

# **COLES 100 years**



**The Growth Story  
of Europe's Leading  
Crane Manufacturer  
1879-1979**





Henry James Coles (1847-1905) established a small general engineering company in Southwark in 1879, in premises vacated by his former employers.  
**Chapter 1, The Founder** page 9.

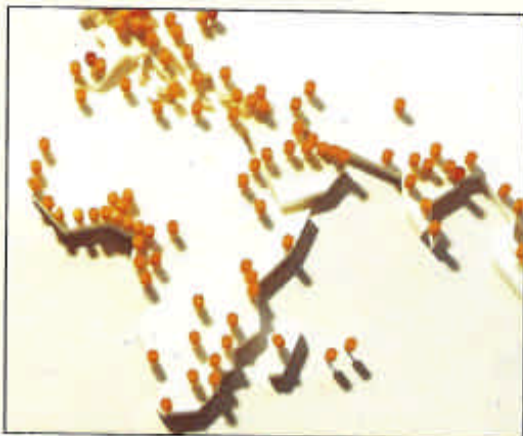


Henry J. Coles' passport indicates that he travelled outside the UK only once. This is despite the fact that a large proportion of his products were exported.  
**Chapter 2, Common Threads** page 13.



The EMA truck crane in use with the Turkish Air Force in the 1940s. The EMA orders gave Coles the impetus to grow massively in the 1940s and 1950s.  
**Chapter 5, Crane Makers to the World** page 31.

The Taylor Series 50, one of the world's first telescopic boom hydraulic cranes. When Taylor joined the Steel Group (and thus Coles) in 1959, it was the signal for the start of the telescopic age.  
**Chapter 6, The Telescopics Arrive**, page 39.



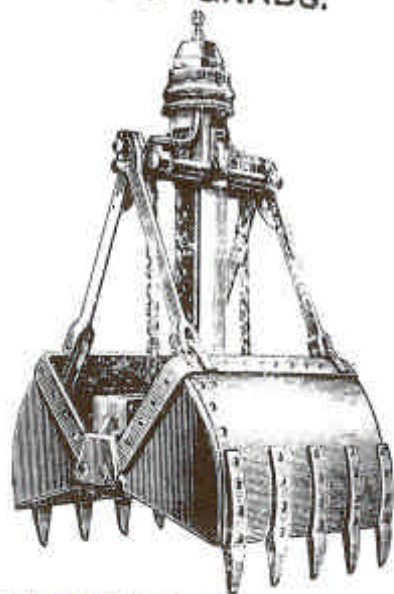
The Coles distributor network, probably the widest in geographical spread in the crane industry, has broadcast the Coles name throughout the world.  
**Chapter 9, Selling: a Way of Life**, page 53.



Coles' Nigerian distributor Stronghold, as with all other distributors, maintains a service organisation to cope with repairs and preventative maintenance.  
**Chapter 10, Service for the World**, page 55.



# COLES' CRANES AND GRABS.



**HENRY J. COLES,**  
SUMNER STREET, SOUTHWARK, S.W.8  
**LONDON, S.E.**

At his small Southwark workshop, Henry Coles manufactured an enormous variety of equipment, including, as this early advertisement shows, grabs, **Chapter 3, The Early Years, page 17.**



The Acrow Prop, starting point of the Acrow story. Coles became a division of this most successful of engineering companies in 1972. **Chapter 7, A Division of Acrow page 43.**

The Coles Research Centre, opened in 1975 and providing an independent factory style establishment for the development of new machines and techniques. **Chapter 11, Research; A Key to the Future page 57.**



This 1922 crane was arguably the world's first truck-mounted crane. It was typical of the innovative spirit which was harnessed in the search for a truly mobile crane. **Chapter 4, The Derby Years, page 23.**



Among the effects of massive injections of capital over the past five years has been the opening of the new Coles fabrication shop, the Jubilee factory. **Chapter 8, Workmanship of the Highest Character page 45.**



The Hydramobile 911, one of the range of recently introduced products which Coles now manufactures. **Chapter 12, The Second Century page 59.**

### **Authors' Note**

When we started work on this book, we had no documentary evidence on the history of Coles prior to 1930, other than a couple of catalogues. During our researches we have talked to dozens of people associated with the company and we wish to thank all of them for the information which they provided. Special thanks are due to Sir James Steel, Arnold Hallsworth, Bob Lester, Tunny Taft, Norman Middleton, and Clifford Shaw (all employees and former employees of the company); to George Mills, who did much back-breaking research work; to the Institutions of Civil and Mechanical Engineers for access to their records; to Mary Boast, the Southwark Borough historian; and to Henry J. Coles' granddaughter, Pamela Plaisted, for the portrait of the founder.

Set in 'Monotype' Bembo and printed in England by  
Sceptre Litho Limited

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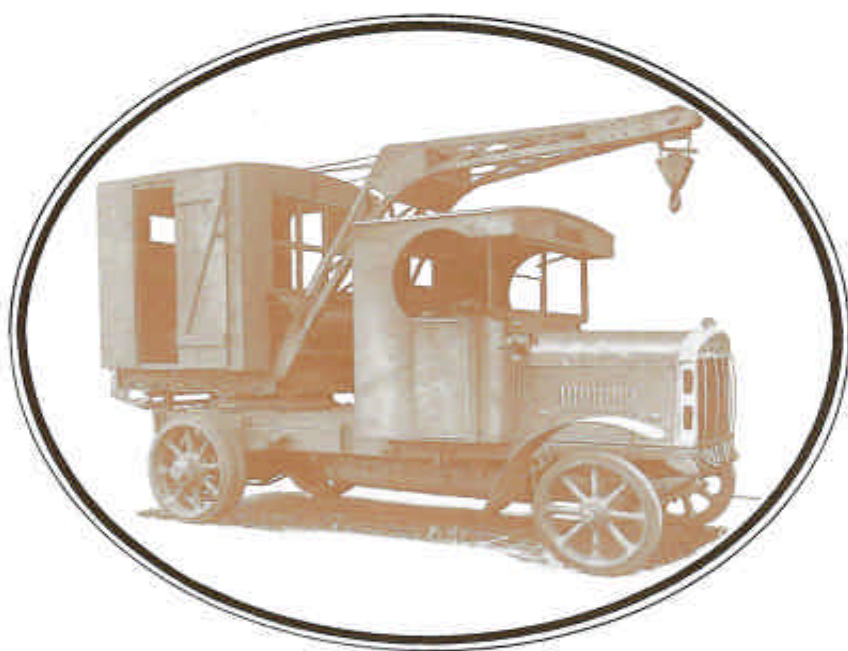
Coles Cranes Limited,  
Harefield, Uxbridge, Middlesex, England UB9 6QG

A Division of  
**ACROW**

Publication 8287/9/78



**COLES 100  
years**



**The Growth Story  
of Europe's Leading  
Crane Manufacturer  
1879-1979**

Martyn Wilson    Karen Spink

# A Message from the Chairman

1878 saw Queen Victoria on the throne of England. Disraeli was Prime Minister. The era of the electric light bulb was about to begin. The 'penny farthing' bicycle was on the drawing board. Henry James Coles decided to found the company which has become Coles Cranes Limited.

The changes brought about in the lives of men and women in the last one hundred years have been greater and more rapid than during any other period in history and these changes have been almost entirely due to the work of scientists and technologists all over the world. 1878, however, was still the age of the practical engineer and of progress arrived at by intuition born of experience and by trial and error. The British contribution in the past century has indeed been impressive and I am pleased to have the opportunity to pay tribute to one of the dedicated men, Henry James Coles, who founded the existing company early in 1879 and whose centenary we celebrate over the next twelve months; some of whose early struggles and achievements are outlined in the following pages.

Inventiveness, quality, training, exporting—these were the fundamentals on which Henry Coles built. In looking to Coles' second century, I would personally emphasise the necessity of good human relations, the recognition of the essential human dignity of the individual. Today we are in the forefront of technology in our field of operations, investing and marketing aggressively, exporting and enjoying satisfactory labour relations. These are the vital factors on which past successes have been based and on which our future depends.

A stylized, handwritten signature in dark ink, consisting of several loops and a long horizontal stroke at the end.

W. A. de Vigier





**W. A. de Vigier - Chairman 1978**



Henry J. Coles



# I The Founder

Henry James Coles was born on 24 June 1847, in the Parish of St. George's, Hanover Square, London, the second of a family of some ten children born to Lewis and Helen Maria Coles (née Penny). Lewis Coles was a tailor, like his father and brother, and two of his sons, Lewis junior and Edward, followed him into the business.

No records can be found relating to Henry Coles' childhood until he left school at the age of 13, to be articled to S. Worssam and Co. (later called A. Ransome and Co.), who were manufacturers of sawmill equipment with premises on the King's Road, Chelsea. He was with them for ten years, the first five in the drawing office, the remainder in the company's workshops. In 1870 he joined Maudslay, Sons and Field. He spent two years there as a marine engineer, erecting equipment on a number of fighting ships including HMS *Triumph* and *Swiftsure*. Then, in 1872, he joined Appleby Bros, and in doing so made the move which changed his life.

The Appleby family were old-established ironworkers, and the business which Coles joined had been started in the middle of the 19th century by Charles James Appleby and his brother. They were very much the general engineering firm—their 1869 catalogue offers an enormous variety of equipment and material—but they did much pioneering work with steam cranes. Early machines which they showed in Paris in 1867, and at the Vienna Exhibition of 1873, were the first permanent way or railway breakdown cranes to be available to the rail companies.

To a very large extent, Appleby Bros was the organisation which fathered the modern crane industry. Henry Coles became their Assistant Manager in 1875, succeeding Alexander Grafton, who was appointed Appleby's permanent engineer in Egypt, and who later started his own cranemaking business in London. Other Appleby protégés did the same thing, although only Henry Coles' company remains to this day.

Appleby Bros were based at Emerson Street, Southwark, with a smaller workshop in Sumner Street. In the latter part of 1878 it was decided to move to a new factory at East Greenwich, and Henry Coles took the opportunity to take over the Sumner Street workshop to start his own business the following year. Three of his brothers, Frederick, Walter and Ernest, who were also working for Appleby Bros, left to join him in his new venture.

It was a brave step to take. Henry Coles was just 32, with a wife (he had married Amy Elizabeth Burks in 1875) and a two-year-old son, Henry James junior. However, he was by now a very experienced engineer, and, like C. J. Appleby, he was not afraid to try out new ideas. Within a couple of years he was taking out the first of a dozen or so patents which he obtained during the next twenty years. His abilities as an engineer rapidly paid dividends, and the company soon established itself.

Coles became a leading light of both the Institution of Mechanical Engineers and the Institution of Civil Engineers, giving learned papers to each society. One incident, recounted in the proceedings of the Institution of Mechanical Engineers, is amusing to note now, although it clearly irritated Coles at the time. The Institution held a competition for rock drills in 1891 and Coles entered one of his patented type, of which he was obviously quite proud. On the day of the test, Coles was away on business and the drill was operated by a labourer from his factory; the result was that the equipment failed to perform to specification, this fact being recorded in the Institution's proceedings. When Coles heard of this he had

*Henry James Coles (1847–1905), the founder of the company, pictured at the turn of the century, shortly after his move to Derby.*



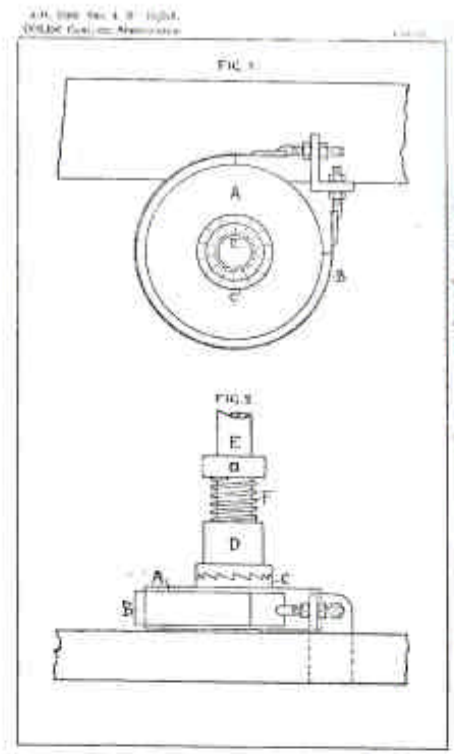
the whole adjudicating committee visit his works to see the machine operated by a mining engineer, and insisted that its performance be adequately noted. This was done to everyone's satisfaction in a subsequent issue of the Institution's proceedings, and Coles went on to sell large quantities of his drills.

During the late 1880s and early 1890s, Henry Coles became involved in local political and charitable work, largely through his association with the Cathedral Church of St. Saviour's, Southwark. He took a leading part in the work of restoring the Cathedral, and he devised a scholarship scheme for the Cathedral's Newcomen School. He also successfully promoted a parliamentary Bill which allowed the trustees of the Borough Market to raise money for improvements to the Market, and he devised a system for re-distributing the unallocated funds of St. Saviour's parish as old-age pensions.

He was appointed a Justice of the Peace and, in 1889, became a member of the Corporation of Wardens of St. Saviour's as Newcomen Warden. In this role he became involved with the campaign for the incorporation of the northern part of Southwark—known historically as Bridge Ward Without—into the City of London. Coles' involvement in this campaign, which had been under discussion throughout the latter part of the 19th century, was prompted initially by historical precedent—there was evidence that the Ward should have been incorporated in the 16th century—but as the campaign progressed, self-interest became a more tangible motive. Bridge Ward Without was the richer, commercial sector of Southwark, and amalgamation with the City would reduce the burden on the rates which Coles and his fellow businessmen paid to support their poorer neighbours.

When the City Council decided to give their passive support to the parliamentary Bill for incorporation, the job of drafting the measure was left to Henry Coles. Unfortunately, in his drafting, he over-emphasised the financial advantages to the inhabitants of Bridge Ward Without, with the result that opposition to the measure came from all sides. City parishes could see losses for themselves (after all, Bridge Ward Without's gain had to be someone's loss); the rest of Southwark guessed that their own rates would go through the roof; and the recently formed London County Council could foresee other rich areas banding together against them in similar fashion.

Despite this wholesale opposition, Coles' Bill was only narrowly defeated when it had its second reading in Parliament, by 187 to 169 votes. It also



The last patent which Henry Coles took out was for an improved brake on rail cranes from which this is one of the specification drawings. It remained a feature of Coles products for many years.



In his campaign for the Incorporation of Bridge Ward Without into the City of London, Henry Coles issued this pamphlet which contains an eloquent plea for incorporation. It was the basis of a speech which he gave to the United Wards Club in 1897.



*This section from the book, Sketches of Southwark Old and New indicates the depth of feeling for Henry Coles among the people of the borough.*

many deserving poor. In 1898 Mr. Coles left Southwark for Derby, and on Monday, February 20th, of that year, representative men of St. Saviour and Christchurch, assembled at the Holborn Restaurant to testify their esteem for, and admiration of, Mr. Coles. Mr. Causton, M.P., during the evening made a presentation to Mr. Coles. In doing so he said :—

He had to make to Mr. Coles a small presentation as a testimony of the regard in which he was held, in order that when he left St. Saviour's he might have something to look upon from day to day which might remind him of the old friends among whom he had worked, who always regarded him as an upright, painstaking, and honourable man. There was no parish in London where more important work was discharged by those who represented it. . . . In every capacity Mr. Coles had filled he had been a most able, deserving, and pleasant colleague. All that had been said of him was well deserved. In the speaker he left behind a friend as sincere as any of those around the table. In presenting Mr. Coles, on behalf of his neighbours and friends, with three pieces of plate, with the names of those who had subscribed, he gave it to him in the earnest hope that in the new career which lay before him he would have a prosperous and long life and good health.

had the effect of spurring the Government into action on the reorganisation of local government in London, and in 1899 an act was passed which dismembered Southwark into Bermondsey and Southwark boroughs, and split the ancient Ward of Bridge Without into two.

By that time, Coles had moved, his business having outgrown the Sumner Street factory. In 1898 it was decided to move to Derby, the centre of the railway industry and close to the industrial heartland of the country. On 20 February that year, a dinner was held in Henry Coles' honour, and Richard Causton MP presented him with three pieces of silver plate as a mark of the appreciation of the people of Southwark.

Coles took with him to Derby the whole of his workforce—quite a tribute to his pull as an employer—including his brothers Walter and Ernest (Frederick Coles having left the business in 1880). By now Henry James junior (known as Harry) was also working for the firm.

Coles slotted quickly into the local Derby community, becoming an active member of the Chamber of Commerce and a trustee of various local charities. He became a leading light of the Bible Society and of the All Saints Union, attached to his local church (which became Derby Cathedral in the 1940s).

With the move to Derby completed, he continued with the inventing which had occupied him for more than twenty years. His last patent, taken out in 1900, was for an automatic brake to control the descent of a rail crane down an incline 'without any action on the part of the crane driver or attendant'.

By now Coles was in his early fifties. Oddly enough, despite his world-wide sales and the level of investment which must have been required to run his business (including the new Derby factory), he operated as a sole trader; that is to say, he had as much legal protection as a corner shopkeeper. Whether he had intended to make his business into a limited company is uncertain. Whatever his intentions, events overtook him and his business.



By 1905, the upheavals of the move to Derby had been overcome, and the outlook seemed to be set fair. Sadly, Henry Coles was not to see the outlook become actuality. On Easter Sunday, he attended the evening service at All Saints Church in the company of his brother Walter. Walking home, he complained of feeling ill and collapsed. He was taken home where he died, without regaining consciousness, the following Friday, 28 April 1905.

He was 57, and could reasonably have looked forward to a good many more years of running the business and improving his beloved cranes. As the *Derby Express* said at the time of his death, he was 'a man of wide sympathies, a strong educationalist and a liberal employer'. He left a widow, five children—and the basis of the company which has made his name world famous.

Form B,  
**The Institution of Civil Engineers.**  
Revised January 1, 1895.—Incorporation by Royal Charter June 1, 1880.

25, GREAT GEORGE STREET, WESTMINSTER, S.W.  
[TRANSMITTED TO "INSTITUTION, LONDON." TELEPHONE, 2051.]

*Self personally  
Dec. 6/90*

We, whose names are hereto subscribed, submit to the Council of THE INSTITUTION OF CIVIL ENGINEERS, the propriety of transferring Henry James Coles,  
of 89 SUMNER STREET, SOUTHWARK, S.E. born on  
the 24<sup>th</sup> day of June 1847, from the class of  
ASSOCIATES ENTITLED TO THE PRIVILEGES OF CORPORATE MEMBERSHIP, in which he was elected  
on the 4<sup>th</sup> day of December 1877, to the class of MEMBERS, because  
he was articled (1860) to Messrs. S. Worsam & Co., Chelsea, (now Messrs.  
A. Sansome & Co.) with whom he remained until 1870, being 5 yrs. in  
the shops & 5 yrs. in the drawing-office; employed by Messrs. Vaudslays,  
Bons & Field (70-72) in erecting marine engines, & by Messrs. Appleby  
Bros., Southwark, (72-76) as Foreman & Shops Manager; on the latter firm  
leaving Southwark in '79 he took part of their works & has since  
been engaged in the design & manufacture of all classes of lifting-  
machinery (hydraulic, steam & hand) & rock drilling & dredging machinery,  
having carried out, among other works, considerable contracts for  
cranes & hydraulic machinery for the Royal Arsenal, Woolwich, a complete  
installation of power-driven travellers for the new foundry,  
Chatham Dockyard, & hydraulic plant for the new Central Station, Lisbon,  
including pumping engines, accumulator mains, etc.; & is the designer  
of the "Coles grab-dredger," & "rock-drill," etc.

Witness our hands this 14<sup>th</sup> day of November 1890.

FROM PERSONAL KNOWLEDGE	FROM PERSONAL KNOWLEDGE
<p><i>Signature of at least 120 Corporate Members of the Institution having a full knowledge of the qualifications of the Candidate.</i></p> <p><i>(See Instructions on the back.)</i></p> <p><u>Edward Words</u> <u>Walter P. H. Kniffle</u> <u>John Barker</u> <u>Alex. H. Kew</u> <u>Walter Meike</u></p>	<p><u>John H. Williams</u> <u>Harry Lane</u> <u>W. H. H. H.</u> <u>J. H. H. H.</u></p>

The Council of THE INSTITUTION OF CIVIL ENGINEERS, meeting on the 16<sup>th</sup>  
day of December 1890, transfer Henry James Coles  
from the class of ASSOCIATES ENTITLED TO THE PRIVILEGES OF CORPORATE MEMBERSHIP  
to the class of MEMBERS.

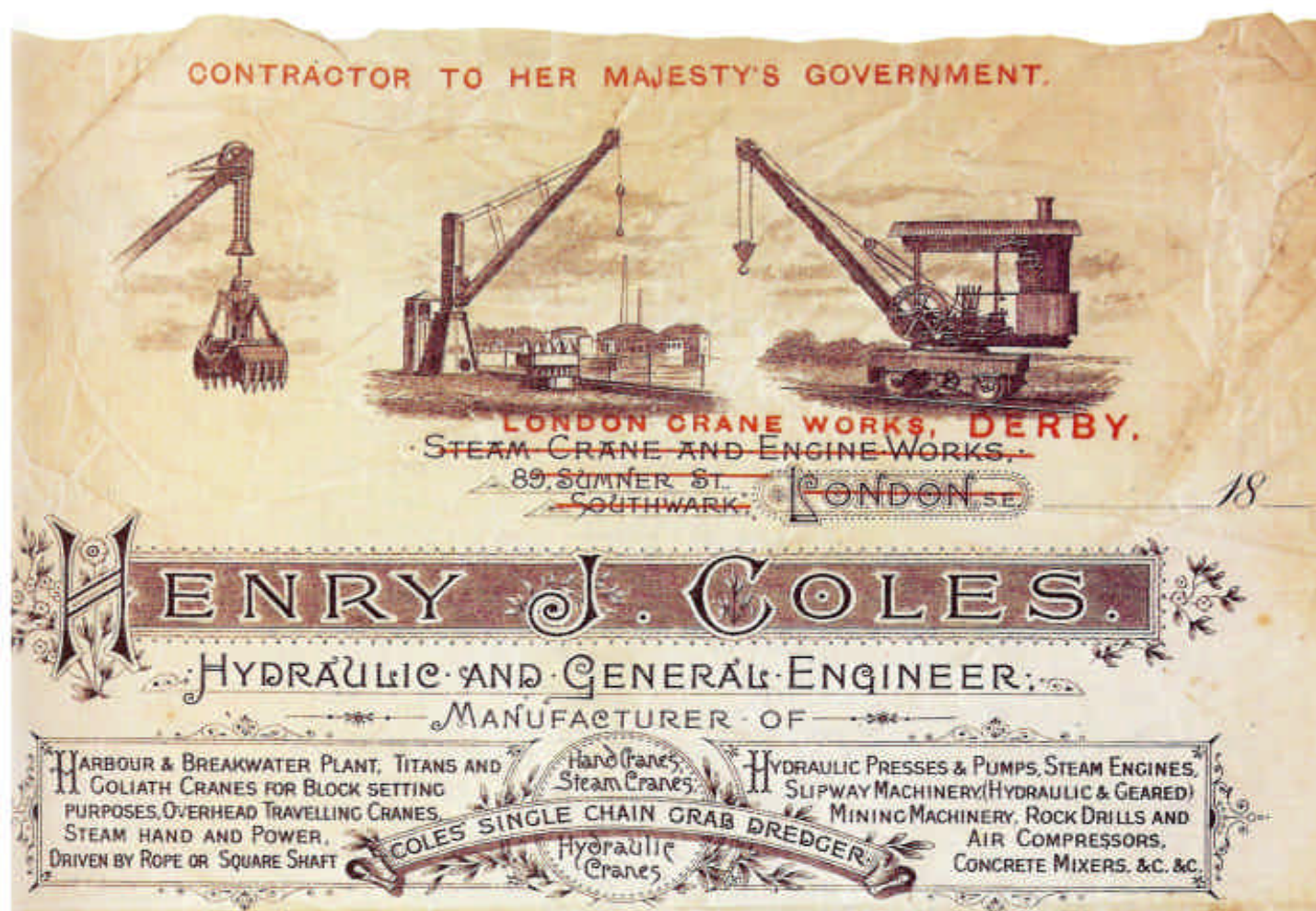
Read for the first time 9<sup>th</sup> December 1890  
Passed by the Council 16<sup>th</sup> December 1890

*By order of the Council*

Henry J. Coles was an associate member of the Institution of Civil Engineers from 1877 onwards, and in 1890 became a full member. This proposal form for his membership gives some idea of his progress to that date.



## 2 Common Threads



*Despite the investment involved in the new Derby factory, Henry Coles was sufficiently economy-minded to overprint his letterheads with the new address rather than go to the expense of a fresh version.*

A hundred years is a long time in the life of a company, and it is certain that any organisation which reaches its hundredth anniversary will have seen many changes. Coles Cranes is no exception; it has seen as many changes as any company of its size—if not more. There have been four changes of ownership, three changes of address; there have been periods of success and periods of relative failure; and throughout there have been immense technological developments. There has also been prodigious growth, particularly in the last 40 years: it took until 1936 to build 1000 cranes; while since then more than 50,000 have been produced. Yet despite all these changes, despite the hundred years, the character of the company today (and a company can have a character) bears a quite striking resemblance to the characters of the founder, Henry J. Coles, and of the company which he started.

Henry J. Coles died in 1905 and as far as is known there is no one alive today who remembers him: we have to rely on documentary evidence, and there is precious little of that. Even so, four characteristics stand out from this evidence, characteristics which Coles gave to his company and which that company retains to this day. These common threads, which link past with present, are arguably the main reasons why the company has survived, and survived successfully, to this day.

The first of these common threads is inventiveness. Henry James Coles was, typically of his generation, an innovator. More than a dozen patents



were registered in his name, relating to cranes, baling presses, steam engines, grab buckets, drills and a host of other materials-handling applications.

After his death, when the company passed into the hands of his relatives, and after it had been sold in the 1920s out of the family, the innovations continued. The company led the world with truck cranes in 1922, automatically reversing steering in 1931, with the start of mass produced cranes in 1938. It set world records for capacities throughout the 1950s and pioneered telescopic cranes in the 1960s. One generation of crane designers has taught the next that planning for the future is vitally important.

This emphasis on teaching is the next common thread. The obituary of Henry James Coles makes special mention of the importance which he attached to training. 'He was especially energetic in promoting the higher education of his apprentices, paying their fees at the Technical College and offering them prizes'. Again, this was a characteristic which he instilled into the very fabric of the company, so that throughout the hundred years, attention has been paid to the need for training. Even in the 1930s, when the company was hard pressed to survive, apprentices were still taken on. Today Coles Cranes attaches immense importance to training, with separate schools for apprentices, sales and marketing staff, service engineers and crane drivers.



Although Henry Coles exported much of his production, his passport indicates that he only travelled abroad on one occasion, when he visited Portugal in 1888.

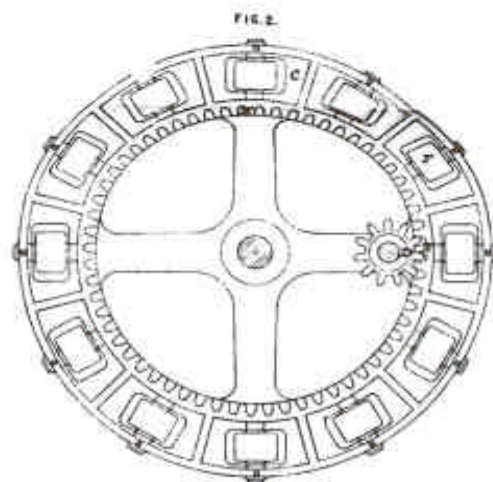
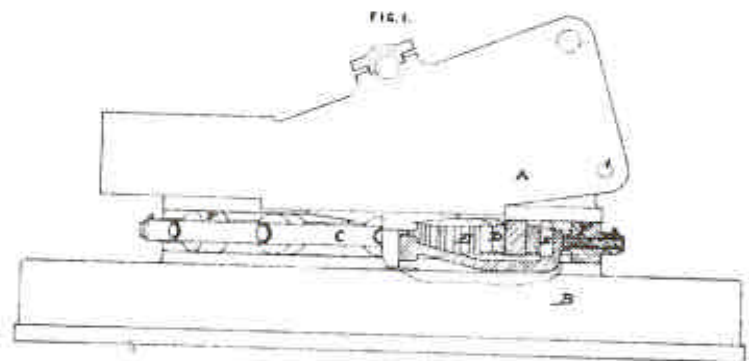
The third of these common threads is export orientation. It is easy to believe that 'export or die' is a call which grew from nothing in the 1950s and 1960s. Coles Cranes is very proud of the fact that it consistently exports around 70 per cent of its products; but during 1895, when Henry James Coles turned out eighteen cranes from his London factory, no fewer than twelve (i.e. 66 per cent) were exported—and that without benefit of a sophisticated dealer network. In 1922, the company built some of the world's first truck cranes but rather than keep them close to home they were shipped half-way across the world to Karachi and to Japan.



Despite this export success the company was until the 1940s never rich and never particularly dominant in terms of size. It achieved its share of world markets through a considerable reputation for quality; and this concern for excellence is the fourth of the links between the present and the past. In Henry James Coles' early publicity material, repeated emphasis is laid on the importance of quality manufacture. 'The chains are tested to Admiralty proof', 'The workmanship and materials are of the highest possible character', 'All the mountings are of an unusually substantial character' and so on. Ignoring the language and the fact that the products are of a completely different kind, the same sentiments can be attached to Coles' products in the 1970s. Throughout the factories, signs are displayed with such slogans as 'Quality is our best salesman' and 'We build our future into every product' to emphasize the point. Considerable funds are devoted to research and development, to inspection and testing; detailed attention is paid to the quality of materials and to the suitability of bought-in components. All of this goes to maintain and develop the reputation for quality which Coles cranes hold in the market.

These, then, are the common threads, the solid links between the past and the present. In many ways inventiveness, training, export orientation and a concern for quality have made it possible for the company to achieve its centenary. Certainly, they are the keys to its present position in world markets, because without all four of these characteristics, true success can only be an ambition—never an achievement.

*This was one of Coles' earliest patents, for an improved method of slewing, which was incorporated in a grabbing crane supplied to the Glasgow Gas Works in the early 1890s.*



No	Size	Date	Order	Buyer	Remarks
150	5 ton	Mar. 1897		Wm. Cardiff	Centre hole 5h, aded 3/16 1/6 3-25.
151	5 "	"		Blatchford	
152	10 "	"		Ady. Gibbalt	
153/4	6 "	"		burial Volga	
155	4 " 1886	"	369	"	
156	5 "	"		Dapachy Dany	
157	5 "	"		Brianstrei	
158	20 "	Mar. 1897		"	
160	1 "	June 1897		Burger	
161	3 "	July 1897		Brownay	
162	1 "	"	1832	Edmund Taylor	Obtained July 1910. Cyl. aded 6 1/2" aded centre pin 1 1/8" aded.
163/4	12 "	Aug. 24 1897		Unsettled by solder Melinda	
165	5 "	"		Wlomme	
166	5 "	"		(Hem-burg).	
167	2 "	Dec. 1897	404	lure beans	
168	2 "	"		Wells Muggs	
169	5 "	"	412	Lipshagen Dany	
170	5 "	"	423	Brigg	
171	5 "	"	423	Normanton	
172	5 "	"	423	Wlomme	
173	5 "	"	423	Ady	
174	5 "	"	423	Moston	
175	5 "	Oct. 1898	497	Lechigne	Neck rings 5 valves spirally 1 1/2" aded 1/2" aded Present style centre 12 1/2" 1 1/4" aded 1899.
176	5 "	"	423	"	
177	7 " 1898	1898	434	Brianstrei	
178	2 "	July 1898		Burger	
179	2 "	"		Wm. Jackson	
180	5 " 1898	"	441	Wm. Jackson	see letter 1898 page 7/12 1/2 C. 1. 1898 no service plan.
181	10 ton	"		Muggs	
182	3 "	Oct 1898		Jacks	
183/4	-	"		Hem-burg	
186	7 ton	Sept. 1898	474	Brownay	
187	5 "	"	480	Calogne	
188	5 "	"	480	Wid	
189	5 "	Mar 99	480	Bonvillain	
190	5 "	Oct. 98	480	Wm. Jackson	Stand for Dapachy Dany 6" centre pin 1 1/8"

This page from the order book the years 1897-8 shows the extent of production which was exported.



### 3 The Early Years

When Appleby Bros, for whom Henry Coles had worked since 1872, left Southwark in 1878, they vacated a factory in Emerson Street and a rather smaller workshop round the corner at 8 Sumner Street. It was this workshop (later re-numbered 89 Sumner Street) which Henry Coles took over in the following year.

Like his mentor, C. J. Appleby, Henry Coles was a versatile general engineer. Although he later came to specialise in cranes, to begin with he made a wide variety of equipment. Sumner Street was close to Clink Street. Here was sited the old city jail—hence the slang term for prison became 'clink'—and it is part of the folklore of the Coles history that, in addition to equipment for honest businessmen, the company also made hard-labour machines for use in 'the clink'. Exactly what these machines were is not clear, but the order books for the late 1880s indicate a regular trade between Coles and the Home Office.

For details of what other products Coles made during those years it is necessary to rely upon the one or two order books which have survived, together with a couple of catalogues, advertisements (from 1887 onwards) and a few stories in the trade press. For many years now, it has been accepted within the Coles organisation that the first crane was the fully-slewing, rail-mounted grabbing crane shown on page 19. In fact, this was one of several similar machines sold to Glasgow Corporation Gas Works in 1895. A similar crane, but rigged for hook operation, was supplied during the 1880s to the Jersey Harbour Board.

*Sumner Street in the 1890s was a narrow thoroughfare of shops, small factories and dwelling houses.*

*(Picture courtesy Bankside Power Station.)*





This section from the 1888 order book indicates the thriving trade in hard labour machines which Coles supplied to the Home Office for use in the Clink Street prison.

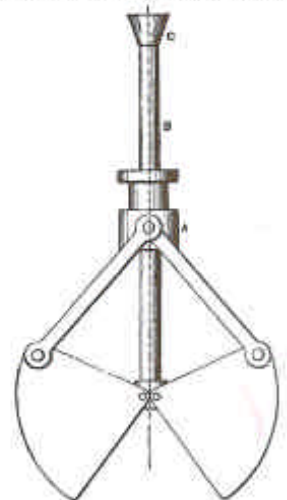
- November 1888*
448. *Home office*  
2. 1 ton fixed cranes. -
449. *George Thompson*  
1. 10 tons fixed crane
450. 3. 15 yard dredgers. -
451. *J. Redmond*  
Chain attachment for 15 yd grab. -
452. *Home office*  
50 Hard labour machines
453. *Imperial Cassaba Ry Co*  
1. 10 tons steam crane
454. *C de Murrieta & Co*

Whether or not this was the first crane, it is clear that the Jersey/Glasgow design was quite outstanding for its time. An article in *Engineering* of August 1895, concerning the Glasgow Gas Works installation, is glowing in its description. The 'extremely simple and direct manner' of transmitting the crane motions and 'the small amount of gearing required' offer advantages 'unique to this maker's cranes'. Technical journals of the day were not inclined to throw praise about, so this article speaks volumes for the Coles machine. As with all Coles rail cranes of the time, these machines had a single superstructure bedplate casting, an unusual and far-reaching innovation. In addition, the grabbing crane (at Glasgow) had a patented live-roller slewing race.

The catalogues for the period also show evidence that Coles looked beyond steam—the essence of Victorian power—for the motive force for his cranes. The 1895 catalogue lists hydraulic and electric cranes on the front cover. Inside, there is no mention of the latter, but an engraving does appear of a rail-mounted hydraulic crane. This machine was literally hydraulic—that is to say, water driven—and was designed to take its power from water standpipes at the side of the track. It was offered in a variety of sizes. Hydraulic power was not new—fixed-base water-driven cranes had been installed in Newcastle docks as early as 1847—although Coles appear to have been the first to suggest rail-mounting. It is not known whether he sold any of this type. He did, however, install three fixed-base hydraulics at Woolwich Arsenal in 1886, which installation warranted a full-page article in *The Engineer*.

In addition to the rail cranes, the early publicity material refers in some detail to overhead, Goliath and fixed-based cranes, as well as to excavators, grabs, rock drills and compressors. Coles owned the rights to two excavator systems. *Système Couvreux*, devised by French engineers Couvreux and Bourdon, was used on the Suez and Panama canals, as well as on other major sea excavations. The equipment used a chain of buckets to cut excavations and make embankments in one operation. The second type of equipment was the Gattmell excavator 'originally devised by the late

In the hydraulic section Mr. Henry J. Coles, of Sumner-street, Southwark, S.E., exhibits a single chain grab dredger with his patent releasing gear, which may be worked from the end of the jib of any ordinary crane.

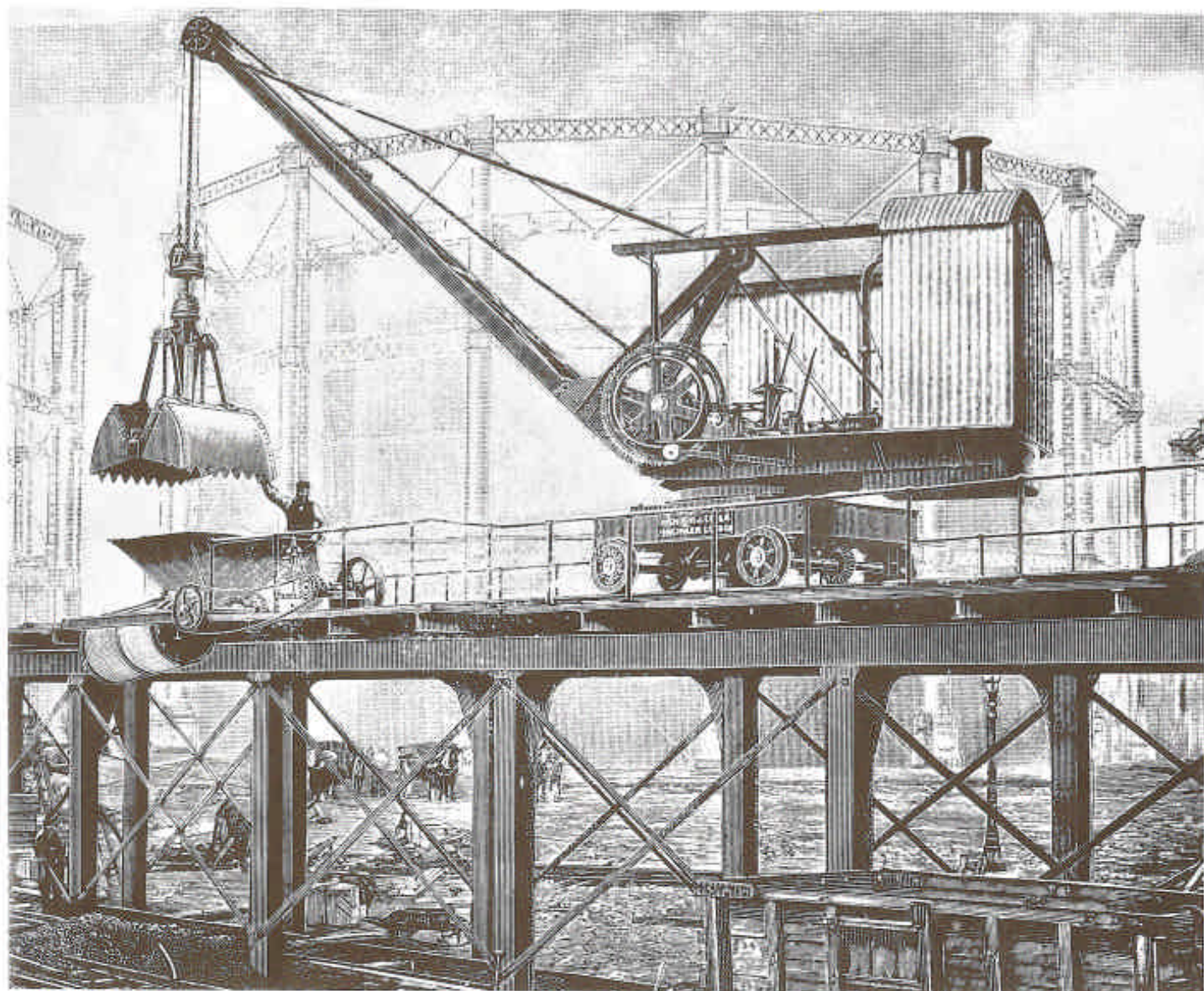


COLES' SINGLE CHAIN GRAB DREDGER.

whether steam, hydraulic, or hand, and by means of which it is claimed that a greater amount of work can be performed than is possible by any other system at present in use. So far as the mere digging portion is concerned, the construction is similar to those which have been in use in various forms for many years, the special feature being the application of the patent releasing gear, which enables the whole cycle of operations to be performed with only once lowering and raising the bucket or grab. In this way complication in working is avoided, and an important saving of time effected, because the discharging and lower-

This patented grab featured at the International Inventors Exhibition in 1884.





*This fully slewing rail mounted grab crane has always been considered one of the first cranes which Coles built. This particular machine was one of six supplied to the Glasgow Gas Works in the early 1890s.*

Mr. Gattmell for sinking cylinders on the Empress Bridge over the River Sutlej' according to the catalogue. What success Coles had with his excavators is not recorded. He may well have sold some, although by the time he started his business, the great age of canal construction was past, and the need for such equipment was quite limited.

He did sell at least one Goliath crane, an event which was covered in a long article in *Engineering*. The machine, which was clearly a one-off, was used in harbour construction in one of the Greek islands. In his earliest catalogue (dated c. 1887) Coles offers similar machines for £550; it seems there were few takers, since Goliath cranes do not appear in the second catalogue (c. 1894).

By the 1890s, the order books indicate that rail cranes were taking pride of place in the company's output (although grabs sold until the 1920s and overhead cranes until after the Second World War). An average of 15–20 rail cranes a year were made, mainly in the 2–10 ton range (although one 15-tonner was sold in 1894) and with usually more than 50 per cent going overseas. Customers ranged as far apart as Milford Haven, Glasgow, Riga, Vladikavkaz, China and Rotterdam.

The orders were obtained without a salesforce, although judging by his later performance Walter Coles seems to have done some travelling. Henry Coles' passport shows that he visited Portugal on business in 1888, and this seems to have been his only trip outside the UK.



# The Catalogues of Henry Coles

Two catalogues have survived from the Sumner Street days. Both were almost certainly, in the tradition of the times, written by the proprietor himself. Although both catalogues contain fairly detailed specifications, including prices, the information clearly intended as a starting point for discussion rather than a fixed idea for handling a particular problem. The 1888 catalogue, for example, quotes a 25-ton capacity locomotive steam crane on 3 axes, with an overall weight of around 50 tons; it is believed unlikely that such a crane could have been built. The price given is £1800.

## Locomotive Steam Cranes.

PATENT GRABS.

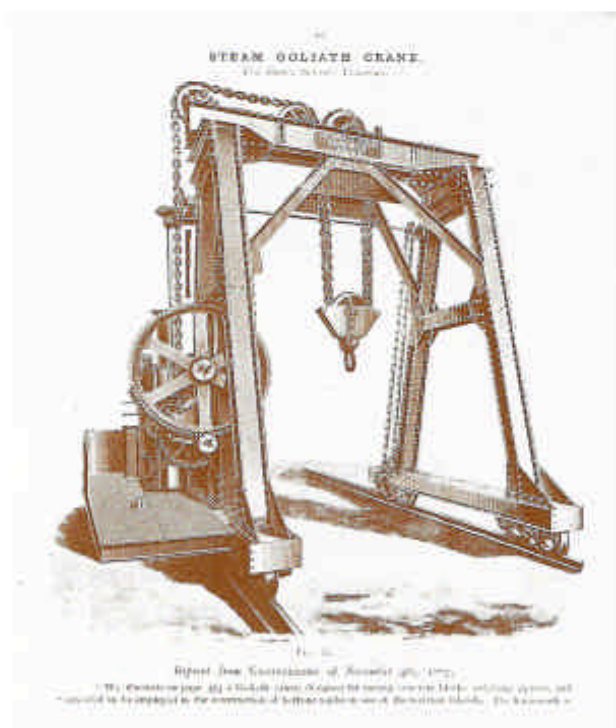
HYDRAULIC CRANES.

ELECTRIC CRANES.

ELECTRIC TRAILERS.

The 24-page catalogue shown on the left was probably issued in 1888—it quotes extensively from an article in *Engineering* of 4th November 1887.

The 16-page catalogue shown below, which contains a reprint from an article in *Engineering* for 23rd August 1895, was presumably retained for use following the move to Derby in 1898.



Above This magnificent machine was supplied for use in the Greek Islands, on a harbour construction job for which Henry Coles supplied all the equipment.

Right In the later catalogue, these barge-mounted dredging grabs operated by steam cranes were shown as part of the range of Coles excavating equipment.

## DREDGING GRABS WORKED BY STEAM CRANES.

Mounted on Barges.

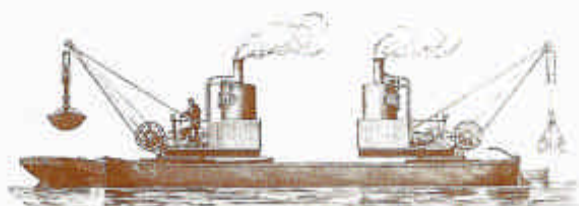


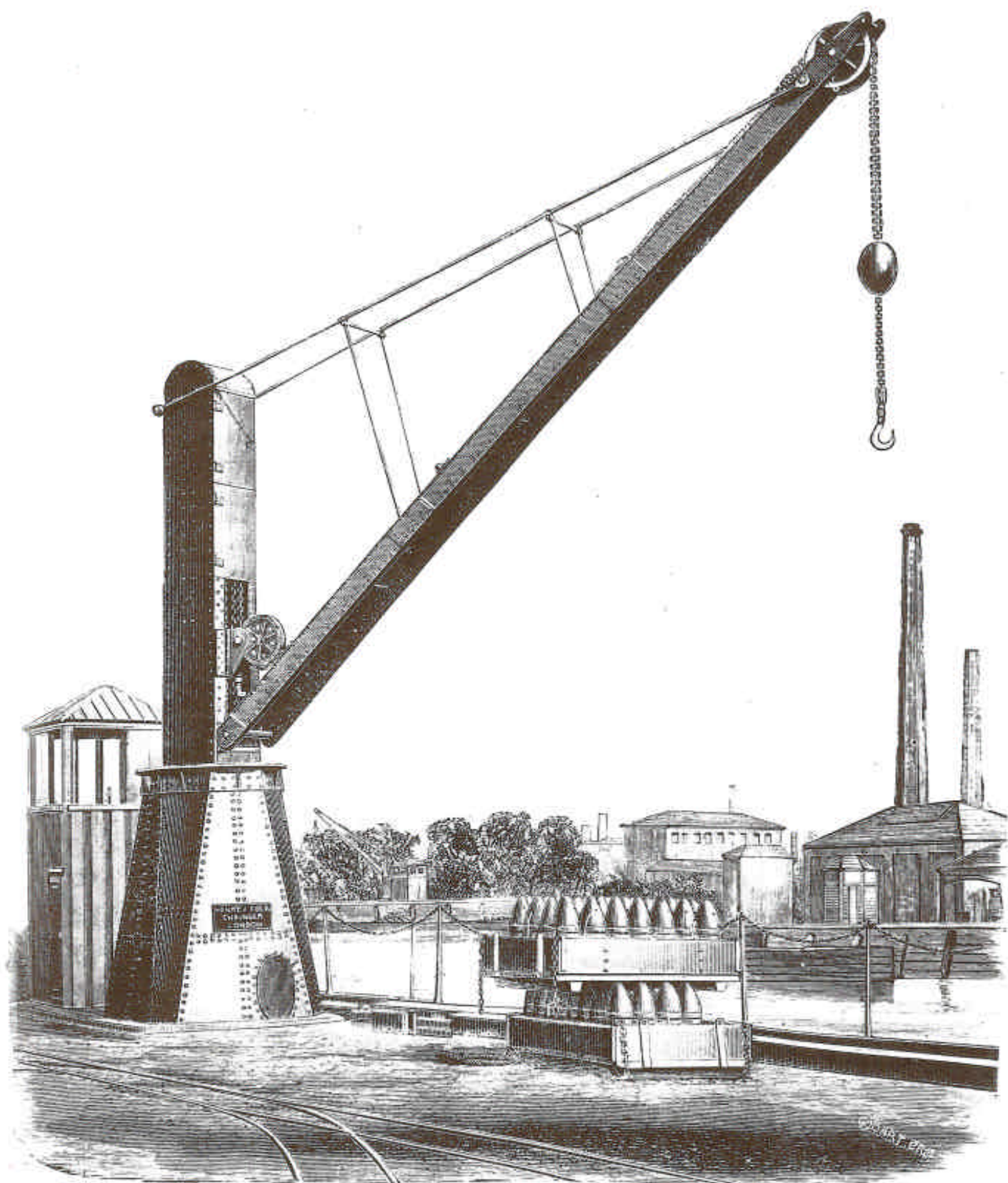
FIG. 14.

The engineering, fig. 14, illustrates the application of the Dredging Grabs for clearing and deepening shallow rivers, canals, road tanks, harbours, etc. This arrangement will be found capable of performing very good work at a reasonable outlay in first cost, with a minimum expense of maintenance and working.

The system enables one grab and crane only to be worked from a barge or platform, or two or more grabs and cranes may be fitted to one barge or platform of suitable dimensions.

The craft may be of sufficient dimensions to carry the spuds, and may also be fitted with propeller worked by the engines of the cranes.





*This is one of three fixed-based hydraulic cranes installed at the Woolwich Arsenal in 1886. It is the only illustration of a hydraulic crane known to have been supplied by Coles.*

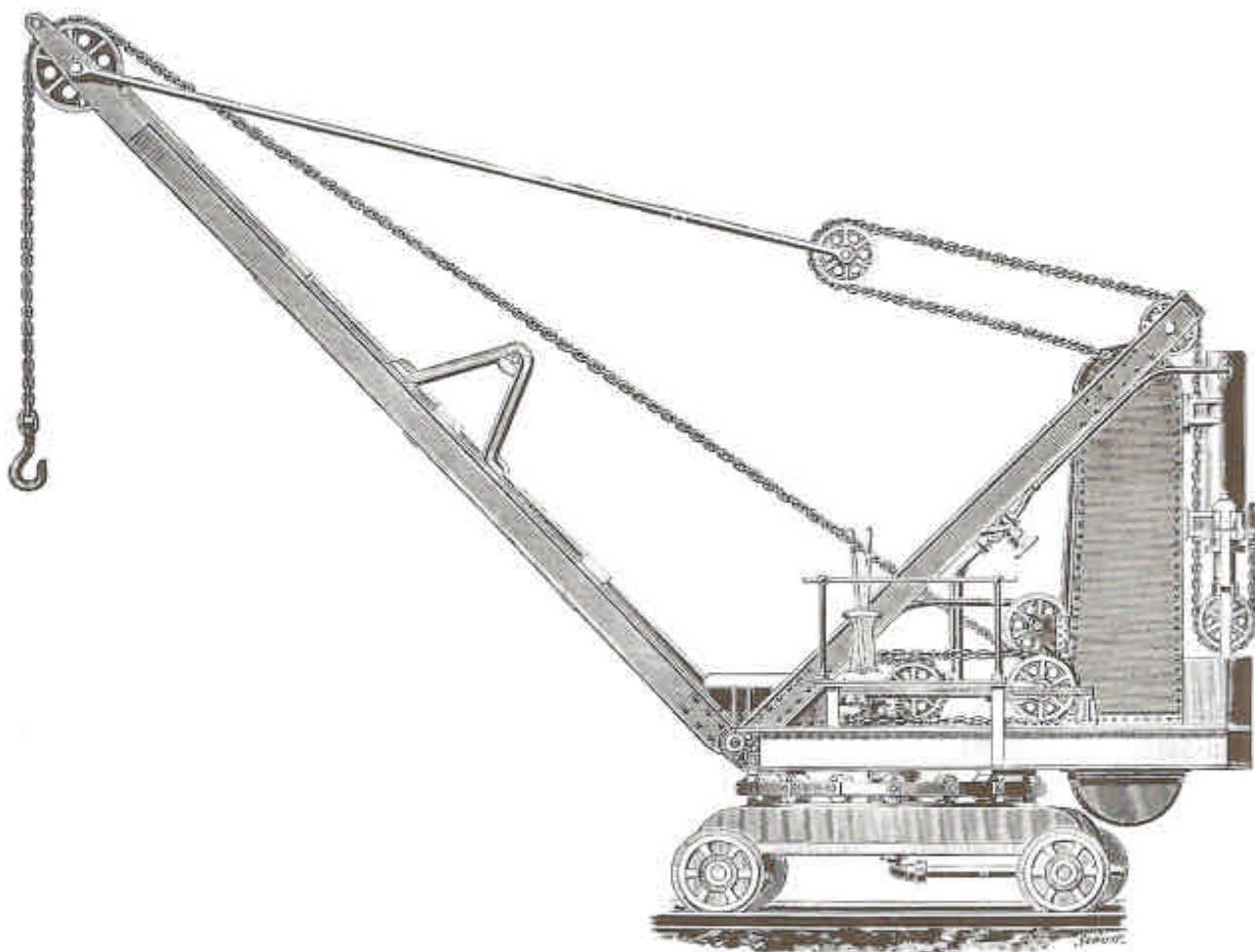
Of course, at this time the British influence on world trade was at its peak, and much of the contracting work was handled from London. As the company's reputation grew, so customers came to Coles for cranes, mining equipment and compressors. It was not until 1887 that the company bothered to advertise, and by that time considerable success had already been achieved.

Sumner Street is now a fairly wide thoroughfare lined with prestige offices. At that time, however, it was one of a cluster of mean streets, where dwelling houses and small workshops stood shoulder-to-shoulder.

Presumably the close proximity of the factory to the London Docks would have been an advantage in despatching overseas orders, but how Coles coped with the business of sending cranes to the rest of the UK is not clear. What is known is that by the mid-1890s, it was necessary to move to an area more conducive to expansion.

A number of options were open, mostly centred on the industrial north and midlands. Other crane manufacturers were located at Leicester, Leeds, Manchester and other industrial centres. A site was found in Derby, and in 1898 the whole company transferred there. In consideration of the refinement of his product line (and of the affection for his roots) Coles called his new factory The London Crane Works. It was to be the home of his company for the next fifty years.

*This rail-mounted hydraulic crane was offered in a variety of sizes in Henry Coles' 1897 catalogue. It appears to be the only example of a rail-mounted (as opposed to fixed-based) hydraulic offered by any manufacturer.*





# 4 The Derby Years 1898-1948



Harry Coles was the oldest son of the founder and chairman of the Limited Company Henry J. Coles Limited.

The Limited Company was formed in 1907, two years after the death of the founder, with a capital of £25,000.

The London Crane Works at Slack Lane, Derby, was sited on an old brickfield adjacent to the Great Northern Railway. A rail track was laid through the centre of the main workshop, connecting with a private siding to the GNR, and making transportation easier.

One of the advantages of Henry Coles' abilities as a general engineer was that he could develop many of his own machine tools. Thus the factory at Slack Lane was fully self-contained, with its own steam engine and belt-driven generator which had been built by Coles before he left Sumner Street. The factory itself was on two levels, with the main machine shops about 20ft below road level and the pattern shops at gallery level with the general office. Above the general office were the drawing office and director's office.

Compared with Sumner Street, the new factory must have seemed huge. There was room to work efficiently and to expand. Moreover with 20 years experience already under their belts the Coles workforce could face the new century with confidence.

In 1902, the promise of electrically-powered cranes foreseen in earlier catalogues came to fruition with a 2-ton rail-mounted machine which took its power from overhead cables. It was apparently a one-off and it seems unlikely that more were supplied.

In 1907, two years after the death of the founder, tangible benefits from the larger premises were beginning to be seen. In that year, a 40-ton rail crane was developed for use in steelworks, shipbuilding yards and so on. It was quite the biggest machine the company had ever built and it is doubtful whether such cranes could have been built at Sumner Street; three were supplied during 1907 to various customers.

In March of the same year, the Limited Company, Henry J. Coles Limited, was formed 'to carry on the business of . . . crane manufacturer lately carried on by Henry James Coles, deceased'. The company, with a capital of £25,000, was owned by Henry J. Coles' relations with 29-year-old Harry Coles elected as chairman and the founder's widow and brother Walter as the other two directors.

With the founder's heirs in charge, they did in fact carry on the business exactly as Henry James Coles had done. Innovations continued to be made. Notable among these was a rail crane developed in 1913, which was powered by the new-fangled internal combustion engine driving the crane motions through a chain system.

From the recollections of people who knew him at the time, Walter Coles seems to have been the driving force. He was a more formally-trained engineer than his brother (he had attended University College, London, in 1879-80) and he travelled quite widely in Western Europe in search of orders.

During the First World War the company, like most engineering firms, gave over its spare capacity to munitions manufacture. There were still plenty of cranes required, however, and towards the end of the war an enquiry was issued by General Pershing's US Expeditionary Force for a fully mobile crane. Hitherto, all cranes had been rail-mounted so the military request represented a considerable departure from existing practices.





The war ended before the matter could be taken further but the concept had sown seeds of interest in the Coles organisation. In fact, the Coles' family were not enthusiastic about the idea, believing that rail mounting was essential for stability and the job of developing the mobile crane was given to Arnold Hallsworth, then a pupil apprentice who had joined the company in 1918, and who went on to become managing director in later years.

It occurred to Hallsworth that the ideal arrangement for a mobile crane would be the Tilling-Stevens petrol-electric solid-tyred bus chassis supporting a special single-motor superstructure. The crane was introduced in the latter part of 1922. It created a certain amount of interest in the trade press at the time but only a few were made. Machines were sold to the Karachi Ports Trust, to Japan and in the UK. The relative lack of success was caused partly because the world was still in the throes of a post-war depression and partly because of simple resistance to what was an entirely new idea.

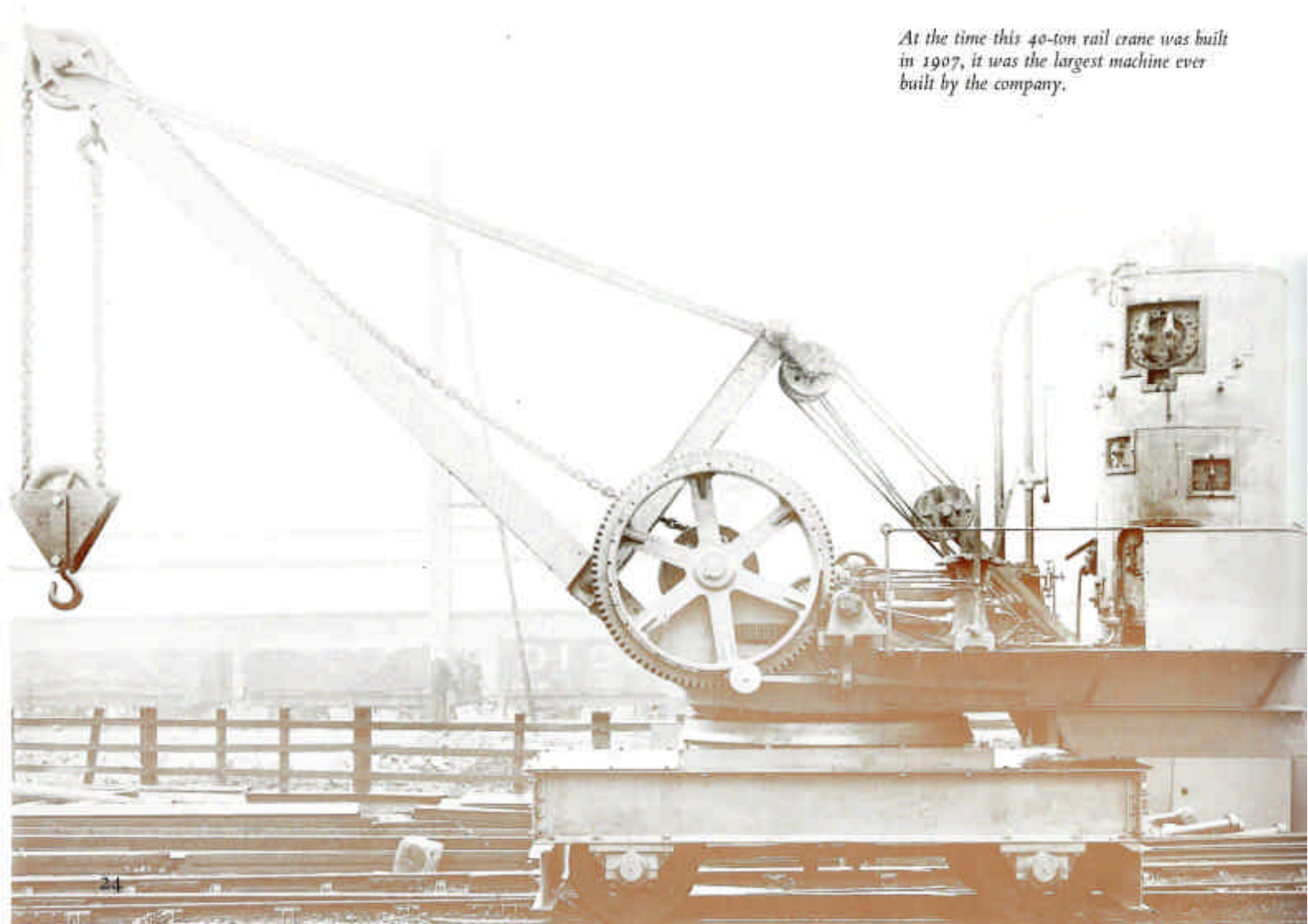
However, it was a start and during the ensuing 15 years several attempts were made to perfect the mobile crane before the EMA was developed in 1937. Some of the developments were highly ingenious. An electrically operated mobile was developed in 1925. This used large batteries which were designed to be recharged overnight. It was a cumbersome system and only one was sold, to a company in Japan (which country was clearly a major market for the products of the time).

A major breakthrough came in 1928 with the development of the world's first diesel-powered mobile crane. This 1½-ton capacity machine had a direct diesel-mechanical drive system from a 25 h.p. engine; six were sold, again to Japan, for the Osaka Harbour Board.

By this time, the ownership of the company had changed hands. The founder's son Harry Coles had been killed in action in France during 1917;



*This splendid contraption is apparently a rail crane supplied for use in a steel foundry, hence the heavy cladding around the working parts.*



*At the time this 40-ton rail crane was built in 1907, it was the largest machine ever built by the company.*



he was 39 and unmarried. The running of the business was then left almost entirely in the hands of Walter Joseph Coles. Arnold Hallsworth remembers watching him 'walk past the drawing office windows; if he was wearing his silk top hat we knew he had been away chasing an order'. He was assisted by his brother Ernest Coles and the founder's surviving son Harold Lewis Coles. In the mid-1920s tragedy struck the family when the three men died within a year of each other. All three were bachelors and as a result the firm was left to the founder's widow and his three daughters. It was clearly impossible for them to run the business and in October 1926 the share capital of the company was sold to Alfred W. Farnsworth, William Searle and William Robinson. Farnsworth was the majority shareholder. He was a consulting engineer in Derby and he could afford to spend only two or three days a week in the factory. The day-to-day



*One of the world's first lorry mounted cranes. With an electric superstructure on a Tilling-Stevens bus chassis, it was supplied to the Karachi Ports Trust and to users in Japan and the United Kingdom.*

running of the business was left to Arnold Hallsworth who, at the age of 27, was appointed chief engineer and general manager.

Farnsworth took over Henry J. Coles Limited as a going concern, although exactly where it was going was far from clear. On the commercial front, the company had developed a fairly wide spread of agents in such places as Argentina, Australia and New Zealand. The latter agent was the founder's nephew, Frederick Bernard Coles, the son of the Frederick Coles who had joined in the new venture in 1879 (although he left shortly afterwards). An idea of the calibre of the agents as a whole can be gained from the fact that F. B. Coles was fully employed as an engineer with New Zealand railways at that time. Not all the agents were one-man bands however. In Denmark, Lowener had been Coles agents since the 1890s, although the association lapsed in the 1930s; following the Second World War, they were re-appointed, and they remain Coles distributors to this day.

On the technical side the search for mobility continued. The company was, however, increasingly hampered by poor market conditions. Even in the late 1920s orders were few and far between and when the depression of 1930-31 hit home, Henry J. Coles Limited tottered alarmingly close to the edge of disaster.

From a workforce level of about 100 people in 1927 the company

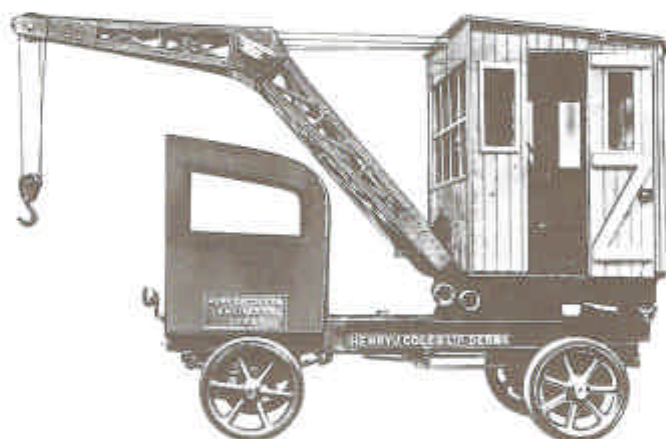


# The Search for Mobility 1922-37

The inter-war years saw a consistent effort being made towards the development of a crane which would be fully mobile, freeing the machine from the constraints of rail-mounting, while maintaining the stability and power essential for effective handling.

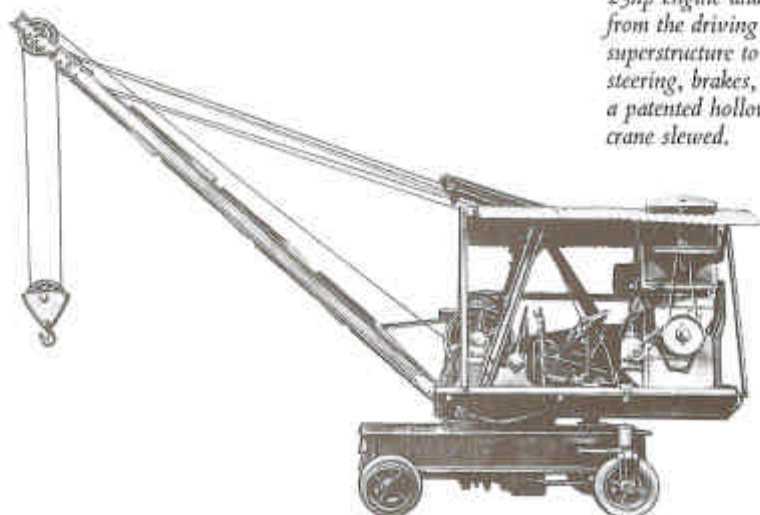
1922

This is generally accepted as the world's first lorry-mounted crane. Utilising the popular Tilling-Stevens bus chassis, it had a single electric motor which obtained its power from the main chassis generator. At a demonstration for the trade press at the end of the year, this 2-ton crane was shown loading a railway truck in one-sixth the time required for a hand-operated crane.



1925

This all-electric crane was powered by large batteries which were designed for overnight charging.



## The PETROL-ELECTRIC LORRY CRANE

Built for your business

IF, in the furtherance of your business, the use of a mobile crane would increase its efficiency, or open up a new line of activity, this brief resume of the most important details and applications of a new Lorry Crane will be of interest to you.

The Petrol-Electric Lorry Crane provides adequate load-handling and lifting facilities for a great variety of businesses. For the handling of miscellaneous commodities of heavy and bulky nature, this mobile crane presents many advantages.

### What it is—and how it operates

THE Lorry Crane consists of two main units—a Tilling-Stevens 4 ton Petrol-Electric Chassis and a Crane.

**The Petrol-Electric Chassis.** The Petrol-Electric Chassis provides a single and economical means of power for the several crane operations of hoisting, slewing and derricking. The chassis engine is geared so that the chassis dynamo gives a constant voltage, and the current generated can be switched on to the crane motor immediately the chassis is stationary.

**The Crane.** The Crane is capable of lifting 2-ton loads at 10 feet radius at a speed of 20 feet per minute, or 1 ton loads at 20 feet radius at an increased speed.

The lift of the crane can be quickly raised or lowered and the whole superstructure can rotate through a complete circle, and in either direction. This can be done in 1/5

of a minute. These operations are worked by the 4-h.p. crane motor, the current for which is supplied by the chassis generating plant. All crane operations are controlled by 3-hand levers and are assembled in a convenient place and arranged in an order easy and immediate control.

**Crane Brakes.** An electric magnetic brake is fitted and is held in the off position during the period of operation; should the current fail when lifting is in progress, the brake automatically sustains the load. A powerful wood block stop brake is also fitted and is operated by a foot lever.

**Locking the Crane.** When the crane is travelling it is held in such a position that it cannot reverse and endanger passing traffic. The lock valve is fitted with gear for locking the frame so that the vehicle is absolutely stable when the crane is being used.

### The Lorry Crane can help you.

PERHAPS these main points outlined above will suggest to you a means by which some of your transport problems may be solved. The Petrol-Electric Lorry Crane is indeed invaluable in the lifting and carrying of cumbersome materials. It constitutes an efficient and paying method of load handling. It is simple to control and quick in operation.

Full Specifications, Photographs,  
Price, etc., from

Tilling-Stevens Motors  
Limited, Maidstone.

(London: Machines Ltd.,  
Telephone: "Pebbles, Maidstone")

OR

Henry J. Coles, Limited  
London, Crane Works,  
Derby.

(London: Derby Ltd.,  
Telephone: "Cable, Derby")



We are willing to go into any proposition which you may raise respecting the Lorry Crane.

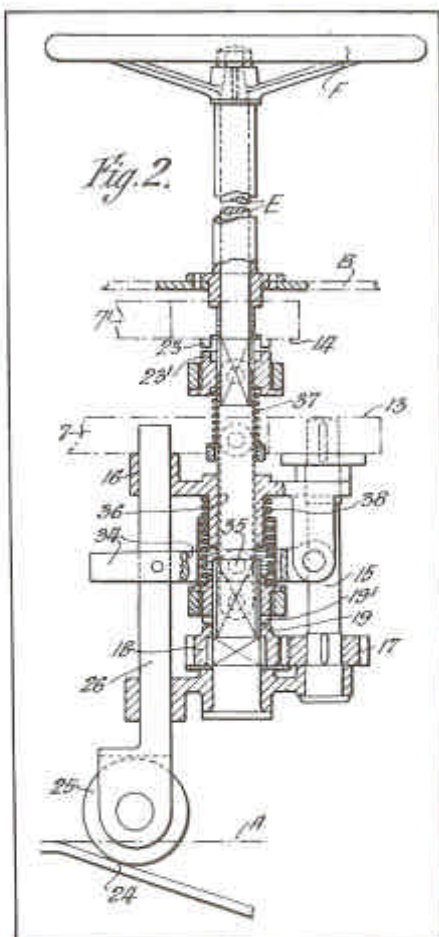
1928 (below)

The first diesel-powered mobile. It had a 25hp engine and all controls were operated from the driving seat. Power from the slewing superstructure to the chassis (for travel, steering, brakes, etc) was transmitted through a patented hollow shaft around which the crane slewed.



1931

Automatically-reversing steering, which has been a feature of Coles mobile cranes ever since, was patented this year: this is a section from the patent specification. The revolutionary nature of this development gave the company a considerable edge when competing for the EMA order in 1937.

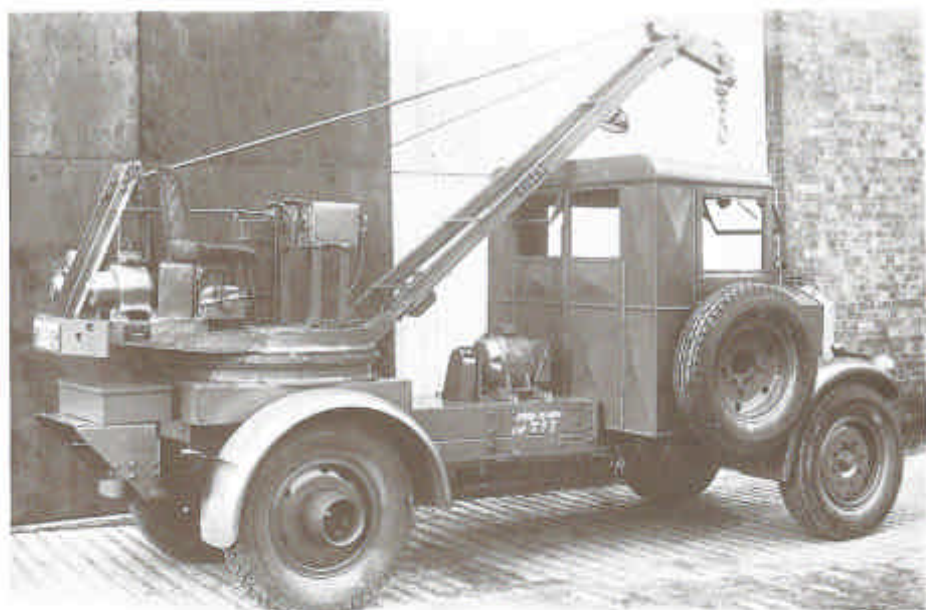


When a driver has been rotating the superstructure (i.e. "slewing") repeatedly and then wants to manoeuvre the crane, it is almost impossible for him to remember at which end of the carriage his steering wheels are positioned.

The object of this invention is to enable the driver to steer from either end of the carriage or from wherever he may be positioned and to travel in any direction by steering in the normal way for that direction. Thus whether the driver is driving from a position over his steering wheels or the driving axle he can manoeuvre the crane from this position by facing in the normal way for that direction.

1937 (right)

The EMA mobile. It had pneumatic tyres, full-circle lifting capability and the now-proven petrol-electric (later diesel-electric) power system. This variable-voltage output, combined with the patented electro-mechanical braking system, allowed precise control over crane motions. The EMA of the title was taken from 'Electric Mobile Aerodrome' crane, as specified by the Air Ministry. To the next generation of servicemen, the Coles machines were known as 'Emmas'.



1936 (above)

This is one of two mobile cranes supplied to the Air Ministry in this year. The success of these machines, mounted on rubber-tyred Morris chassis, did much to convince the Ministry of the validity of separately slewing superstructures.















Slack Lane plant was concentrating mainly on rail cranes which, with the development of truly mobile cranes like the EMA, were losing their popularity. In 1948 production of these was also transferred to Sunderland, where they continued to be made until the mid 1960s.

Between 1946 and 1948 the Derby factory also built Coles Electric Eels. These battery operated trucks were part of a diversification programme which developed after 1945 but which never really took off. In 1948 the Slack Lane factory was taken over by Pelapone Limited, another company within the Steel Group, who manufactured diesel engines and related equipment. In 1898 Coles had left London for bigger premises with the potential for expansion. Now, fifty years later, the company headed further north with even bigger prospects.

*Even in the 1920s Coles were producing literature in French, as well as undertaking fairly widespread mailing shots using the small leaflet on the left.*

*Although the majority of the company's output was for mobile and rail-mounted cranes, they continued to supply fixed-based cranes, particularly for wharf operations, in the inter-war years.*





## 5 Crane Makers to the World 1939–1959

Coincidentally, the history of the Steel Group (now called the Coles Cranes Group), of which Henry J. Coles Limited became part in 1939, dates back like Coles to 1879. In that year Lancelot Steel established a builder's merchant's business in Sunderland. The company grew rapidly so that by the turn of the century it was one of the largest concerns of its kind in northern England. During the first half of the present century the company continued its growth, expanding into heating and ventilation engineering and, in the 1930s, into industrial catering equipment.

By then the company was being run by John Eric Steel and his brother James, grandsons of the founder. In 1937 Steel and Co. became a public company with an issued share capital of £220,000.

It was John Eric Steel's stated intention to bring to Sunderland heavy engineering which was not connected with shipbuilding. In 1939 the first steps towards the achievement of this aim were taken with the acquisition of Henry J. Coles Limited and, almost immediately afterwards, with the purchase of the Egis shipyard on the banks of the River Wear at Pallion, Sunderland. The shipyard was renamed Crown Works (in deference to the amount of Government work which the expanded group was undertaking) and crane manufacture began almost immediately.

Crown Works has grown in the years since 1939 to become the biggest crane manufacturing plant in Europe. However, in the early years cranes shared manufacturing facilities with a veritable cornucopia of manufactured products, including catering equipment, overhead cranes and pulley blocks, fireplaces, batteries, neon lights, electric vehicles, agricultural machinery, snowploughs, anchors and anchor chains, screw jacks and heating and ventilating equipment!

In 1943 most of these products were joined under an umbrella company, Steels Engineering Products Limited. The Coles product name was retained (although there was a suggestion, rapidly rejected, to rename the



*Engaged in flood rescue work as an unofficial personnel carrier, this EMA truck was one of thousands built for the forces.*





*John Eric Steel (left)  
Sir James Steel (right)*

products 'Steel Cranes') but Henry J. Coles Limited disappeared as a separate entity.

Through the success of the EMA orders obtained during the late 1930s, the British forces came to standardise on Coles cranes throughout the Second World War. Production grew at an enormous rate so that by 1945 some months saw the output of close on 100 cranes leaving the Sunderland factory. These were almost all EMA superstructures mounted on a variety of proprietary chassis including Austin, AEC, Leyland, Crossley, Diamond T, Ford and, perhaps most famous of all, Thorneycroft. These chassis were supplied by the War Department and the workforce at Crown Works strengthened and adapted them before mounting the superstructures.

This success was not, however, without its penalties. For one thing, the standardisation (which in 1943, was formalised in a government directive) in the design of the cranes prevented any development which was not completely in keeping with military requirements. Thus it was possible in 1942 to develop probably the world's first crash recovery crane, but it was not possible to extend the capacity range beyond the 6-tons which was the limit of military requirements. Apart from projects related to military work, developments were largely limited to improved manufacturing techniques and materials, developments which instilled into the fabric of the crane making organisation characteristics which it retains to this day.

In addition to limiting development of the cranes the monopoly which the military held in the purchase of Coles cranes effectively blocked the company from its commercial market. During the first 60 years of its existence, Coles had made little money but had built a worldwide reputation for quality and reliability. By 1945 this reputation was, in the commercial field, a pre-war memory. The Ministry of Supply, which had controlled the marketing of cranes from all UK manufacturers, had effectively handed over the domestic commercial market to Coles competitors, by taking all of the Coles output for the forces. At the end of the war the tap was turned off, leaving Steels Engineering Products with a massive workforce, a superb product and a market which had suddenly disappeared.

Facing this situation the Steel brothers decided to attack the problem rather than seek a passive defence. In the late 1940s, enormous sums were spent on completely re-equipping Crown Works from raw material storage to final painting and despatch. Existing workshops were refurbished, production techniques planned anew and major investment was made in research and development.

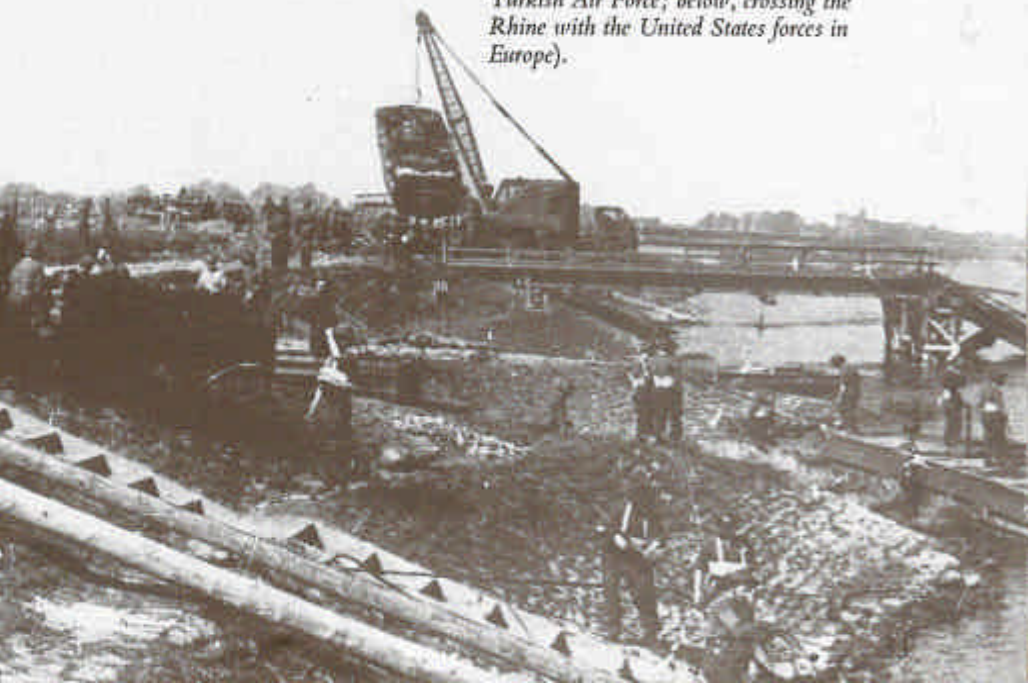
In the division of responsibilities between the Steel brothers, James took on the job of revitalising the sales effort, while Eric concentrated on

*With the incorporation of Steels Engineering Products Limited, the company issued this folder covering the host of products manufactured in the 1940s at Crown Works.*





Production demands were not the only problems to be felt during the war years, as this letter from a brake supplier indicates.

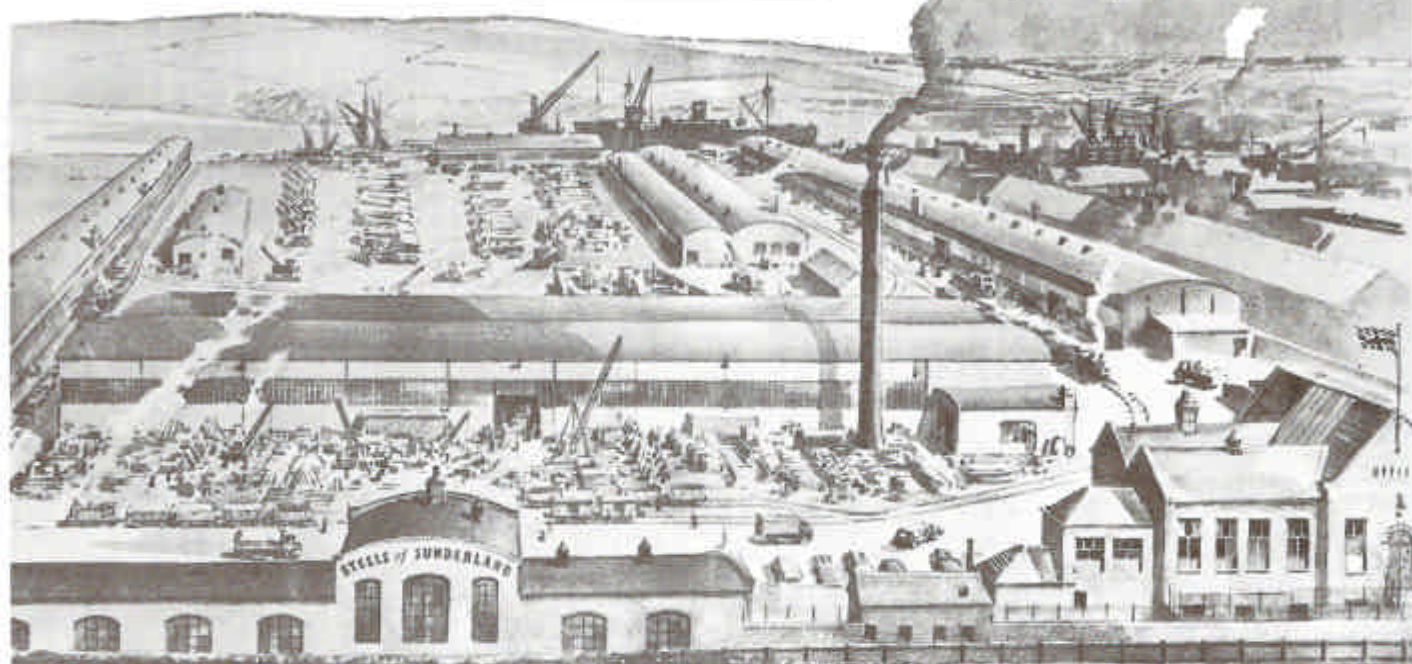


The EMA cranes were truly ubiquitous, being used all over the world (top left, erecting a V2 rocket in Trafalgar Square, London; top right on the Rock of Gibraltar) and with all the armed forces (above with the Turkish Air Force; below, crossing the Rhine with the United States forces in Europe).



# The Development of Crown Works

The first Coles cranes to be built in Sunderland were EMA cranes started shortly after the acquisition of the company by Steel and Company in 1939. Initially the factory occupied the 15-acre Egis shipyard site which was closed in 1938. To the north of the site was the River Wear, to the east another shipyard and to the south and west a golf course. Over the years, Crown Works has expanded (and is still expanding), taking over both the shipyard to the east and the golf course to the west. Now occupying an area of about 100 acres, there is yet more room for westward expansion.



Above The Sunderland Echo of June 1939 features the opening of Crown Works and the start of crane-building on Wearside.

Above left The late 1960s saw the start of mass-production of the telescopic boom truck cranes which now form the major part of the Coles range.

Left The latest in fabrication procedures, the new Jubilee factory features this automated profile burner.

Below Taken from a 1945 Steels catalogue, this is an artist's impression of a Crown Works now disappeared under a mass of rebuilding.





*The output on EMA lorry mounted cranes was prodigious. This batch would have represented just a couple of days' production.*

refurbishing the factory. In 1946, James Steel embarked on the first of what was to become a ten year programme of visits to export territories. Often away for three months at a stretch, he visited 120 different countries, many of them on a number of occasions. He appointed dealers, cajoled them, negotiated orders, talked to customers, often for days on end. Many of the dealers appointed in those post-war years still handle Coles products.

Back home, Eric Steel was encouraging the design team to look for ways of developing the product range. The inter-war years were essentially about the search for mobility. This had been achieved by 1939 and by 1945 the diesel-electric system was as near perfect as it could ever be. The late 1940s and 1950s were to be about utilising this perfected system to obtain bigger and better machines.

Some of the developments were simply a case of building on the EMA crane. In 1945, a Mark VII series 7 lorry mounted machine was adapted for building 'Airoh' houses, which were pre-fabricated buildings designed to overcome the post-war housing shortage.

Other developments were of a more fundamental nature. In 1944-45 a new breed of mobile cranes was introduced with capacities of 1 and 6 tons. In 1945 Eric Steel brought in a firm of industrial designers who were engaged to style these machines to suit contemporary tastes. It was a revolutionary move, and one which laid the foundation of Coles design thinking until the introduction of hydraulic machines in the 1960s.

It was towards increased capacities that most efforts were directed, however. To a very large extent, this task was easier than that of regaining lost markets. Many of the engineering developments which had taken place during the war—bigger power sources, improved materials, better production techniques and so on—were now at the disposal of industry as a whole and the Coles design team utilised every development they could find to increase capacities. One of the main limitations on increasing capacities had been the types of tyre available. Until 1936 all wheel-mounted mobiles had been on solid tyres, and the development of more highly reinforced pneumatics during the war contributed directly to the introduction of larger cranes.

The efforts of the design team paid rapid dividends. In 1945 the 6-ton

*This EMA truck was one of the developments of the concept which took place in 1945. Incorporating a cast-iron bumper for additional stability, it was designed for building prefabricated 'Airoh' houses.*







*The 100-ton capacity Coles Centurion truck was in its day the largest machine in the world. Introduced in 1963, it proved consistently popular with plant hire companies throughout the world.*





*During the 1950s experiments were made with a telescopic boom on a diesel electric mobile of which this was the prototype.*

**Announcing THE WORLD'S LARGEST MOBILE CRANE**

**COLES "COLOSSUS"**

**STEELS ENGINEERING PRODUCTS LIMITED**

**THE NAME THAT GAINED REPUTATION**

*In 1954 the original Coles Colossus, with a maximum lifting capacity of 41 tonnes, was introduced. The biggest truck crane in the world, it was more than twice the size of the previous biggest Coles crane.*

EMA was the largest crane in the Coles range. Five years later 20-ton machines were being built and by 1954 these were being dwarfed by the 41-ton Coles Colossus. Throughout the 1950s, in fact, capacities were doubled and redoubled, until in 1963 the 100-ton barrier was breached with the Coles Centurion, the world's first wheel-mounted crane to lift the magic figure.

Throughout this development, the crane manufacturing side of Steels Engineering Products continued to grow. The markets which had been lost during the war were opened up again and the vast quantities of ex-war department cranes which flooded the market, far from killing the demand for new machines, actually increased it. The EMA lorry mounts formed the nucleus of the crane hire fleets which blossomed during the building and civil engineering boom of the 1950s. Just as thousands of soldiers had come to admire the reliability of the machines, so the hirers came to appreciate the cranes for the same reason: the name Coles on a crane was synonymous with reliability. Coles were in at the start of the crane hire boom, through a subsidiary called Crane Hire Limited, formed to utilise reconditioned machines. It never really succeeded, largely because the hire company was essentially competing with Coles' users.

To capitalise on the improved markets and to reduce the burden on Eric and James Steel a formal sales force was established, first for the UK and then for export markets. Increasingly the cranes dominated the Steels Engineering Products line-up and during the 1950s and 1960s virtually all of the other products were dropped in favour of the cranes.

John Eric Steel died at the age of 49 in 1956. He was a remarkable man who is still remembered with respect and admiration. He had fortunately seen the fulfilment of his ambition to bring heavy engineering outside the orbit of shipbuilding to his home town. He was succeeded as Chairman by his brother James (later Sir James) who continued the development which he and his brother had started.

As the cranes grew in size and capacity and as the markets, particularly in crane hire, increased it became clear that the diesel-electric system was limited. Essentially each new crane which came along was achieved not so much through an improvement in design techniques but through the application of better materials and equipment to a basic concept which had already been perfected. In essence, the Centurion of 1963 was no different from the EMA mobile of 1937. It was much bigger, of course, and used vastly improved materials and drive systems, but the concept of a diesel engine driving a variable voltage generator to power individual crane motions was the same as it had been for 25 years.

In the early 1950s, the concentration of corporate thinking on diesel-electric technology which had given the company so much success had come to border on fanaticism. But the company's management could see that, good as the system was, there were openings for other transmissions.

During that decade, the Coles management had noted the progress of R. H. Neal and Co. Limited, who were manufacturing diesel-mechanical cranes at Grantham, and of F. Taylor and Sons (Manchester) Limited, who had been developing hydraulic cranes. In 1959 both companies became part of the Steel Group, giving it an unrivalled strength with products using all three transmission systems, as well as a broader market coverage.

More importantly it provided Coles with a foothold in hydraulics. By 1959 it was clear this was more than a passing fad. Taylors had developed a unique expertise since the war, with a fair measure of success. Now the investment was available to develop that experience, and build on that success. The telescopic age was about to be born.

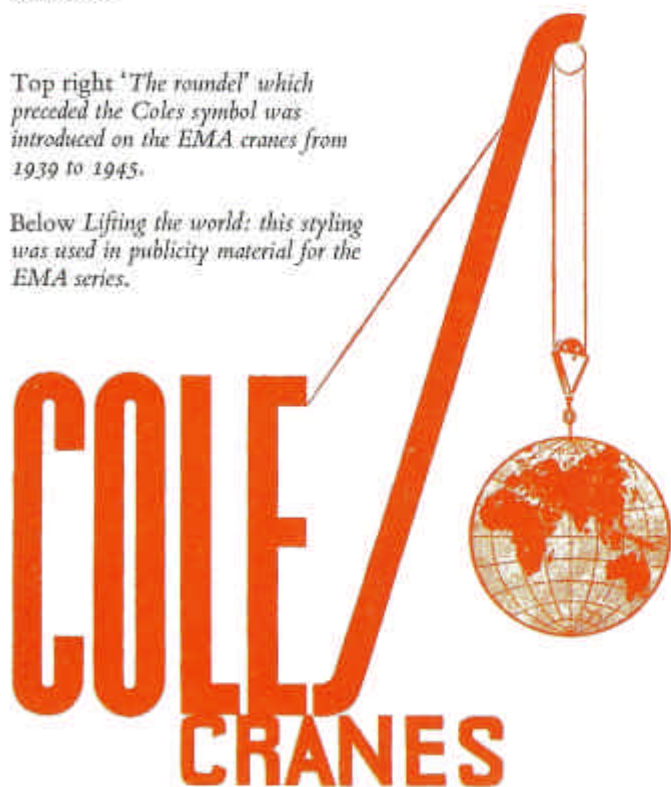


# The Coles Logo

The namestyle which is applied to all Coles products is one of the best known and most readily recognised in the world. It was introduced in the mid-1940s as part of a corporate identity scheme which included styling the small mobile cranes, and which originated the much-copied yellow-and-black colour scheme used ever since on Coles machines. Over the years the logo has been refined into a precisely defined style which is carefully protected as a symbol of product excellence.

Top right 'The roundel' which preceded the Coles symbol was introduced on the EMA cranes from 1939 to 1945.

Below Lifting the world: this styling was used in publicity material for the EMA series.



Right The first use of the Coles symbol was on publicity material produced at the end of 1944. Note the condensing of the characters and the retention of the circular motif. The 'roundel' was still applied to the crane.



Below This Spanish version was an attempt to internationalise the symbol.

Bottom The process of filling out the logo reached its peak with this 1947 version.



Built by  
STEELS  
SUNDERLAND  
ENGLAND

Distributed by

Above This 1948 crane shows the results of the styling scheme introduced after the war; the symbol is now fitted to the cranes.

Below On this 1978 Coles crane, the logo has reached its full development.





## 6 The Telescopics Arrive 1959-1972

By the time F. Taylor and Sons joined Coles it had gained more than a decade of experience in hydraulic mobile cranes. It was in two of their machines which the Steel Group saw most potential: the Series 42, with 4-wheel drive; and the Series 50, a general-purpose mobile. Both machines had telescopic booms, and to both a considerable amount of design attention was given.



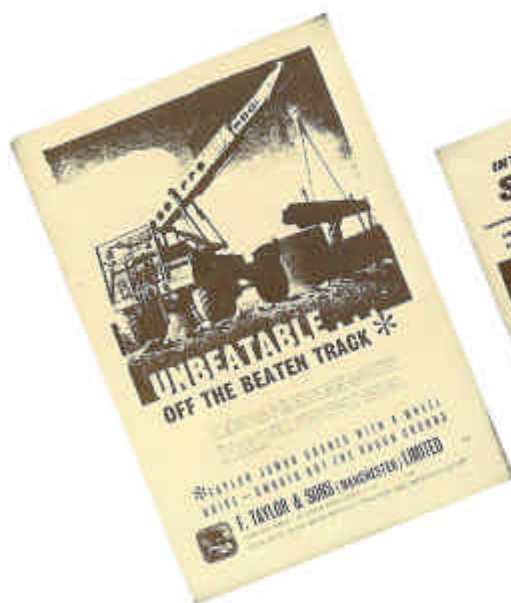
*The first Taylor hydraulic crane (and probably the first in the world) was known to the workforce as 'The Coffin'. It was a non-slewing, non-derricking yard crane, built by Taylors for their own use. This was the start of the Taylor Hydracrane and Jumbo crane (the trademark for which is shown above).*

During the early 1960s a team of young hydraulic engineers joined the Sunderland design staff. They were brought in by Bob Lester, who had joined Coles at Derby in 1935 and was now Design Director. With his lifelong involvement in diesel-electric technology Lester recognised the need for new minds on the subject, minds which knew hydraulics and could learn about cranes.

Between 1960 and 1966, Lester's team worked with the staff of Taylor to develop the hydraulic concept along three parallel lines. The first, and probably easiest to develop, was from the Taylor Series 50 machine. This small general purpose crane had a one-man chassis mounted cab, with a telescopic boom extending to give 37 ft height of lift. By 1962 this concept had been refined into the Taylor Jumbo (later Coles Hydra) Speedcrane. This line of general purpose machines had been refined over the years since their introduction into some of the most popular machines of their







type in the world. The characteristics of front-wheel drive/rear-wheel steer, which give it excellent manoeuvrability, compact overall dimensions and automatic hoist-rope compensation, have remained fundamental to the design of Speedcranes to the present day.

The second line of development in the use of hydraulics was their application to the fast-travelling truck cranes which had developed enormously in popularity during the 1950s, particularly with the crane hire operators. By now, this was Coles' major market, and the need to ensure that a hydraulic truck crane met hirers' requirements was paramount in the company's ambitions for future growth.

One problem about which both hire companies and their customers had complained was the need to provide supplementary transport to carry jib sections for even small trucks. Before the introduction of hydraulic machines, some attempt had been made to circumvent this problem with the development, during the late 1960s, of 'jib carriers'. As their name applies, these machines carry their full jib potential on the superstructure decking, and were designed to be entirely one-man operated. These had proved extremely popular, and when the company came to apply hydraulics to truck cranes, it was to the jib carriers that design attention was turned.

During the early 1960s, hydraulic jib carriers were developed with capacities of 7, 8 and 11 tons, with Taylor's hydraulic expertise wedded to the Sunderland-designed chassis and superstructure. The name Hydra, which had been a Taylor trade name, was utilised for the machines, and remains the mark for all Coles hydraulic machines.

There were clearly limitations on how far the jib carrier system could be taken, and during 1965 the Coles design team began working on a telescopic boom crane for showing at the following year's Mechanical Handling Exhibition. This machine, the Coles Hydra Truck 10T, used the chassis of the 11-ton strut-jib crane with an entirely new superstructure and boom. It had many novel features. The boom telescoping was automatically synchronised (using a system devised originally for mining machines which Taylors had built during the 1950s) and for many years this remained a feature unique to Coles telescopes. In addition it had power-extended outriggers, a considerable advance on the manual type previously fitted to all cranes.

When the 10T was first exhibited in May 1966, it created an immense amount of interest. Upwards of 200 orders were taken at the exhibition, with more following shortly afterwards. It had been planned to handle all production at the Glazebury factory, but it was quickly decided to transfer manufacturing of the machine to Sunderland, with its vastly larger re-

*The 1960s saw the launch of three entirely new product lines, each featuring telescopic booms.*

*The Taylor Series 42, a 4-wheel drive telescopic boom crane designed for military use.*





sources. The machine was soon uprated to a 12T (12 ton), and Glazebury factory then developed the 70T (a seven-ton crane), which proved just as popular. Production of the jib-carrier strut-jib hydraulics was eventually dropped altogether, and rapidly newer and bigger telescopes were developed. Crane hirers found that their customers appreciated the reduced time and costs involved in handling long boom lifts, while the crane hirers themselves quickly found that hydraulics can be just as reliable as electrics, as well as being more profitable.

This time there was no need for a military order to provide the push towards improved capacities. The market demanded new and bigger telescopic trucks. By 1968, a 30-ton Hydra truck was available and by 1972 plans were in hand for a 100-tonner; the path which had taken a quarter of a century from EMA to Centurion was to take less than a decade with the Hydra trucks.

The third line of hydraulic development was in the area of rough terrain cranes. Taylor's had some success during the late 1950s with their four-wheel drive Jumbo cranes, particularly in military markets. During the early 1960s they continued to sell these, enjoying particular success in the civil engineering market which their amalgamation into the Steel Group had opened up to them.

In 1966, following the success of the 10T truck crane, the Glazebury factory began work on a rough terrain telescopic which would have the truck crane superstructure mounted on an entirely new chassis. Utilising their own knowledge of high-power 4 x 4 drive systems, they adopted the American-inspired system of 4-wheel steer to produce the first Hydra Husky, launched in 1967. Like the Hydra truck, the Husky was immediately popular, and production of this was also transferred to Sunderland. With the increasing demand for telescopic trucks, however, facilities here were not ideal, and in 1969, Husky production began at the Grantham factory, where it is now concentrated.

All this development work was matched by a vast increase in sales effort. At the beginning of the 1960s, more than 80 per cent of the output of Coles cranes was sold in the UK. By the end, the proportions were almost reversed. In 1966, 1971, 1972 and 1977 the company won the Queen's Award for Export Achievement and the cranes themselves gained half-a-dozen international medals for technical excellence.

By the late 1960s more than 40 different types of crane were produced. Development was also taking place with the diesel-electric machines: while the telescopic took over at the lower end of the capacity range, at the top end the 200-ton barrier was breached with the launch of the Coles Colossus 6000 in 1971, only 8 years after the Centurion was introduced.

The growth rate was not without its price. By 1972, the company was manufacturing cranes using production facilities which were more wedded to an earlier generation of product. Just as hydraulic cranes require fresh design thinking, so they require new manufacturing techniques. In the overwhelming rush for its products since the introduction of the new machines in 1965-67, the company simply had not the time to revamp the factories accordingly.

Moreover, the company was facing considerably increased competition from other manufacturers in the crane business. In order to maintain its position and to build on its unique reputation, the Steel Group had to look towards an association with other manufacturers within the construction industry. Approaches were made and introductions effected between the Steel Group and the Acrow Group, and in July 1972 the former became part of the latter and was renamed the Coles Cranes Group. Once more a change in ownership was to spur Coles to greater heights.

*The Taylor Series 50, a general-purpose mobile which was developed into the Speedcrane.*







*Coles LH1000, with a maximum lifting capacity of 135 tonnes, is the biggest telescopic in the Coles range.*

*The Coles Colossus 6000 still the largest truck crane ever to have been built in the United Kingdom, with a maximum lifting capacity of 250 tonnes.*





# 7 A Division of Acrow

William A. de Vigier and his Acrow Group are one of the success stories—if not *the* success story—of British industry. De Vigier, a Swiss national, came to England at the age of 26 in 1935. A year later he registered Acrow (calling it after Arthur Crow, the solicitor who formed the company, with the aim of having it appear at the top of every alphabetical list of industrial firms). With a workforce of three and a small workshop in Bow, East London, he started producing Acrow props, a revolutionary adjustable steel prop. The major contracting firms recognised the advantages inherent in the prop's design and orders began to flow. Ploughing back profits into the company, Acrow grew rapidly, with an impetus which has continued uninterrupted ever since. Acrow has, probably uniquely among British industrial concerns, registered record profits every year since its inception.

Equally attractive as far as the Coles Cranes Group was concerned was the business in which Acrow achieved their success. Like Coles and excavator manufacturers Priestman Brothers, the major parts of the Group, Acrow was a main-line force in the construction industry. What Acrow needed were capital products like cranes and excavators.

In 1972, both Coles and Priestman had product lines which were now using hydraulic technology which had been developed largely during the 1950s and 1960s. Both had excellent reputations for quality, reliability and product innovation. Both were facing the threat of increasing competition, particularly from American and Japanese manufacturers, and both needed more modern production facilities if they were to face that competition effectively.

The three older established Coles factories in the UK had all undergone a certain amount of modernisation in the past. Sunderland had been given



*Acrow's founder William A. de Vigier with, in the background, a line-up of Coles cranes at the workshops of Crane and Machinery Services Limited, another Acrow Group company.*



a major facelift in the late 1940s and Glazebury and Grantham had had money spent on new production facilities shortly after the 1959 takeovers. However, all three were essentially old-fashioned, showing the signs of their respective ages. Equally important, the company had no proper research facilities.

Beginning almost immediately de Vigier pumped money into new production facilities at all the Coles factories. In 1972, Grantham had seen virtually no new building since the late 1940s. By 1978, only one wall remained of the old factory; everything else had been rebuilt. Similarly Glazebury, Sunderland and Darlington (which Coles established in 1969) have been modernised, a process which is continuing into Coles' second century.

Massive developments have also taken place in the product line. In an increasingly competitive market and utilising a product technology which was still in its infancy as far as cranes were concerned, Coles in 1972 had a product line which needed to be re-vamped once more. Work was started on a new integrated range in each of the categories of hydraulic crane which had been developed in the mid 1960s. During the period 1975-77 these new machines were progressively introduced, giving crane users a uniquely comprehensive choice of telescopic boom cranes.

In 1976, work was also begun in the development of a crane which would supersede the general purpose mobiles, the descendants of the EMA of 1937. During 1977 the Hydramobile 911 was field tested and early in 1978 was officially launched. Combining the simplicity of the diesel electric machines with the versatility of hydraulics, the 911 is the first of a new generation of general purpose cranes. By 1980, the direct descendants of the EMA will have gone the way of their truck-mounted counterparts.

The Acrow years have seen Coles grow from strength to strength. It is now the major contributor to Group profits and the investment which Acrow has made in products, manufacturing, research and development is being repaid. When Henry James Coles started his business in his small Sumner Street workshop in 1879 he can have had little idea of what the future held, but he faced the future with confidence, confidence which was well founded. Clearly, the company faces its second century with confidence which is equally well founded.



*The Acrow prop, foundation of the Acrow business, seen here supporting Acrow 'U-form' panels, which were introduced in 1964.*

*W. A. de Vigier opens the Coles Jubilee factory, which provides sophisticated fabrication facilities at Crown Works, Sunderland.*





# 8 Workmanship of the Highest Character

The title of this chapter is taken from a catalogue which Henry J. Coles issued in 1887. The sentiments which he expressed, that quality manufacturing is an essential prerequisite for success, are as appropriate to the company in its centenary year as they were less than a decade after its foundation.

Coles cranes are manufactured—either directly or under licence—at plants throughout the world. Directly-owned plants are located in Sunderland, Darlington, Grantham and Glazebury (in the United Kingdom), and at Sydney (Australia). Cranes are manufactured under licence in India, Poland, and Brazil.

The oldest established and largest plant is Crown Works in Sunderland. It was taken over in 1939 as the 15-acre site of what had once been the Egis shipyard. Progressively during the 40 years since then, the plant has grown as adjacent property has been taken over to provide the room for growth. Now the site occupies an area of about 100 acres, and is the largest crane making plant in Europe.

Over the last three or four years the factory has seen the benefits of a massive injection of investment capital in new production facilities, testing and despatch capability. The first major effects of this investment was the opening, in May 1977, of the new Jubilee factory. This fabrication shop covers the process of manufacture of all main steel fabrications from incoming raw materials through to the finished machined and painted state ready to lay down in assembly. It was erected at considerable cost, and involved completely rebuilding an entire factory, and refitting it with new machine tools, many of which used advanced numerically controlled technology.

Even before the new fabrication shop was officially opened, work had commenced on the extension and refitting of the test bed and despatch facilities. The existing test bed was doubled in size and new concrete test pads were laid. Each test pad has telephone connections with a new two-storey test bed control centre, together with air and electric services, and the whole area is floodlit for 24-hour working. The new test bed is probably the best-equipped of its kind in the world; the final examination of cranes is vital to their safe and efficient operation, and the new facilities provide a virtual guarantee for cranes leaving the factory.

In tandem with the new finishing arrangements, work proceeded with extending, reorganising and re-equipping the assembly shops. This will remain a continuing process, putting money where the corporate mouth is, and providing tangible evidence of the group slogan—paraded throughout the factories—that by investment we live.

Because Crown Works is so large, the evidence of investment is less obvious than it is at Coles' smaller factories. Much clearer results of the changes since the Acrow takeover can be seen at the former R. H. Neal plant, Dysart Works at Grantham, now the Coles rough terrain centre.

Investment funds have been pumped into this factory during the period 1973 to 1978, involving rebuilding over the entire site. New fabrication, assembly, test and painting facilities followed each other at pace, with a new office complex being opened in late 1977. All that remains now of the original factory is a part of a wall in the machine shop. The result is an



*Detailed attention to quality manufacturing has been a feature of Coles throughout its history. Here, a slew ring is built up by hand.*



# Grantham — The Neal Story

R. H. Neal and Company Limited was established in Ealing, West London, in the 1920s, manufacturing a range of builder's equipment such as concrete mixers, pumps etc. In 1930, they began to manufacture mobile cranes, and in 1937 they opened a factory in Dysart Road, Grantham to increase production. At the time when Neal's took over the Grantham Works, it was owned by a pump manufacturer, although it had earlier been the site of a lunatic asylum!

To begin with, the cranes shared the facilities at Grantham with Neal's other equipment. However, during the 1940s, the company benefited—as did others in the field—from the absence of Coles from the commercial scene, and the cranes became Neal's sole product. During this decade, the factory expanded considerably as new assembly and fabrication shops were built to increase production.

At the time of the Steel Group takeover, the company was manufacturing a range of diesel-mechanical cranes with capacities up to 25 tons, which were proving very popular in the civil engineering and building industries. In addition they made under licence from a New Zealand manufacturer a hydraulic grabbing crane, the Pelican, mounted on a Fordson tractor chassis and designed for coal handling. They also made under licence the Hymax hydraulic mobile crane.

During the 1960s, the product range was expanded almost to the point of indigestion until, in 1969–70, the Husky range was established at the factory. With the benefits of considerable investment over the past five years or so, the Grantham factory is now Coles' specialist rough terrain centre.

Right The Neal Pelican loader, a grabbing crane built on a Fordson tractor chassis. This machine was specially designed for unloading bulk materials from railway waggons.

Below The Neal NS46 diesel-mechanical crane was probably the most widely sold of all the Neal cranes during the 1950s. With a 4 tonne lifting capacity, it was installed in many docks throughout the world.



Left The Neal type GM mobile crane, a 15 cwt machine with a 5.57m (15 ft) jib, which was sold widely during the 1950s.

**NEAL**

PELICAN LOADER



Below Coles Hydra Husky 36/40TSC, one of the range of Coles Hydra Huskies in which the Grantham factory now specialises.







*This bay of the Jubilee Factory at Crown Works is devoted to the production of boom sections, which are built on a flow line basis.*

*Peter Steel (below), son of John Eric Steel, is the Director and General Manager of Crown Works.*



entirely new plant, built especially for the production of Hydra Huskies, even down to an area of excavated ground on which the machines can be put through their rough terrain paces.

Investment at the Glazebury factory was started shortly after the Acrow takeover in 1972, although it proceeded at a slower pace than that at Grantham. The reason for this is that the need was not as great for refurbishment; moreover the existing facilities were not as easily rebuilt. When the Grantham development was in hand, work started in earnest in re-equipping Glazebury and the impetus has been maintained. New office facilities, assembly and paint shops and parts department have all been built, and the work of rebuilding is to continue in the future. The investment was rewarded in tangible form in 1978 when Glazebury became the first Coles factory to win the Acrow Group Production Cup, awarded to the factory which most successfully achieves its production targets.

Coles' newest factory is Springfield Works at Darlington; it is the largest in site area after Sunderland and offers the greatest potential for expansion. In 1976, it was decided to devote Darlington production facilities to manufacture of the new range of Hydramobile general purpose mobile cranes. Development of the Hydramobile 911, the first in this new range, began in the same year, and internal reorganisation of the existing covered areas was started. By the time the machine was officially launched in February 1978, a new paint shop and test bed had been commissioned.

With the new 911 mobile in production, and a full range of larger machines under development, Springfield Works is undergoing the same sort of investment which has benefited (and is still benefiting) the other Coles factories. During the centenary year, additional production capacity will be committed and investment made on rationalising production lines and improving tooling.

The fifth Coles factory, at Revesby near Sydney, Australia, was established to provide a bridgehead in the local market. The Sydney



factory, operated by Coles Cranes of Australia (Pty) Ltd, was opened in 1954. The primary reason was to fulfil a major order for bridging cranes for the Australian Army, a condition of the order being the machines were assembled locally.

During the manufacture of the Australian Army cranes, it became clear that if Coles machines were to be competitive in the local market, then indigenous manufacturing would need to be a permanent affair. Initially production began slowly with the assembly of machines from UK-made kits. When the hydraulic machines were introduced, they proved immensely popular; over 200 Coles Hydra Trucks 120T were sold in Australia during the life of the crane. One major problem has been that the peculiarities of the country's road regulations make special chassis essential for sale of the cranes. Coles Australia overcome this problem by building UK-designed superstructures for mounting on their own design of chassis.

With production running at a rate of some 60 machines a year, Coles Australia has considerable potential for expansion. Sights have been set on South-east Asia and New Zealand as natural areas for development, especially since Coles already have a major slice of these markets, and funds are being invested to ensure that this development potential is fulfilled.

Coles cranes are also manufactured by licensees in India, Poland, and Brazil. Tractors India Ltd manufactures a wide range of machines locally, mainly of the diesel-electric mobile and truck type. For many years, the company has sold machines outside India, and during 1977 the Coles international sales network began to take an increasing proportion of the factory's product. Considerable sales successes have already resulted outside the sub-continent as a result.

The Polish licensee arrangement, through the Polish construction equipment organisation BUMAR, reflects a long and successful relationship between Coles and Poland crane users. From the early 1970s the Hydros 35T has been manufactured by BUMAR, and sold widely.

Whether Coles products are manufactured directly or under licence, the production and design criteria remain constant. Cranes require sophisticated manufacturing techniques, a skilled workforce and experienced design knowledge. Literally hundreds of Coles cranes go into service each year, meeting these criteria with an exactitude bred through a century of experience.



*A Coles mobile L1210 pictured at the Australian factory in the 1950s. In the background is the first of the Australian Army bridging cranes, for which the factory was originally built.*



*The Tractors India factory showing Coles diesel-electric mobiles in production.*



# Glazebury — The Taylor Story

F. Taylor and Sons (Manchester) Limited was established in the days of horse-drawn transport, expanding in the 1930s into vehicle bodybuilding and distributorships for commercial vehicles. The company had a factory at Pendleton, with a second works at Glazebury being established in 1945.

In that year the company was awarded the contract for warehousing cotton imported from the USA under the Lend-Lease scheme. The cotton was stored in bales in various redundant mills and the company decided to build a mobile crane to handle them.

Using a tipper-truck chassis, the company built a non-slewing crane with hydraulic derricking and hoisting gear. This machine, known to the workforce as 'The Coffin', became the prototype for a new design of crane, introduced in 1945 and marketed under the name Taylor Hydracrane.

The earliest Hydracranes were built on ex-War-Department chassis. When the supply of these ran out, Taylor's built their own chassis. During the 1950s, developments of the Hydracranes, notably the Taylor Jumbo Junior and the Jumbo—the latter so called after its peculiarly articulating jib—were sold extensively in the UK and overseas: all told about 1000 were delivered.

In 1959, F. Taylor and Sons was acquired by the Steel Group, and production was concentrated at the Glazebury factory. From the mid-1960s, the Taylor name was dropped, and the factory now produces Hydra Speedcranes and small Hydra Trucks, the eventual successors to the 1945 'Coffin'.



mately 6,800 lb. We shall be publishing details of succeeding models in the near future.

## HYDRAULIC CRANES

A NEW type of hydraulic crane is being marketed under the trade name 'Hydracrane' by F. Taylor & Sons, (Manchester) Ltd.

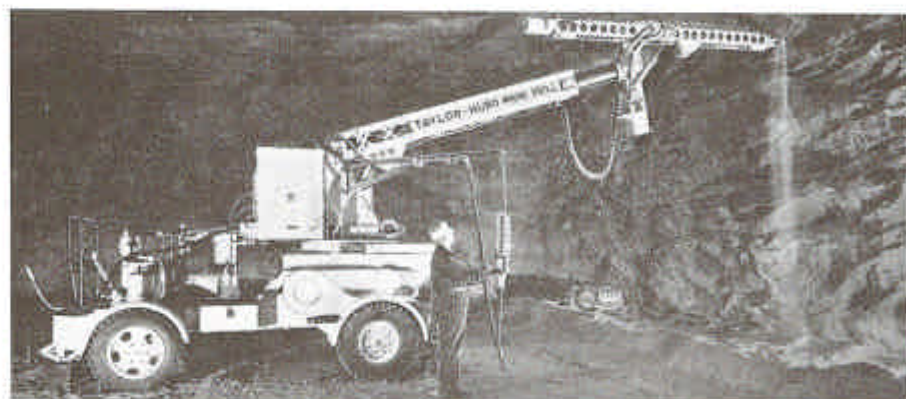
Mounted on a Morris W.D. type chassis the cranes are operated by twin hydraulic single-cylinder rams through a power take-off from the gear box. Three lengths of jib arm can be supplied; measured from the front of the vehicle to the tip these are 8 ft, 10 ft and 14 ft. To allow more manoeuvrability on the road the longer jib arm is



Speed of lift from ground level to maximum height is 45-50 seconds  
Time taken to lower is 20 seconds

maximum loads in the three positions are the 8 ft jib, 30 cwt, 37 cwt, and 45 cwt; the 10 ft jib, 20 cwt, 28 cwt, and 35 cwt; and for the 14 ft jib, 15 cwt, 20 cwt, and 25 cwt. All are tested before leaving works with a 33½ per cent over

Above This press cutting from Mechanical Handling of June 1946 features the first public mention of the new Taylor Hydracrane.



Above During the 1950s Taylor also manufactured mining drills. This machine featured a telescopic boom which was later adapted for use on hydraulic cranes.

Left One of the most significant developments in the Taylor story was the introduction of the rotary coupling in 1956. Until that time, the cranes had 359° slewing capability, with hoses winding round the operator as he slewed! In 1956 a pillar device was invented round which the crane slewed. This system has since been adopted by every other crane and excavator manufacturer.

Below The modern range of Coles Hydra Speedcranes, a highly popular family of general-purpose telescopic boom machines.











Left Crown Works, Sunderland, is Europe's largest mobile crane manufacturing plant, covering about 100 acres. It is also the company's head office.

Above Dyart Works, Grantham, which is the Coles rough terrain centre, has been virtually rebuilt over the past five years.

Right The Coles factory at Glazebury, just west of Manchester, is devoted to the manufacture of Hydra Speedcranes and small Hydra trucks.

Below right Springfield Works, Darlington, is the largest Coles factory in area after Crown Works and as such has considerable potential for development. It manufactures the new range of Coles Hydramobiles.

Below The Australian factory at Revesby, near Sydney, manufactures machines primarily for the local market.

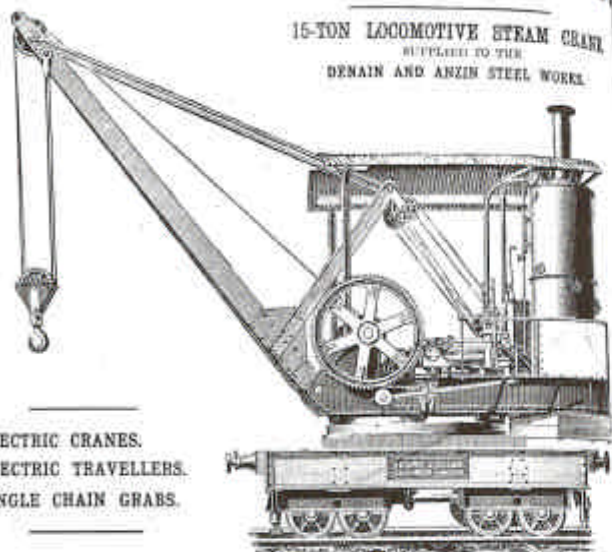




# Advertising through the Ages

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SINGLE CHAIN GRABS.

HENRY J. COLES, SUMNER STREET, SOUTHWARK, LONDON, S.E.

The very first Coles advertisement, which appeared in 1887, features the innovative fully-slewing steam crane which was a "standard" product.

The latest Coles advertisements are frequently full colour, emphasizing the range of products and the strength of the back-up which the company offers.

## Coles-the best range, the best back-up

When you work with Coles you are working with the best. That's why Coles is the best back-up for all your heavy lifting - no work matter.

Consider the vast range of products which Coles has to offer. From the smallest crane to the largest, from the most basic to the most advanced, Coles has the answer for every need. And the best back-up for all your heavy lifting - no work matter.

Circle 10 on Reader Service Card

**COLES**

For more information, contact your nearest Coles branch or write to: The Coles Group, 100, Victoria Road, London, E.C. 1. Tel: 01-499 1111.



Advertising has played a major role in spreading the Coles name throughout the world. In the increasingly competitive world of the 1970s, the 'presence' of the company before its prospective users is extremely important.

**COLES**

and the Coronation

## behind the scenes...

In Coronation activities, no numerous mention, throughout the U.K. and Empire, Coles cranes were playing their part.

Now that we are returning to our normal everyday duties it is fitting to record just one of these many instances. Our illustrations show a Coles Model L2310 Crane with 60-ton jib erecting one of the four triumphal arches in the Mall.

**COLES**

CRANES, TRUCKS &  
ELECTRIC HOISTS

Designed, manufactured and marketed by

**STEELS ENGINEERING PRODUCTS LIMITED**  
Incorporated in England. Registered Office: 100, Victoria Road, London, E.C. 1. Mechanical Handling Department

**CROWN WORKS**

**SUNDERLAND**

**SALES & SERVICE**

**BIRMINGHAM**

**GLASGOW**

**LONDON**

**MANCHESTER**

**NEWCASTLE**

Celebrating the Coronation of Her Majesty Queen Elizabeth II in 1953, Coles produced a series of advertisements showing Coles cranes at work preparing for the celebrations.



## 9 Selling: A Way of Life

Commercial organisations survive and prosper solely through their relationship with their customers: when customers are buying the product the company prospers.

Until 1945 Henry J. Coles Limited (by then called Steels Engineering Products) survived (and at times prospered) without a formal sales force. From the earliest days orders for Coles products were obtained through personal recommendation, through enquiries from prospective customers, through competitive tenders in answer to specific requirements, and, of course, through repeat orders from satisfied customers.

By the 1920s a network of overseas sales agents had been appointed. In some ways, these agents had virtually appointed themselves by writing to Coles asking if they could sell the product: usually the answer was yes and sometimes that was the last to be heard from them!

The change to the present-day conditions began slowly in the late 1930s to be accelerated by the Second World War. By 1945 the need to sell (as opposed to take orders) was imperative. The company had lost much of its pre-war market through the demands for its product by the military: now it had comparatively big production facilities which could easily have stayed unused.

During the period 1945-48 a UK sales force was built up with area offices in a dozen cities and a team of travelling representatives attached to each. Initially this sales force sold all the products of the Steel Group, but it was rapidly reorganised into a mechanical handling force, selling cranes, hoists and electric trucks. The UK sales force established itself in the market, so that by the mid 1950s Coles cranes were outselling all their rivals combined.

At the same time, a proper dealer network was developed for sales outside the UK, largely through the efforts of James Steel. For the first decade or so, this was a relatively small-scale operation, but the dealers who were appointed were of the highest quality: many still handle the Coles account.

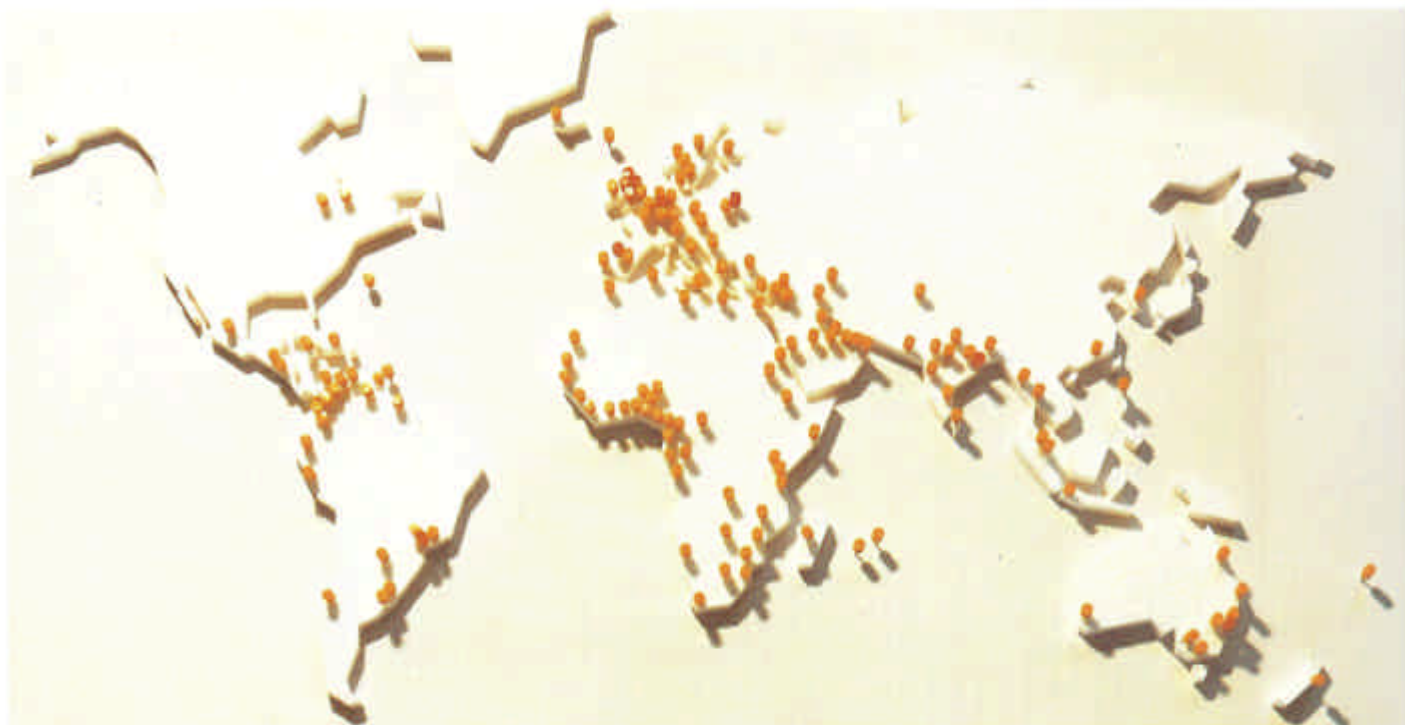
In 1952 the first Export Sales Executives joined the export sales department. This was part of a deliberate attempt to obtain a more consistent effort from the dealers, and if necessary to appoint new ones. The ESE travelled extensively to the dealers who were his responsibility, making sure they marketed Coles product as aggressively and effectively as possible.

When the Neal and Taylor acquisitions were made in 1959 the scene was set for a considerable expansion in sales throughout the world. Neal in particular had a strong sales network, especially in construction and civil engineering markets. They were also more active than Coles in a number of territories. Thus with a sales organisation which was some 60 per cent larger, with strength in depth throughout the world, and with a truly comprehensive product range, the 1960s saw a considerable growth in export markets. In 1960, about 20 per cent of the products of the re-constituted company (called the British Crane and Excavator Corporation Limited from 1964 onwards) were sold outside the UK. During the 1960s that proportion grew until by the end of the decade the export element increased to nearly 70 per cent.



*George A. Ricketts was one of the company's first Export Sales Executives. Seen here on a visit to Ethiopia with one of Haile Selassie's pet tiger cubs, George Ricketts sold cranes throughout the world (including the first ever British crane in the People's Republic of China).*





During the 1970s, the UK and export organisations have been refined and streamlined into the present day set-up. The UK sales force is a direct selling organisation which maintains regular day-to-day contact with UK crane users. Controlled from the sales and marketing headquarters at Harefield near London, it has area offices in six main regional centres (including Harefield), with a force of travelling representatives.

The export sales organisation, which is also based at Harefield, is divided into six territorial groups, with a manager and export sales executives, backed by a team of administrators. The principal role is to manage the dealer network to the benefit of the customer, Coles and the dealer himself. All Coles' distributors are carefully selected for their professionalism and market knowledge, reputation and financial strength. As with Coles' UK organisation, the dealers maintain a staff of representatives and, if the territory needs it, a network of branch offices. In addition to selling cranes they operate parts and service facilities and provide product support.

The sales organisation which has developed over the past quarter-century combines experience and professionalism of a nature which is the equal of any organisation in the industry.

*The Coles dealer network is one of the most widespread in the world, providing sales, parts and service back-up to users on every continent.*



*The premises of Matforce in the Ivory Coast. Typical of the Coles distributor network, Matforce has its own parts and service organisation devoted specifically to after-sales care of Coles cranes.*



# 10 Service for the World

As with the sales force, 1945 is the watershed for the development of the parts and service organisation which is today one of Coles Cranes' most widely appreciated characteristics.

The repair and maintenance of products by the original manufacturer is, in any case, very much a post-war development. Henry James Coles described himself as a general engineer and as such he was similar in most respects to his customers. The result was that if equipment broke down the customer would invariably handle his own repair work.

By the same token the concept of parts stocks is a recent innovation. Until the EMA machines of 1937, cranes were manufactured to order. Although some earlier machines were similar in design, the only advantage which this conferred was in a reduction in the drawing office time needed to produce the machine. More often than not the customers made their own replacements from broken parts.

The service organisation grew slowly from small beginnings from the mid 1940s. The increasing complexity of the equipment and the need for specialist engineers meant that customers were less and less able to cope with demands for repair and preventive maintenance.

Initially in the UK and subsequently within the dealer network, area offices began to have teams of mobile service engineers. Later parts stock were established, so that by the end of the decade the parts and service organisation could provide instantly available repair facilities for cranes throughout the world.

As the complexity of the product line increased in the 1960s, the experience which the Coles organisation had gained from its formation in 1945 enabled it to establish a unique reputation among crane users. In 1972, a new parts headquarters was built at Sunderland, holding in stock more than 80,000 different items. Customer requirements can be referred to two other Parts Departments at Grantham and Glazebury factories, and to other



*A recently developed IBM system has been installed at the Sunderland Parts Headquarters to provide computerised control over parts supply and inventory.*

*The Coles dealer network provides repair and maintenance services for Coles machines in the field. Stronghold are the Coles distributors in Nigeria.*





parts depots in the UK and in distributors' premises.

The whole operation worldwide is telex linked, and a sophisticated system of transport facilities ensures rapid movement and despatch of parts. At the end of 1976, a highly developed computerised control system was introduced. During the centenary year, this system will link all UK Parts Departments and stores. Taken together, the Coles parts operation is the most advanced of its kind in the industry, allowing the organisation to react immediately to customer requirements.

The service department provides direct repair and maintenance facilities within the UK, with a force of about a hundred engineers each with a specially equipped van, to provide readily available service throughout the country.

Increasingly, the central service organisation is basing engineers throughout the world to build on this back-up requirement. Particularly this is happening in the Middle East where hundreds of Coles cranes have been installed over the past few years.

As an adjunct to the parts and service operation, crane repair depots have been established by Coles and its distributors throughout the world. The latest of these was established in the UK at Stockport, where there are facilities to repair ten or more cranes simultaneously. Depots such as Stockport allow cranes to be rebuilt in exactly the same way as they were originally made, while incorporating improvements developed since manufacture.

The Coles parts and service organisation has grown from nothing in just over a quarter of a century. It has grown as a result of the vast increase in the numbers of Coles machines in use around the world; it has also grown because by its efficiency it has given to Coles Cranes a unique reputation for after sales support, justifying the organisation's proud claim of 'Coles Care'.

*The Stockport Central Repair Depot has facilities for repairing long-service or accident damaged cranes. More than 10 machines can be repaired at the same time.*





## II Research: A Key to the Future

The hundred year history of Coles is one of product innovation. From the very earliest years developments have been made to improve or refine the cranes being built, or to devise new machines altogether. Henry James Coles was an inventor throughout his life, and during the years after his death his successors continued the innovative work which he started.

To a considerable extent, it is only recently that this innovative spirit has been organised and directed in a formal sense. The increasing sophistication and competitiveness of the market means that there is no room for the hit-and-miss experimentation which was characteristic of Coles, and indeed the rest of industry, until the 1940s.

During the inter-war years the quest for mobility which occupied Arnold Hallsworth and his staff was largely conducted through the proving (or disproving) of various hypotheses which presented themselves from time to time. It was through trying out bright ideas, rejecting the ones which failed, keeping the ones which worked, and learning from mistakes, that the concept of the EMA was developed to fruition.

Many of the bright ideas came indirectly from the customers. The 1922 lorry-mounted crane was an idea suggested originally by the US forces in Europe in 1917. It was never in fact built for them but when the consulting engineers for the Karachi Ports Trust asked for a mobile crane—a concept which was entirely new—the seed of the idea had already been sown. Similarly, the final design of the EMA crane was developed largely in answer to the military requirements for mobile cranes which had to be robust, simple, easy-to-maintain and reliable.

In the late 1940s, the need to formalise this development work became clear. On the one hand an increasingly competitive market left little room for manoeuvre around a costly mistake. At the same time, the direction in which research should be headed—towards heavy capacities—was becoming more and more clear.

From these small beginnings the Coles research and development organisation grew slowly. A separate section of the drawing office was



*The drawing office at Slack Lane, Derby where many important crane developments were designed prior to 1939.*

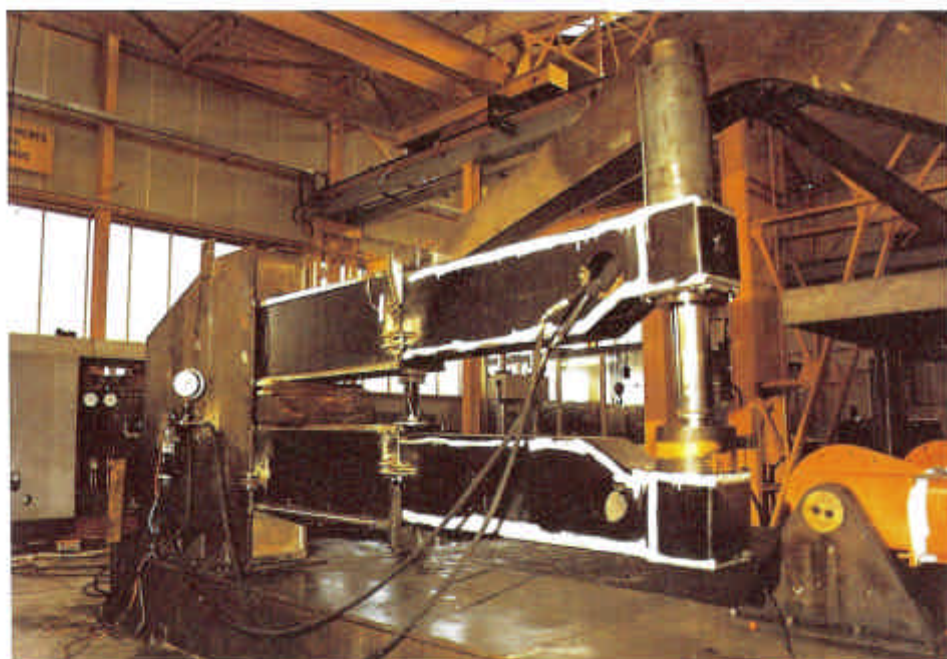


*Above, Bob Lester, who joined Coles straight from school in 1935, is now the company's Design Director.*

*The new Coles Research Centre, with its own office block and self-contained factory unit, providing the most modern facilities for crane development work.*







*The Research Centre utilises many sophisticated devices for testing cranes and their individual components such as, (above) a fracture detector, (left) an outrigger beam test unit and (below) a chemical laboratory.*

given over to forward planning and development, and part of one of the factory workshops at Crown Works was taken over as an experimental shop.

During the 1950s and 1960s this organisation developed a whole string of machines which were at the time entirely new. The 1950s saw increasing capacities as truck cranes moved towards the 100-ton mark while the 1960s saw this work being superseded by the new telescopic cranes.

By the start of the present decade, however, it was quite clear that the research facilities which had existed in a somewhat makeshift way for some twenty years would have to be modernised in order to provide the machines of the future.

In 1975, Steels Engineering Limited, the heating and ventilation engineering section of the old Steel Group, moved out of Crown Works to a new purpose-built factory on the other side of Sunderland. This left an office block and workshop vacant, quite separate from the main factory: as such it was the ideal spot for a research and development organisation.

During 1975 the SEL factory was completely gutted and new machine tools were installed. The office block was similarly refitted and additional staff were recruited. By May 1976 the new Research Centre was opened. It has been designed as a factory within a factory. It has its own drawing office, telephone and telex facilities, laboratories, computer terminals, assembly shop and test bed.

It has been structured to allow prototype cranes to be built from scratch in an environment which allows every stage of production to be closely monitored. The result is that machines are right before they go into production.

At the same time, the Research Centre provides a service to the company as a whole, to examine and assess componentry and materials in use. The result is a tightening of quality controls and a reduction in post-production remedial work.

Although the Research Centre is a more 'glamorous' facility than the drawing office at Slack Lane, Derby, could ever be, it is still designed to do the same job. The crystal-ball-gazing is perhaps more formalised; but new and better cranes will always be the objective.





# 12 The Second Century

As Coles Cranes Limited enters its second century, the company can do so with confidence greater than at any time during its history. The reasons for this confidence are several. Firstly, Coles is secure in the knowledge that it has used its first hundred years to the fullest advantage, establishing a reputation for product integrity, quality and service. Equal confidence is justified in the product range which it takes into the second century. A family of general purpose, rough-terrain and truck-mounted cranes offers the international buyer a complete choice of lifting equipment. The development process, of which these machines are the result, will of course continue. Coles will not relinquish the product leadership for which it fought in earlier years.

Finally, and of increasing importance, Coles can have confidence in consequence of its position as a leading member of the Acrow family. This organisation, with its uniquely consistent record of success, is Europe's major manufacturer of construction equipment. Its founder and chairman, W. A. de Vigier, has made no secret of his ambition to lead Coles to the

*The fleet leaders: the Coles range of truck cranes has been introduced over the last few years to provide a comprehensive family of machines with capacities from 12 to 135 tonnes.*





# Coles for a World in Action

Coles cranes have, during their 100 year history established, an international reputation for quality and service. Coles machines are in use throughout the world, in conditions which range from the cold of the Arctic Circle to the heat of the Sahara Desert.







Above This Coles Hydra Husky 23/25TSC is being used in Guyana on construction of the world's largest floating bridge. The bridge is being built using Unifloes, manufactured by Thomas Storey, another Acrow Group company.

Above left This Coles Hydra Truck 18/20T is one of two similar machines working in Saudi Arabia for Atlantic Plant Construction. It is seen here on steel erection work at a new power station near Riyadh.

Above far left This Coles Colossus 4000HLT is one of a number of Coles Colossus Port Tower cranes in use in Australia on container handling work.

Below left This Coles Hydra Speedcrane 6/8T, owned by the Coles dealer in Lebanon, is seen at Tartous Port in Syria, assembling earthmoving machines.

This Coles LH1000, owned by Sarens NV in Belgium, is seen here building an electricity pylon. It reduced the turnaround on this job from ten to four days.





premier position in world markets. In striving to achieve this ambition, he has invested massively in new production facilities, giving Coles the potential for success greater even than that achieved at any stage of its development thus far.

Confidence is essential for success. Britain as a nation—and each of the companies which are components of its industrial structure—faces increasing international competition. Coles is fortunate in having faced this kind of competitive pressure throughout its corporate life. The sales, marketing, manufacturing and product development functions have been tested and refined giving the organisation a highly competitive edge. This makes the company a front runner in its industry, with exports consistently representing more than 70 per cent of total output.

A centenary might be seen as the end of a story, since a hundred years of continuous activity on one product line is a record limited to very few companies. Coles sees 1979 as a beginning. The new manufacturing resources, new products and forward sales strategy reflect that attitude. The essential ingredient—confidence—is strongly evident at all levels in the organisation and the forward perspective long-term and coherent.



*David Steel, son of Sir James Steel, was appointed Managing Director in 1976; he was previously the company's Marketing Director.*

*Coles Hydra Huskies, a range of rough terrain cranes built at the Grantham factory, have established a considerable reputation for rough terrain work.*





# Coles Chronology

24 June 1847	Birth of Henry James Coles
29 October 1860	Birth of Walter Joseph Coles
1860	Henry Coles apprenticed to S. Worssam and Company (later A. Ransome and Company)
1863	Birth of Ernest Harcourt Coles
1870	Henry Coles joins Maudslay, Sons and Field
1872	Henry Coles joins Appleby Brothers
15 February 1875	Henry Coles marries Amy Elizabeth Burkes
29 August 1877	Birth of Henry James Coles junior
1878	Appleby Brothers leave Southwark
1879	Henry Coles takes over Appleby Bros' Summer Street factory
2 March 1884	Birth of Harold Lewis Coles
1898	Closure of the Summer Street factory and move to Derby
28 April 1905	Death of Henry Coles senior
7 March 1907	Incorporation of Henry J. Coles Limited
1913	Introduction of rail crane with internal combustion engine
June 1917	Death of Henry Coles junior
December 1922	Launch of Tilling-Stevens lorry crane
12 March 1924	Death of Walter Coles
27 February 1925	Death of Harold Coles
28 December 1925	Death of Ernest Coles
20 October 1926	Sale of company to A. W. Farnsworth
1928	Introduction of first diesel-engine crane
1931	Automatic reversing steering patented
13 July 1937	Order received for 82 EMA mobiles
31 January 1939	Sale of Henry J. Coles Limited to Steel and Co. Limited
1939	Opening of Crown Works, Sunderland
11 December 1943	Incorporation of Steels Engineering Products Ltd
1948	Derby factory closed
	12½-ton crane introduced
22 March 1951	Henry J. Coles Limited dissolved
1952	20-ton crane introduced
1954	41-ton Coles Colossus introduced
6 November 1956	Death of John Eric Steel
1956	F. Taylor and Sons launch first fully-slewing telescopic crane
1959	60-ton Coles Valiant introduced
	R. H. Neal & Company and F. Taylor & Sons acquired
1962	First Hydra Speedcranes introduced
1963	100-ton Coles Centurion introduced
20 March 1964	Change of name from Steels Engineering Products Ltd to British Crane and Excavator Corporation Ltd
1966	First Hydra Trucks introduced
1967	First Hydra Huskies introduced
1969	First 30-ton Hydra Truck
13 March 1970	Change of name of British Crane and Excavator Corporation Ltd to Coles Cranes Ltd
1971	250-ton Coles Colossus introduced
1972	The Coles Cranes Group acquired by Acrow Ltd
1973	100-ton capacity LH1000 telescopic boom truck introduced
1975-77	New ranges of Speedcranes, Trucks and Huskies introduced
1976	Research Centre opened by W. A. de Vigier
1977	Jubilee factory opened by W. A. de Vigier
1978	Hydramobile 911 launched

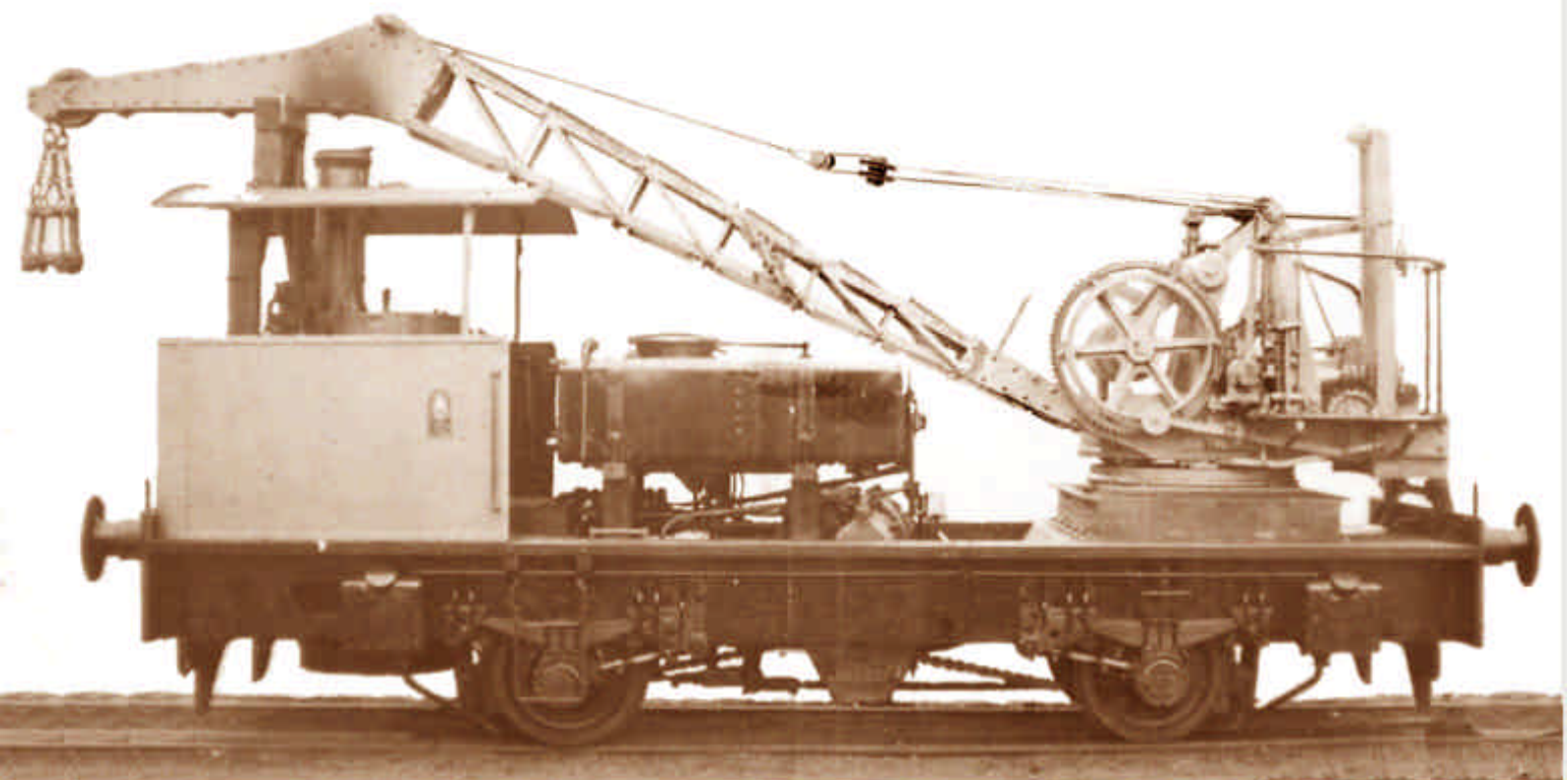
Coles Hydramobile 911, the first of a new range of all hydraulic self-propelled mobile cranes. Launched in 1978, it is built at Coles Darlington factory.







Illustration on rear flyleaf - Hydra Truck 45/50T



Steam engine (by others) with Coles steam crane fitted.  
The engine supplies steam for the crane.

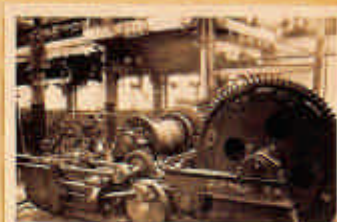




(1)



(2)



(3)

Improved "Allsteel Bala" Coles steam crane,  
on permanent way undercarriage with buffers  
and drawgear also rail clips & outrigger jacks.  
Duty 7 TONS @ 16' RADIUS, 5 T. @ 20', 5 T. @ 30' & pro rata  
all free on rails. Hoisting speed 7 TONS @ 65 ft. per min.  
Weight in working order 30 tons; non-shunter 28 tons.  
Construction - steel castings and sections bolted or  
rivetted together.

(R. Kilmer, Sup. & Co. (1928))

The first all-steel  
"Coles" crane, steam  
shunting type 4'-8 1/2" gauge.  
Duty 7 TONS AT 16'-0" RAD.  
(free on rails) & pro rata.

1. Crane on test.
2. Blow-up of superstructure.
3. View of engine & gearing.

(Autumn 1927)

This illustration is taken from a scrapbook kept by Clifford S. Shaw, who worked for the company in the late 1920s. Such scrapbooks were often invaluable, since they represented the only accurate reference to a crane after its despatch.