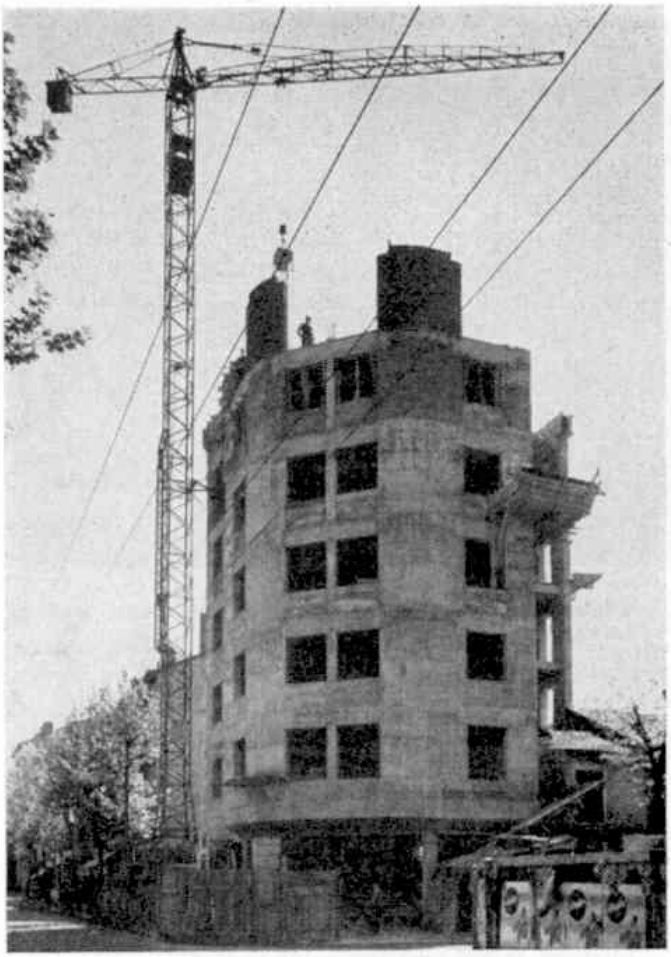


A modern tower crane in action. This picture shows a Sheepbridge Jules Weitz crane in use during the building of an office block on a main road. The tower is anchored to the building for working at extended heights. The illustrations to this article are reproduced by courtesy of Sheepbridge Equipment Ltd.

Tower Cranes

By the Editor

CRANES have always been favourite subjects with Meccano model-builders, and here is one that will provide them with excellent ideas for building examples of this type. It is the tower crane, which is becoming prominent in cities and other places where large buildings of many storeys are being erected, for which it is specially suitable. The design I am dealing with, an example of which is seen in the picture at the head of this page, is French in origin. It is made there by the Jules Weitz Company of Lyons, and is now being manufactured under licence in Great Britain by Sheepbridge Equipment Ltd., of Chesterfield.

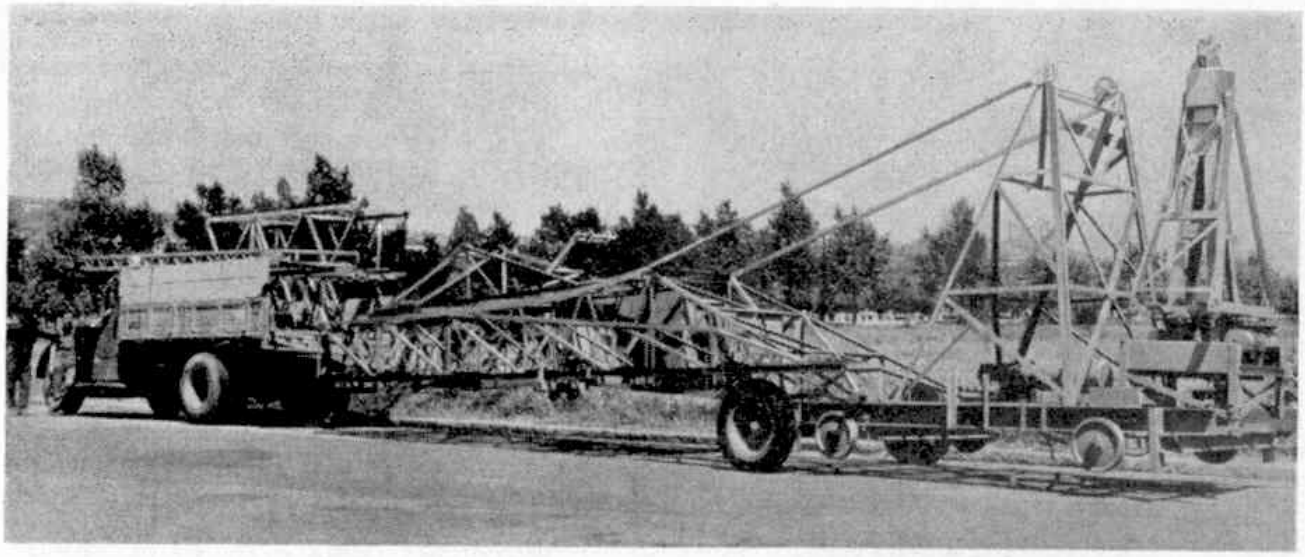
The Sheepbridge Jules Weitz tower cranes are ingenious in design, and they are proving especially useful in building operations because they can be used in comparatively narrow spaces. In the picture above the crane is seen erected just outside the building line, and it will be seen at a glance that it does not get in the way at all, while being able to carry out all the work of lifting and depositing material where it is required. In fact, a space only 10 ft. wide from the face of the building to the boundary of the site is sufficient to accommodate the crane.

An extremely valuable feature that will be a surprise to many readers is that it can easily be assembled in the lift shaft of the building and there used during erection. This of course is a consequence of the small area covered by its base. The tower occupies the lift shaft, with its jib well above the building and it can be easily lifted to higher levels as building proceeds. It can readily be dismantled when building construction is completed, and the parts lowered over the side of the building by means of a system of pulleys and the use of the main hoist motor of the crane itself.

A wide range of these tower cranes is to be produced. The lifting capacities will vary from 12 hundredweight to 20 tons, and the tallest crane will be about 300 ft. in height. This crane will have a jib radius of 78 ft. 10 in.

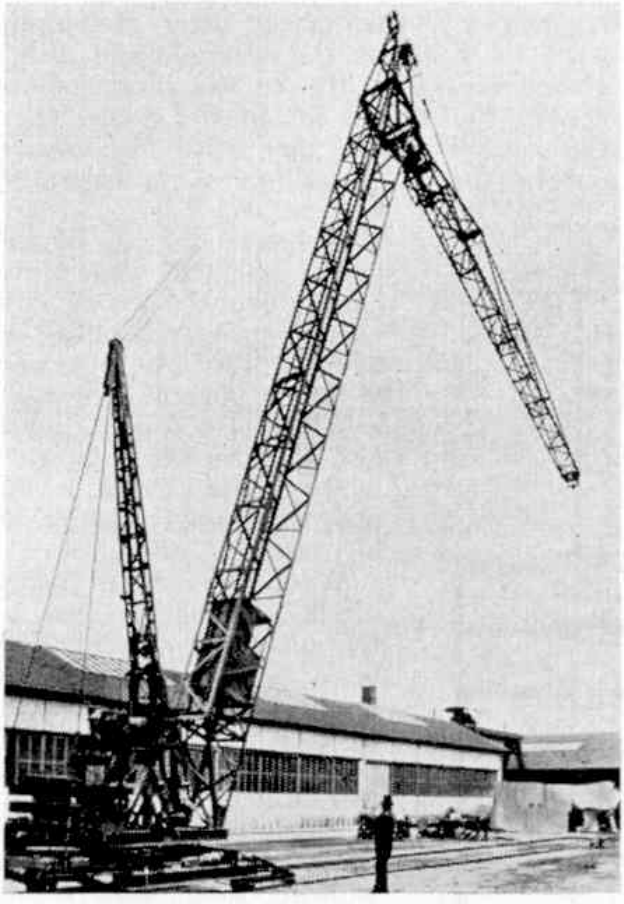
The framework of the base of the crane is built up of deep section steel channels and is mounted on four bogies, which are protected by means of steel plate stone guards. This base can be seen in the lower illustration on the opposite page, which shows a crane in course of erection on the site where it is to be used. As will be seen, the crane has a square section lattice tower, and the jib can be fixed horizontally or in two other inclined positions as required. Both tower and jib are built up from sections that can easily be handled and put together by means of fitted bolts.

The drivers' cabin is inside the tower and it can be fixed at any height to suit the level at which work is in operation, so that the driver always can be given a good view, an essential in crane operation.



It is easy to move a tower crane to the site on which it is to work, the assembly being towed by one ordinary lorry.

It is moved up and down the tower as required by means of a hand-operated winch on the cabin roof. In the illustration on the first page the cabin can be seen nearly at the top of the tower, whereas in the lower one on this page, showing the crane in course of erection, it is of course almost at the foot. The crane travels on its bogies on rails 7 ft. 7 in. apart, so that it can be moved when required by simply laying additional rail tracks.

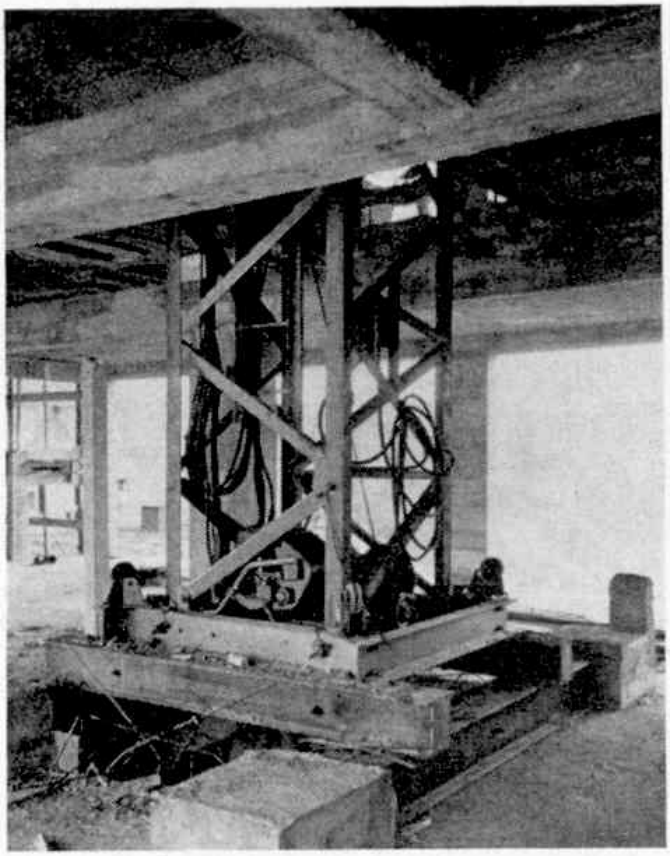


The crane is erected in a very simple manner. Here the main hoist motor is being used with a supplementary jib to haul the tower up. During this operation the motor controller in the cab is remotely operated by means of ropes.

The crane is electrically operated. The equipment was specially designed by British Thomson - Houston Ltd., and includes motors and control gears for all movements. The load is suspended from a trolley that runs on the lower members of the jib, and a safety device in the trolley prevents the crane from lifting too large a load at an excessive reach outward from the tower itself, or from travelling too far out on the jib for safety with the load that may be already on the hook.

When the crane is in use concrete ballast is loaded on its base. A first look at it, with its tall tower and the long reach of the jib, suggests that it would be unstable, but it is so designed that it is perfectly satisfactory with a full load on the hook suspended from the jib trolley even when the wind is blowing at 57 miles an hour, and this without the use of stays or jacks to steady it. When it is not in service, the crane can be anchored or guyed in order to prevent damage by even stronger winds. An additional means of security when working at great heights is a means of anchoring the tower to the building itself, as can be seen in the illustration on page 72.

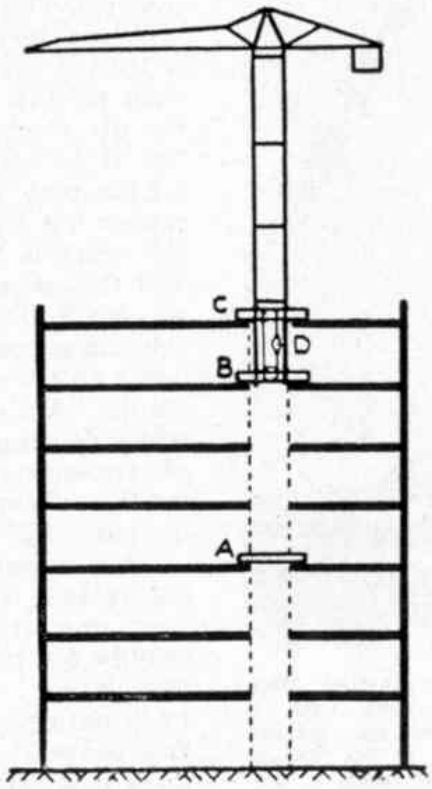
The upper illustration on this page shows how easy it is to move the crane from one site to another. It breaks down readily for transport and with one end on the bogie, which can be fitted with pneumatically tyred wheels available for this purpose, and the other on an ordinary lorry, the assembly can be moved readily.



A tower crane can be erected in the lift shaft of a very tall building that is being constructed with its aid. Here is the base unit of a crane accommodated in this manner.

Erection is just as simple, and the tower crane can be prepared for work within a short time of the carriage being placed on the rails. In this process the power and machinery of the crane itself only is required. First the tower is raised into the vertical position, using cables hauled by the hoist motor of the crane, and a supplementary jib. The latter is part of the main equipment, and is stowed at the base of the crane tower. The jib of the crane itself is next hoisted to the top of the tower by similar means, the cables being attached to one end, so that the jib appears to slide up the tower. Then a similar operation pulls up the jib to take up its horizontal position.

The construction of buildings of many storeys provides interesting examples of the versatility of this type of crane.



How the crane is raised as a building grows upward. In this drawing the base of the crane has been lifted from the third floor of a building to the sixth.

The fact that it can be easily assembled and used in the lift shafts, in which it can be raised to any height required, is a specially valuable feature. In the upper illustration on this page is the base of a Sheepbridge crane in use as a climbing crane in the lift shaft of a building. The hoist unit can clearly be seen, and it is apparent at once how small an amount of space is required. Large lift shafts are not necessary for such a crane, the minimum requirements being 3 ft. 10 in. square.

The diagram at the foot of the page shows how the crane is handled within the lift shaft. Here operations have gone on up to the seventh floor, and the base of the crane has been raised to the sixth floor for its next operation. At C, on the seventh floor, is a spare framework. Frameworks of this kind are used to keep the lift in position, for which purpose guides are fixed to them. This height has been reached by the crane after beginning with its base on the ground, and being given successive lifts to the intermediate floors. The actual lift of the crane when the necessity for this arises is carried out by means of pulleys in its base and a hand winch.

A special feature of the crane is the complete character of the precautions to prevent overhoisting or overloading. The overload indicator system comprises a series of coloured lights and a bell system, mounted in the driver's cabin, where they are clearly visible at all times.

When the load being lifted approaches close to the maximum safe working load an amber light appears, and this indicates to the driver that he should proceed with caution.

If the driver allows the load to exceed the safe working load, then a red warning light appears and a loud electric bell warns the driver that he is over-

(Continued on page 106)

Tower Cranes—(*Continued from page 74*)

loading the crane and that he must travel the trolley in closer to the tower to adjust the working radius.

If the above warning system fails to operate for any reason, or if the driver ignores the warning light and bell and proceeds to increase the overload still further, then an automatic electric trip will operate and isolate the hoist and trolley "out" motions, apply the brakes, and so render the crane incapable of further abuse. The lowering and trolley "in" motions, however, are not isolated and therefore the driver has full control to enable him to back out from the overload position.

The overhoist safety system comprises a screw operated limit switch mounted on the hoist unit which automatically cuts out when the lifting hook approaches its maximum height.

To guard against any failure of this system an additional safety feature is incorporated whereby if the hook is raised further, then the complete hoist unit, which is flexibly mounted, will rise and so trip the motor and apply the brake.

The East Coast Railway of Malaya—

(*Continued from page 88*)

foam mattresses. Meals and refreshments to the tastes of all races are available when required.

The maximum speed allowed at the moment is 40 m.p.h. on metre gauge permanent way built up of 80 lb. B.S.A. rail laid on timber sleepers and metal ballasted.

A train journey of over twelve hours through uninterrupted jungle would undoubtedly be monotonous and boring. But although this East Coast Railway penetrates a dense wilderness of massive forest and tangled undergrowth, it is not a continuous wall of tropical jungle. The forest scene is relieved by glimpses of carefully and neatly cultivated padi fields. There are kampongs whose houses set up on high piles peep out from the surrounding trees. These houses are built of soft atap thatch with its restful hues of grey and brown.

For almost the entire length of the journey from Gemas in the south to Tumpat in the north there are stretches of glorious river scenery, with perahus anchored along the calm gravelly beaches. Other evidence of riverine life is the large number of houses built on floating bamboo rafts.

A town of particular interest in the northern section is Gua Musang. Here the Communist terrorist flag flew for a few days in July, 1948, as the centre of a vain hope for a Malayan Communist republic. From Gua Musang onwards the scene is almost alpine in character—but without the snow. Purple mountain masses and towering bush-capped limestone cliffs press in on the line. Rapid successions of tunnels and bridges increase the alpine illusion. Surely few of the world's jungle railways can match the East Coast Railway of Malaya for excitement, interest and varying beauty.

What Shall I Build Next?—(*Continued from page 95*)

lost no time in making a start to make this dream come true.

Coalers are of many types. In one the coal is brought along the quayside in railway trucks. On reaching the coaling plant the trucks run into an elevator that carries them to the top of a high tower, where they are automatically tipped to discharge their contents down inclined chutes leading to the ship's bunkers. At very large ports more elaborate plants are often used, some of them afloat. These pick up coal from barges by means of huge grabs, raise it to whatever height may be required, and then release it on to a travelling belt conveyor by which it is carried to the ship's hatchways.

Quite different subjects for models that can be seen in any dock area are the fussy little tank locomotives used for hauling trains of wagons along the quaysides. These powerful little engines are quite easy to model, and a really large Outfit is not essential for their construction, unless of course it is desired to incorporate all their details and fittings.

A subject of a more unusual type is the portable automatic luggage elevator that usually forms part of the equipment of quays where passenger ships are berthed. These are used for transporting heavy luggage from the quay to the ship, or vice-versa, and are self-contained units. They consist of a slotted conveyor belt running in a trough supported by a steel girder structure that is mounted on wheels, so that it can be moved to the appropriate loading point on the quay. Sometimes the conveyor can be extended as necessary, and it is hinged or pivoted to its supporting structure, so that its angle can be varied to suit individual ships. Usually the conveyor and the travelling wheels of the unit are driven from the same electric motor.

Many curious vehicles also are sometimes met in dockland, including those used for transporting giant logs, motor vehicles and massive steel girders.

"'THE AEROPLANE' PICTORIAL REVIEW"

(Temple Press, price 7/6)

Here is a feast indeed for the keen collector of aeroplane pictures. The striking air-to-air and ground photographs of military and civil aircraft range from bombers, fighters, reconnaissance types and trainers to transport and general purpose types, and helicopters. In addition there are portraits of famous personalities of, and scenes of important recent events in, the aeronautical world. In all the Review contains over 280 half-tone illustrations, the pick of a year's pictures in the well-known periodical *The Aeroplane*.

"ABC MODEL RAILWAYS"

By K. N. Jeffries (Ian Allan, 2/6)

This new ABC will appeal both to the newcomer and to the more experienced model railway enthusiast. The author reviews the various scales and gauges most used today, and makes clear the differences that are possible between locomotives and rolling stock of about the same general size. Layouts, the application of prototype practice, and permanent way are considered. Power supply and control systems are dealt with and then we come to engines, coaches and wagons. Useful notes on signalling, lineside effects of various kinds, and hints on operation and the necessary maintenance conclude this attractive booklet. Illustrations are plentiful.

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