GROUNDED

men who were cutting. When cut, the lift of the crane was reduced until bending of the under section plating started, which was actually at about 20 tons lift. To assist the bending action and to try and minimize the possibility of fracture some of the rivets along the lower corners of the jib section had been removed.

In fact the jib plating bent quite easily and, though protesting, held easily until the small end grounded (see FIG. 3). After shifting the lifting point to the after fairleads, which were slightly to the cab side of the line of the c.g. of the jib with the small end grounded, the underside plating was cut through, as shown in FIG. 4. For this operation the lift of the crane was kept at 15 tons so that any movement of the section being cut would be downwards and away from the men cutting. After lowering the whole of the jib to the ground it was turned over on its side for cutting up into 2 to 3-ton sections which could be handled by the scrap contractor.

The next few days were taken up in removing the rest of the cab and the training drive and releasing the roller track. The stump was then extracted from the well by the floating crane, as shown in FIG. 5, and laid down for cutting up.

The 30-Ton Dockside Crane

This travelling crane, built by Cowan and Sheldon in 1925, used to operate principally on the east side of No. 1 dock. It was electrically driven with screw operating derricking gear. Its dismantling was complicated by the lack of information of the weights involved and the need to dismantle it for sale in a re-erectable condition. In fact the subsequent purchaser has broken it up for scrap.

Having slung the jib from the floating crane at the c.g. given on the drawing, the derricking screw back nuts were removed (one had to be split) and the screws,

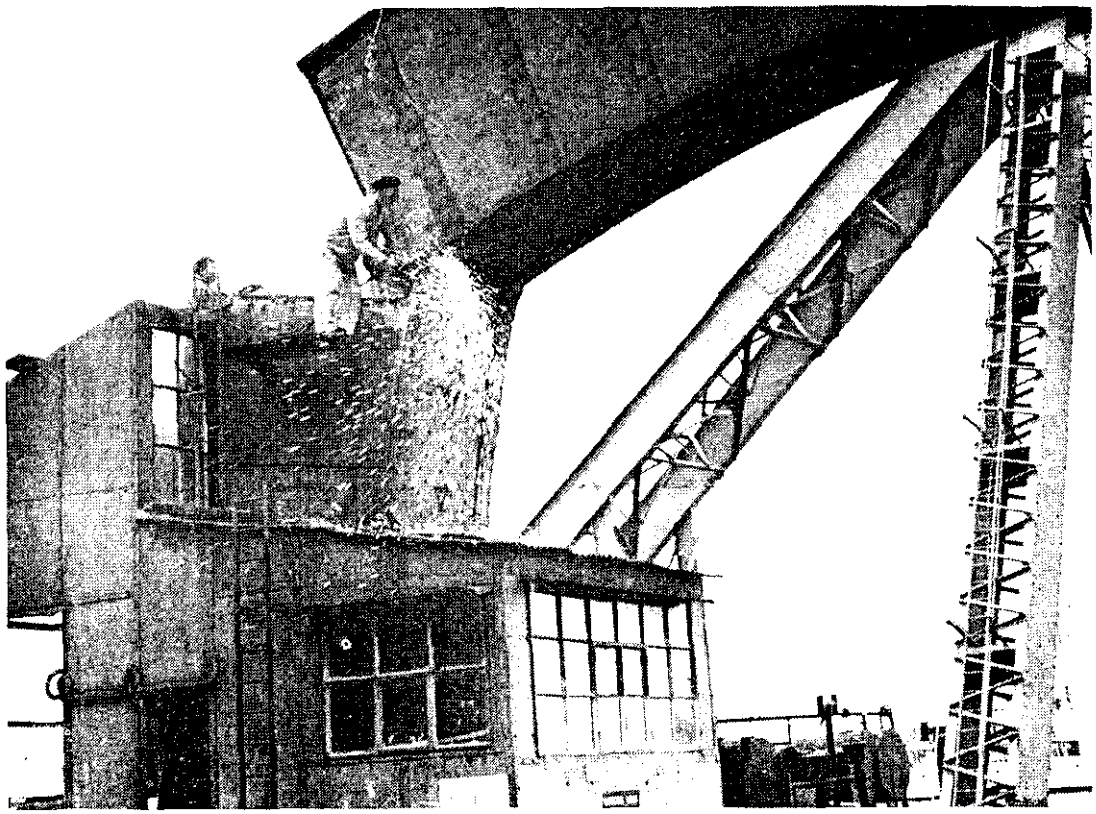

FIG. 4—CUTTING THROUGH UNDERSIDE PLATING

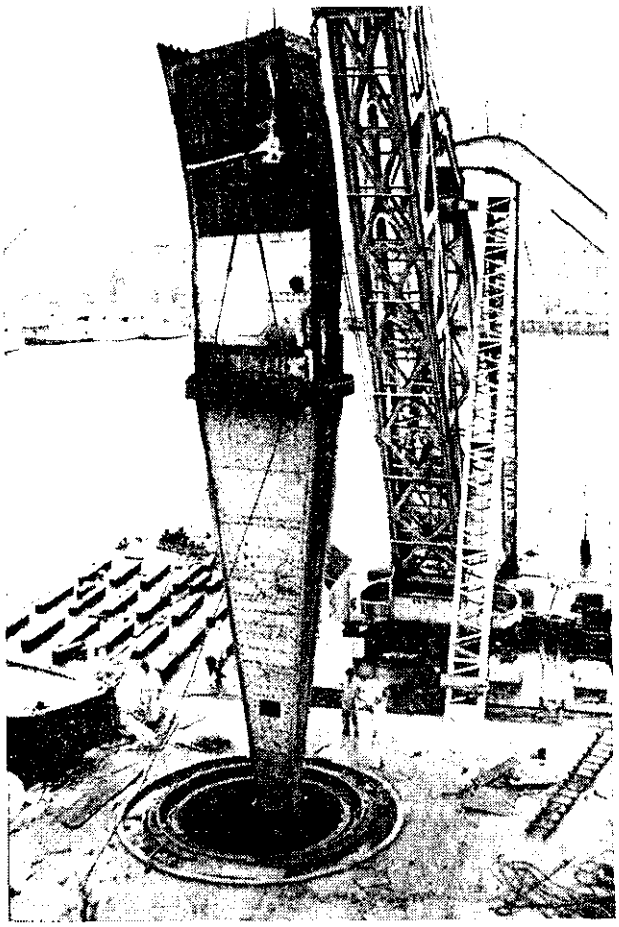

FIG. 5—A SUCCESSFUL EXTRACTION

supported by chain blocks from poles, then slid out of their trunnion bearings as the jib was lowered by the floating crane. Next the main jib hinge pins were knocked out and the jib eased forwards out from the cab. Alas the c.g. was elsewhere than expected and it took up a very steep angle before it was finally lowered safely to the dockside. Having gutted the machinery from the cab, the revolving structure was lifted off in one section, but before it came free it had to be jacked up some three feet in order to clear the centre gearing from the king post. The remaining structure which was too heavy for a single lift was broken down by unriveting the legs from the beams immediately above the intermediate bogies.

5-Ton Level Luffing Cranes

Three of these have been dismantled, packed and shipped to other dockyards. They presented

few problems other than the height of some of the lifts because the weights involved were relatively small. The cranes were originally built in sections capable of being bolted together for rapid erection so that one only had to apply the erecting instructions, given in the handbook, in reverse. The quickest dismantling took some five days to reduce too its major components and a further four weeks for breaking down and packing for shipment.

The Dock Pumping Station

The easiest method of disposing of the pumping station would have been to have sold everything as it stood and allowed the purchasers to dismantle it. This was not feasible because the drainage pumps had to be retained while a wall was being built across the dock entrance, and once in a building we have found that contractors take every mortal thing of value they can lay their hands on. The principal items were sold as separate lots after dismantling by the pumping station staff. Virtually all have gone as scrap, including two hydraulic accumulators, whose load tanks contained some 70 tons of sand each topped by scrap iron which included a pair of old cannon. Some of the sand found a final resting place in the concrete blocks which formed the dock wall.

The boilers which were sold on site presented, at times, a full scale sectional model for any 'plumber' interested in the construction of Scotch boilers. Though initially the contractor burnt them to pieces, including running them down by burning holes in the end plates, all plates were subsequently separated by burning or knocking out the rivets, because, we were told, the Japanese steel firms will only accept single thickness plate for remelting.

The Men Who Have Done it all.

It was most interesting to observe and reflect upon the way in which the local employees engaged in the above work, which amounted to pulling their own jobs to pieces, continued to work willingly and conscientiously.