

LAUNCH OF  
No "534"  
*in the presence of Their Majesties*  
THE KING & QUEEN  
*Wednesday, September 26, 1934*  
*at Clydebank*



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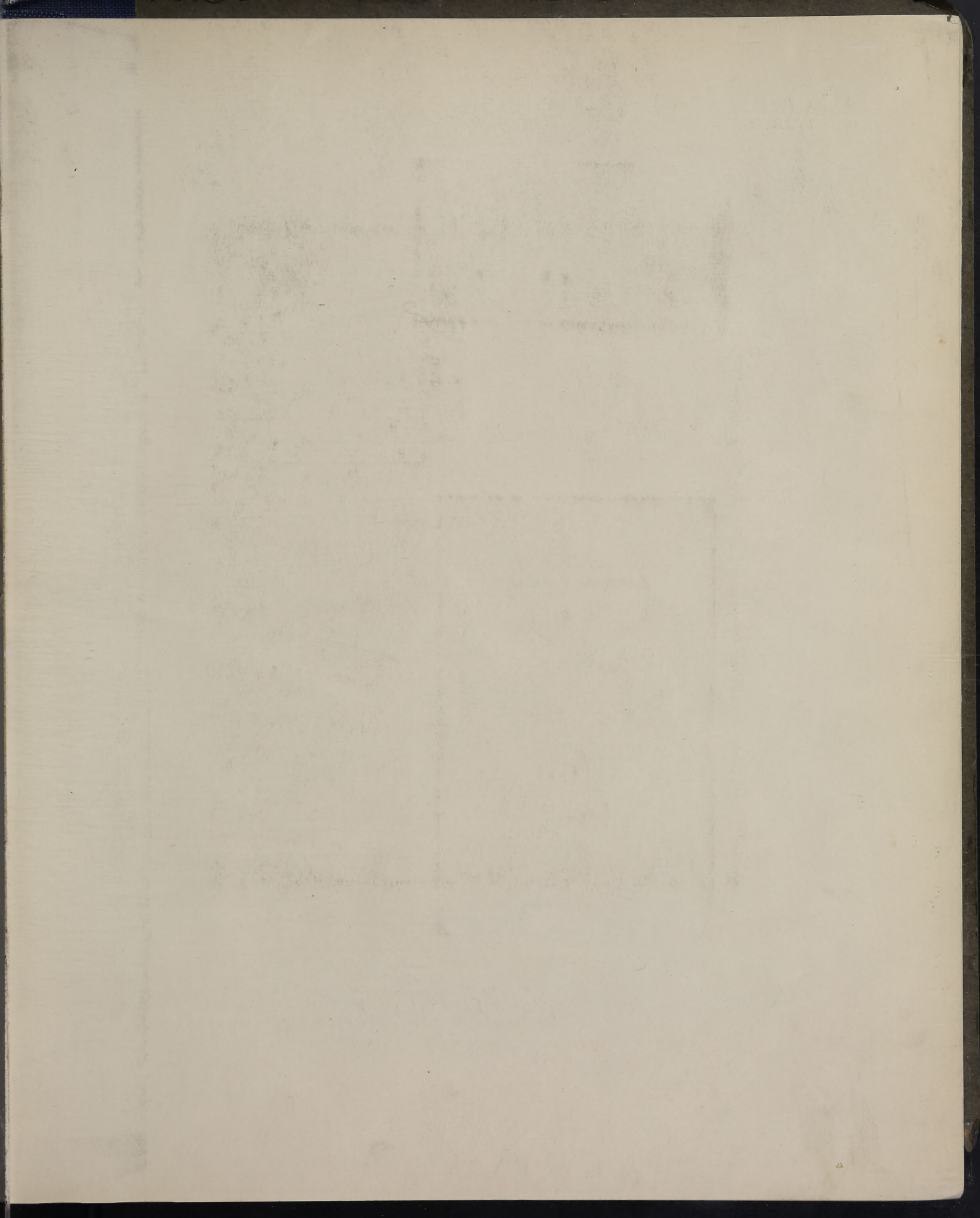
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1934



# Number "534"

BY JOHN MASEFIELD

*Specially written by the Poet Laureate to mark the occasion  
of the launch.*

*For ages you were rock, far below light,  
Crushed, without shape, earth's unregarded bone.  
Then Man in all the marvel of his might  
Quarried you out and burned you from the stone.*

*Then, being pured to essence, you were nought  
But weight and hardness, body without nerve ;  
Then Man in all the marvel of his thought,  
Smithied you into form of leap and curve ;*

*And took you, so, and bent you to his vast,  
Intense great world of passionate design,  
Curve after changing curving, braced and masst  
To stand all tumult that can tumble brine,*

*And left you, this, a rampart of a ship,  
Long as a street and lofty as a tower,  
Ready to glide in thunder from the slip  
And shear the sea with majesty of power.*

*continued*





HIS MAJESTY KING GEORGE V

*Vandyk*

# Number "534" (continued)

*I long to see you leaping to the urge  
Of the great engines, rolling as you go,  
Parting the seas in sunder in a surge,  
Shredding a trackway like a mile of snow*

*With all the wester streaming from your hull  
And all gear twanging shrilly as you race,  
And effortless above your stern a gull  
Leaning upon the blast and keeping place.*

*May shipwreck and collision, fog and fire,  
Rock, shoal and other evils of the sea,  
Be kept from you; and may the heart's desire  
Of those who speed your launching come to be.*

*John Macfield.*





HER MAJESTY QUEEN MARY

*Hay Wrightson, London*

HIS ROYAL HIGHNESS THE PRINCE OF WALES  
MASTER OF THE MERCHANT NAVY AND FISHING FLEETS

*Vandyk*



# Masterpiece in the making

by

E. P. Leigh-Bennett.

*A pen picture of the activity in the Yard  
shortly before the Launch*

**H**IGH hope, grim disappointment, deep relief felt throughout the nation—such has been the history of a skeleton ship, known as “534” all over the world until the launching. Let us take a look at her.

It can be noticed that in Britain, work of supreme importance or quality is often done in drab and unpretentious places (the mind leaps instantly to a hat shop in St. James's Street); and it is significant that this is true of the famous and closely-guarded place known very simply, almost tersely, as “John Brown's Yard.” You probably go to it in a swaying motor-bus from the conglomerate of Glasgow, and it sets you down at the plainest of wooden gates with a contiguous guardroom, wherein close interrogation follows. Beyond, there is a paved deserted open space bordered by a cluster of featureless office buildings; a murmur of some hidden activity in the distance; but of the world's finest ship, no sight. Non-committal men in spartan offices survey you

intently, and confirm your intrusion with grave mien. One accompanies you, with patience.

Rounding a corner of a dour building you get your first sudden view of her—a monstrous bow which rears into the sky. Another hundred yards, another corner, and there she is—one thousand and eighteen feet in length, and about one hundred and thirty-five feet high; trussed in a forest of timber, with a roar of vigorous young life vibrating from her immense dark red body. Of course you stand transfixed and gaping, for quite a time. The mind has nothing to work on to attune itself to such a spectacle. You feel like a fly crawling along the floor at the base of a hung carcass of Highland beef. It is impossible for any but marine engineers to appreciate the extent of the matter except with the help of mental image. So, to enable you more fully to understand the scope of this maritime achievement, here are two simple comparisons. She is exactly the same length as the first hole at Prestwick golf course—339 yards. And if you could stand her up on one end alongside the Eiffel

## Masterpiece in the making (continued)

Tower in Paris, she would top that structure by 18 feet.

A number of pictures have been drawn accurately to scale for the elucidation of the lay mind. One such shows her set down in Trafalgar Square. The Nelson Column is on her starboard beam; the crown of Nelson's hat reaches to about the boat deck. Her stern has pushed in the walls of the Garrick Theatre in Charing Cross Road; her port side only just fits alongside St. Martin's Church and South Africa House; the National Gallery is severely damaged, and her stem has protruded into Whitehall.

Other world-famous structures, drawn to scale with her as a background, look puny. The upraised hand of the Statue of Liberty in New York Harbour would reach only just above the bridge. The tip of the towers of Westminster Abbey would not reach to the top of her mainmast. The head of the Sphinx would be well below the main deck at the stern. The top of the Magdalen Tower at Oxford would only be half-way up her middle funnel. The roof of the Berlin Opera House would just about reach to the deck of the fo'c'sle. And one of the promenade decks is more than twice the length of the façade of Buckingham Palace.

### *At First Glance*

Faced with all this, and with the duty to record it, you realize that you must try to keep the narrative as simple as possible, or be drowned in a sea of adjectives. And all the time there are those great bows sheering up into the sky before you. But you are helped in this at first by the apparent simplicity, the suavity of the work that is toward. (This turns out to be merely a trap to catch your

pen, but no matter.) A high skeleton-framed lift stands alongside the gargantuan structure, and in it you ascend with a posse of self-contained overalled men to the boat deck, which they are now making. Through an aperture in her side, and then into the tumult! Pneumatic riveting of steel plates emits a high-pitched scream. Hundreds of pneumatic and hydraulic riveters are at work at this moment (the latter with pressure of a ton to the square inch in great lobster-like claws), reverberating through the empty steel shell of the ship, through all her twelve decks, over all her tremendous length.

### *Her Men*

A score or so of men are hammering red-hot steel rivet heads into steel plates; beating the life into her with fire and sweat. Your ears throb; your eyes smart; your legs tremble; but you get used to it. Meanwhile, there is the view in the sunlight of the summer morning. It is magnificent. The Scottish hills (twenty, thirty miles away), the grey-green Clyde water wriggling towards the haze of sea; the great cluster of Glasgow in the distance under its smoke pall; a spatter of yellow buttercups in a wide, peaceful meadow far below; but hell let loose up here.

In the open, on top decks where you move in less restricted spaces and can see knobby obstructions (snares for unwary feet), and where yawning caverns of hatches are exposed, the men themselves are thrown into strong relief for intent contemplation. You can talk to them up here too, if you pitch your voice in the right key; you will probably understand about one-tenth of what they say, but you will catch the drift of things. They are small men for the most part, with the sharp-



SIR PERCY E. BATES, BART., G.B.E.  
CHAIRMAN, CUNARD WHITE STAR LIMITED

*Dorothy Wilding*

## Masterpiece in the making (continued)

featured, rather "peaky" look of the Lowland Scot. There is a hint in the eyes which implies "I am as good a man as ye are; aye, an' a damn sight better." For has any man from any other place ever beaten a Clydeside riveter at his job? But there is humour, also, glinting there, flashing out on the slightest provocation. And high-grade efficiency is stamped all over them.

Adversity—scorching, lasting—came upon these men in the midst of their work. A sudden silence fell upon this great yard. For two years and four months there was no sound, save the seeping mutter of the tides and the throaty cawing of the rooks resting in the cranes which brooded over the deserted hull. But the men knew it had to be—and just waited patiently, with tightened belts. Then, as the world opened to them again with a welcome widening of the yard gate on that day last April, the irrepressible humour flared up instantly, and one heard, under the joyous wail of the bagpipes, the inevitable badinage. As from an old man of eighty-four who, shouldering his heavy tool-chest back to work, admonished the crowd with "Oot o' the way o' y'r betters, boys." And the quick response, "Whit's a' the hurry, grand-feyther? Awa' hame te y'r bed; the launch is no' till the autumn!"

### Ten Million Rivets

So, as one observed them closely, there was quite obviously an added zest in their movements, their every shrewd glance. Official records have it that into this ship are driven 10,000,000 rivets which, if formed into a chain, would reach from London to Newcastle—270 miles, and collectively weigh 4,000 tons; yet every single rivet has a man's

personality stamped into it. It represents his concentration and craftsman's pride, his tenacity—and his backache. This was manifest to all observers on Clydeside throughout the eighteen months of careful labour; and though rich carpets, lustrous enamel and soft upholstery will hide many of those rivets, that simple fact will remain her pre-eminent attribute through all her triumphant days.

### Bones and Sinews

On the lower decks, in the tinned-salmon-red gloom, the screaming clamour of work is intensified by steel walls and roofs. There are fewer men to be seen with their species of Thompson sub-machine guns. The vast spaces are comparatively empty, except for several great rubber snakes, containing compressed air, which coil across steel floors and have their extremities hidden in holes. Hereabouts the bones and sinews have been already fashioned, and embellishment—eighteen months of further craftsmanship—is not yet due. But in those interminable corridors, and between the gaunt red rivet-studded walls, you gain some appreciation of the steelwork statistics. You are not so surprised now on recollecting that the steel plating of this ship would pave the main road from London to Nottingham—and would entirely cover St. James's Park and The Mall. The red walls have little guiding placards here and there, telling you where you are. So vast is she, and daily becoming more complex with layers of beauty, that men from the offices in the background, who have not visited her perhaps for several weeks, often lose themselves. But you, an observer, care little if you *are* lost, as she has you so



THE RIGHT HON. LORD ABERCONWAY  
CHAIRMAN, JOHN BROWN & CO., LIMITED

*Copyright by John Brown & Company, Ltd.*

## Masterpiece in the making (continued)

completely in thrall. You can see where they will cut the 2,000 portholes and windows, which will contain an area of glass exceeding 2,500 square feet. You pass spaces allotted to room after room, mostly with their own bathroom—the word “cabin” seems inadequate—reducing to pallid insignificance the longest hotel corridor to which you have ever relegated your shoes at night. Visualizing just a few of the rooms you now accept without reserve the official statement that there will be fifty miles of plumbing work aboard.

### Steep Steel Cliffs

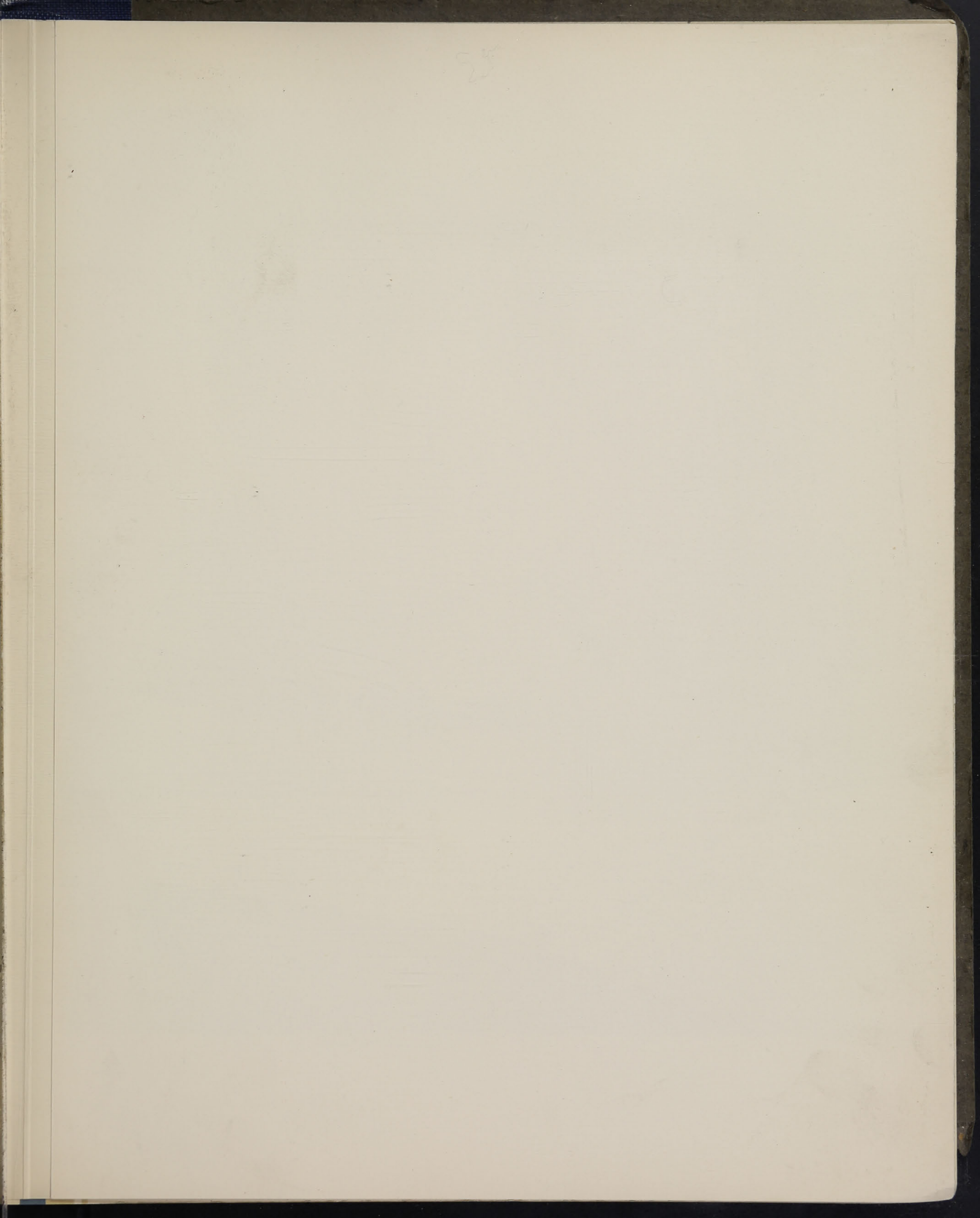
You can examine the tremendous spaces set aside for the kitchens and their ancillary service rooms. See where the swimming bath will be—as yet only a wide, deep gash in her body. . . . Now your wanderings have brought you to a lofty red chamber where presently a thousand people will sit comfortably at dinner in sybaritic surroundings. Tall trunks of fir trees support it for the moment, ready to take any untoward stresses that may be set up when she moves to her destiny down the slipways. The dining saloon has a culinary atmosphere already, for there is a knot of gravely preoccupied men in a corner, having lunch. Their silver grill is a rusty piece of steel plating made red-hot in a rivet furnace; the menu is sausage, thick toasted bread and something in an enamelled can; their seats the rivety deck. If ever you are in here one night in a white tie, I hope you will remember them. Meanwhile, a more acute comprehension of the size of this dining saloon and foyer may be conveyed by the fact that herein could be placed quite easily alongside each other the first Cunarder, “Britannia”

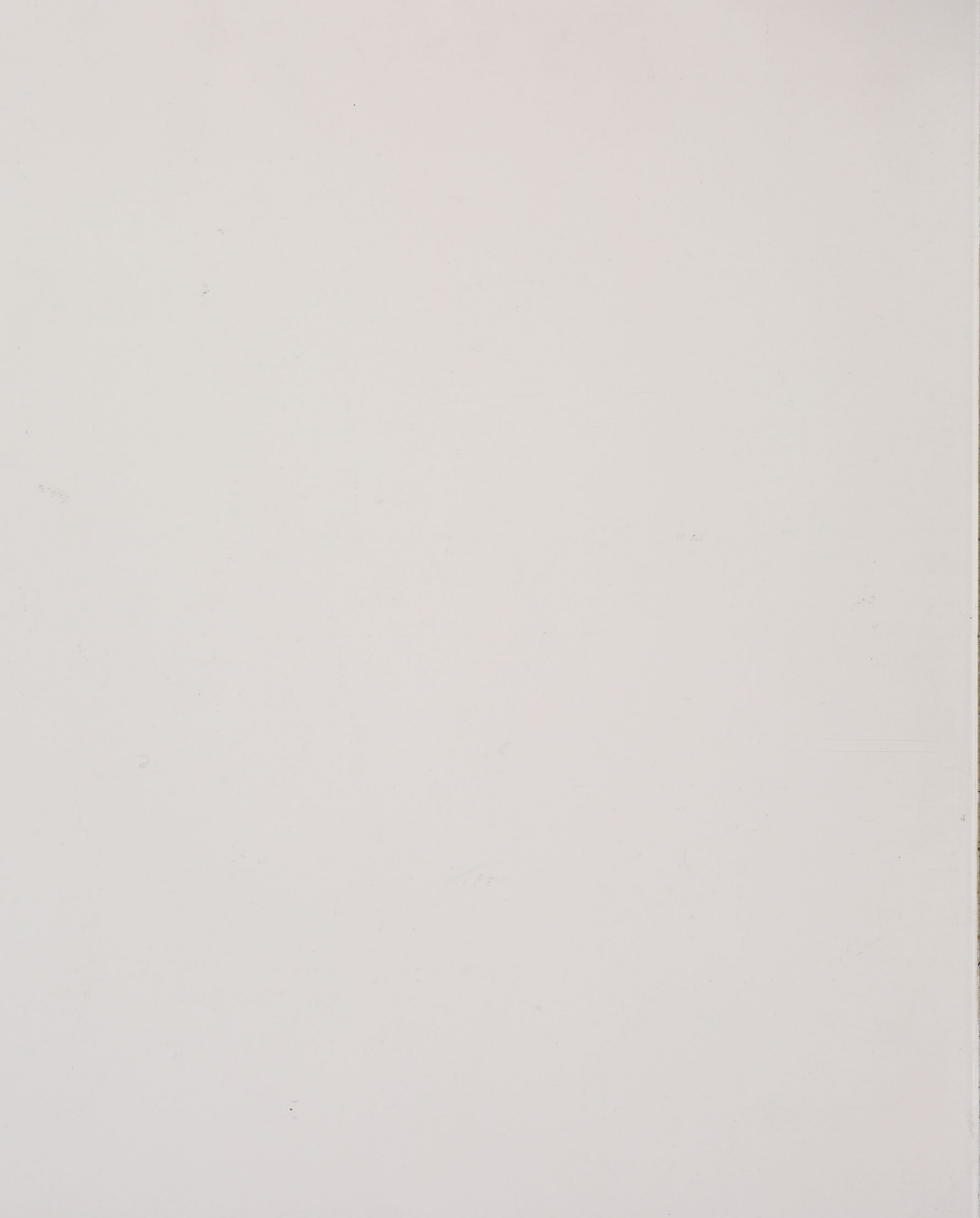
(1840), and “Pinta,” “Santa Maria” and “Nina,” the whole of Columbus’s fleet. In the first class lounge the space is such that nine double-decked passenger omnibuses placed abreast, with three “Royal Scot” engines superimposed on their roofs, could pass under the arch formed by its roof and walls. Here and there on your journey you see smaller spaces—little canyons between steep steel cliffs—and you are puzzled. They are for some of the twenty-one electric lifts that will serve the ship’s people.

You descend steel ladders gingerly; down, down, into darkening deeps, and walk precarious planks set invariably at a slope and prone to disquieting undulations, towards some of the engine and boiler rooms. It is during this progress that you realize why shipyard foremen so often and so wisely wear bowler hats—you being bareheaded. For there is a sudden hissing noise past your head and a *splat* on the plank you tread; and there lies, simmering wickedly, a red-hot molten mass about the size of a saucer, from some portable rivet furnace in the hidden heights.

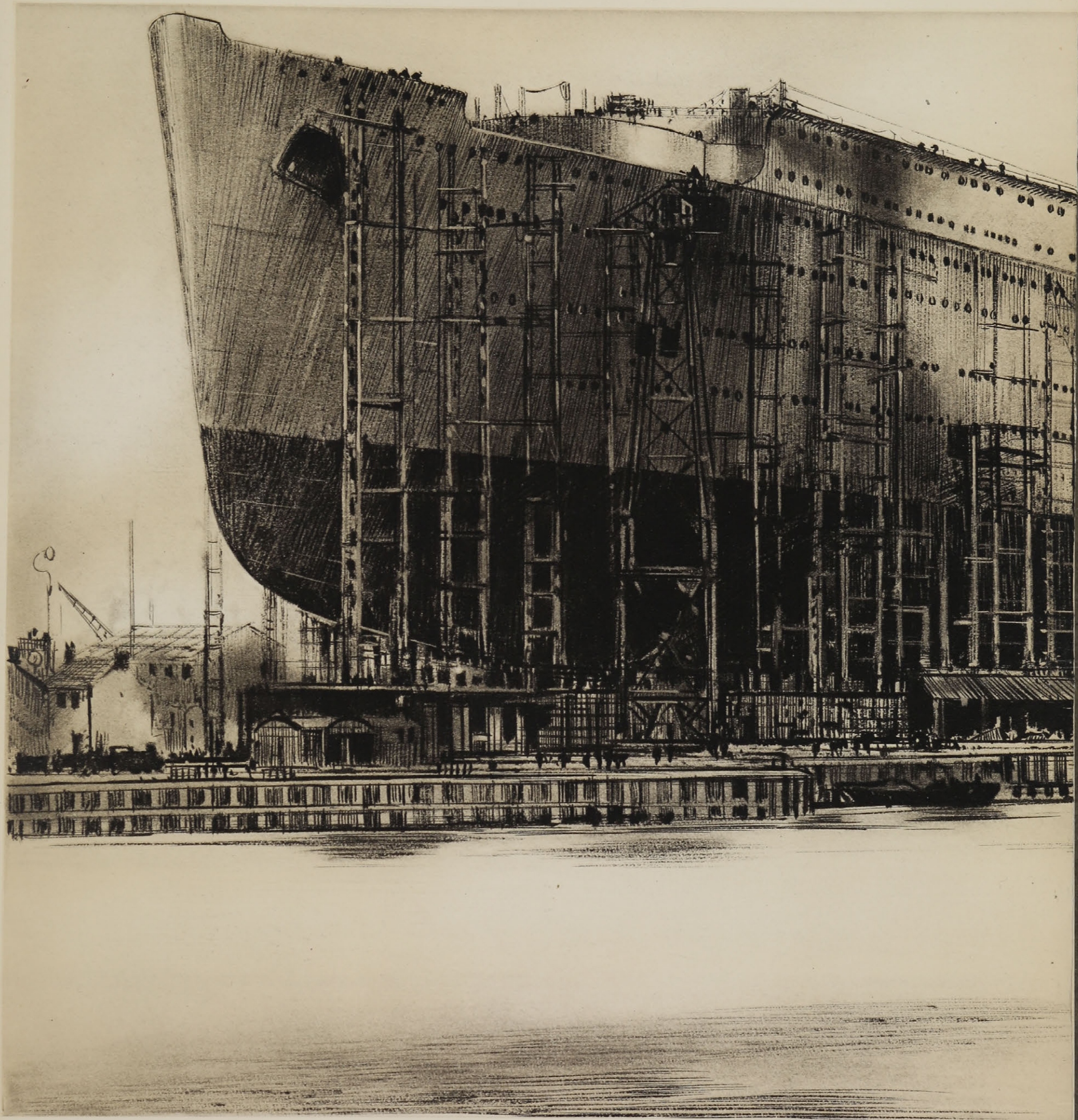
### Immense Boilers

Twenty-seven immense boilers there will be, occupying five rooms; over 2,600 feet of main steam piping will lead from the boilers to the engines. For electric power, seven turbo-generator sets, developing 10,000 kilowatts; the greatest power station afloat, sufficient to supply lighting and public services for a town the size of Brighton. “The propelling machinery,” they say, “will consist of a quadruple screw arrangement of Parson’s single reduction geared turbines.” Yes; but we do not venture a dive into the











Frank A. Mason







SIR THOMAS BELL, K.B.E.  
MANAGING DIRECTOR, JOHN BROWN & CO., LIMITED

*Elliott & Fry*

## Masterpiece in the making (continued)

deep technique of that. What does, however, bring stark reality into the forefront of the mind is the fact that every single one of the 257,000 turbine blades, varying in length from two to sixteen inches, will be tested and fitted by hand. Seeing these careful men we know what testing means. By the way, these geared rotary turbines store up sufficient energy to run, like spinning tops, along the road from Liverpool to Manchester.

### *Ship within a Ship*

In the bowels of the ship they are as yet only making ready for these colossal units of machinery. Men in dungarees, with electric lamps strapped to their heads, are crouched in dark corners, rigging what look like stupendous "Meccano" sets. Alone they work, in dank gloom, or in little clusters of twos and threes, making understanding signs to each other in the inferno of oxy-acetylene welding, which throws grotesque lilac shadows on the red-lead walls. Much of the work down here cannot be supervised all the time; the men proceed on their own, most of their actions depending upon their individual skill and integrity; yet well and truly are these engine-rooms prepared for the vital forces soon to rest there. In one of the boiler-rooms—loftier and wider than many a country church—great girders rear up on either side, of the sort of girth you see when watching the building of a big departmental store. The resilient strength of the whole vast enterprise is most marked down here. A network of temporary girders have been erected—hundreds of tons of steel—huge black cradles of additional strength for the launching day only; then they must be dissembled and come out. But on the day, before the engines are in place

and everything "laced up," these comforting cradles may be needed—and so . . . .

You can go even lower than the engine-rooms and stand on the double bottom of the ship that stretches throughout her length. Here you have over six feet of headroom. She is a ship within a ship, for she has an inner and outer skin, with over 160 watertight compartments below the bulkhead deck. The space between the inner skin and the outer shell of the ship, in some places, is nearly twenty feet wide.

### *Massed Mechanics*

"Marine engineers by means of the engines have breathed into the vessel a living soul."

When taking you to the engine shops in John Brown's yard, even the unemotional technician admits, in explanation, that there is nothing in the world like these engineering units for size. You experience an overpowering impression of immensity. You have of course never seen such boilers, such huge condensers—nobody has. There has never been constructed so gigantic a rudder for any vessel in marine history. When finally in position it will weigh nearly 150 tons—equivalent to the weight of twenty-five tram-cars. Even these experts, not given to egoism, have to admit that this is the finest rudder ever designed, although the design is theirs. Another impression is, as it were, shot at you with the information that the total weight of the huge castings which form the shaft brackets, stern-post, rudder stock and frame approaches 600 tons. One of these castings alone, the rudder stock, weighs 90 tons. They have to cut a key-way in this rudder stock to a limit of 10,000th of an inch. The steering gear will weigh about 160 tons,



A MONSTROUS BOW WHICH REARS INTO THE SKY

*Stewart Bale*

## Masterpiece in the making (continued)

which is three times heavier than any steering gear yet built.

But the men in these engine shops have been doing the same sort of job in the same place all their lives, and so have become master craftsmen. Here, for instance, is a man guiding a machine that is cutting steel shavings from a 3 ft. shaft that will form the driving centre of the lower pressure turbine on one of the four propeller shafts. If this man made an error it would cost the builders about £15,000. But he never does. They show you a 60-ton gear-wheel being adjusted "to a limit of half a thou" for grinding—a very difficult job which may take a week. The heavier the object, as they explain (seeing your stare of horror), the more difficult to adjust to a fine limit. Behind a cage in an isolated place they show you a gear-wheel 14 feet in diameter. Its teeth are being cut to a 1,000th of an inch of accuracy. It revolves, so slowly as to seem almost motionless, ceaselessly for over two months on this machine. And there are five of these gear-wheels to cut—four and one spare.

### Mammoth Castings

Some of the steel castings came to them with much anxiety and trouble. There was, for example, the unique railway journey of the stern frame (190 tons), the shaft brackets, lower main rudder posts and the upper stock, from the Darlington Forge Company. It is twenty miles only from Darlington to Haver-ton Hill Dock on the Tees, but the rail journey took six hours, during the quiescence of a week-end. It took them a week to place this extraordinary freight on the eight special steel trucks; every inch and every pound had to be meticulously calculated. Six hundred

and twenty-five tons was the load of that crawling train, with inch clearances only under some of the bridges. During the last seven miles of the journey, the grotesque train had to run on the wrong set of metals, with some of its load overhanging the other "road" by twelve feet; wherefore the driver had to go forward on foot at each signal box and obtain permission in writing to proceed. But there was not a scratch or a hitch during rail and sea journey from the forge to the Clyde.

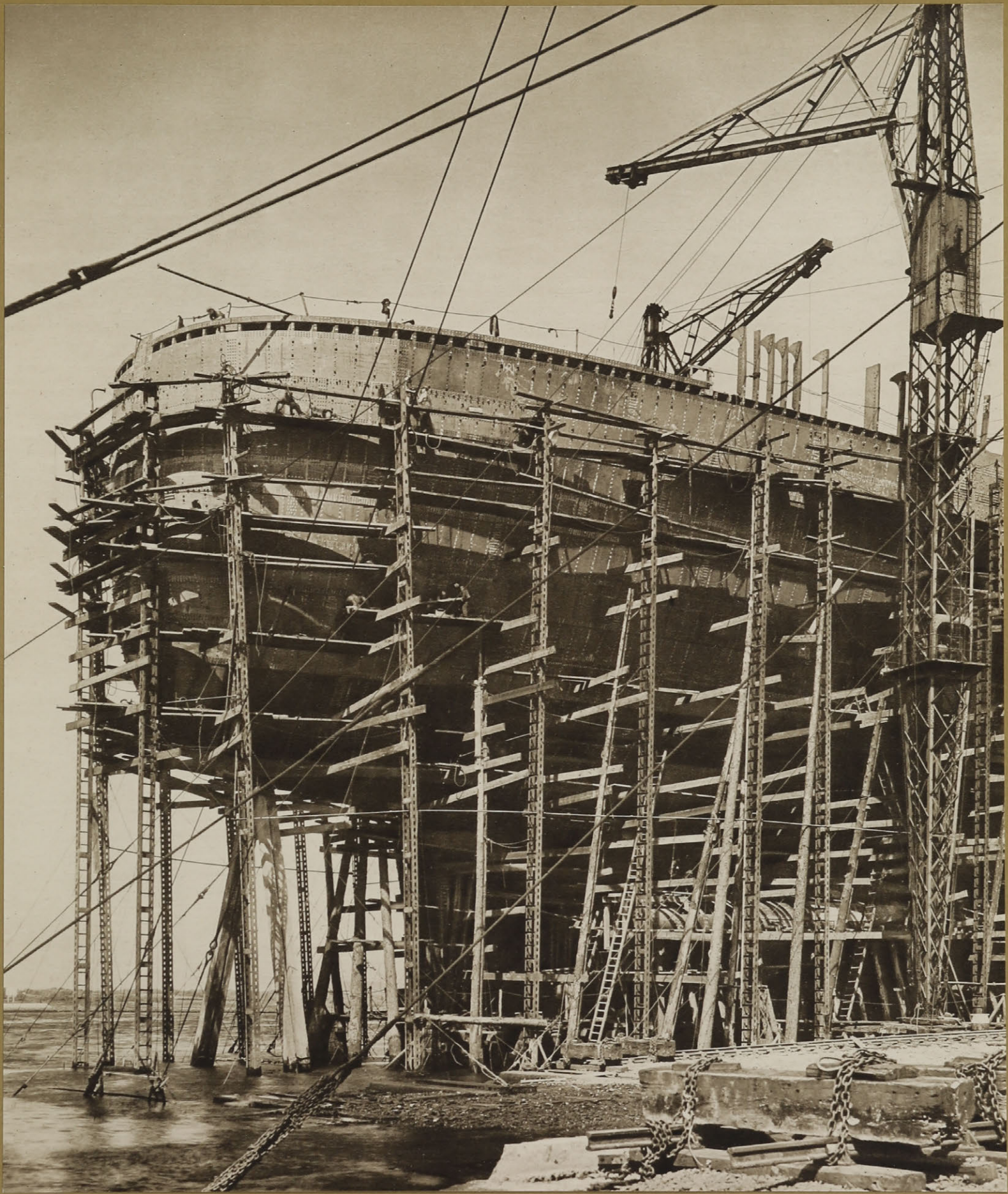
The men who made these castings are the finest steelworkers in the world. Over 1,000 tons of molten steel were in the ladles for these castings. A ton and a half of screws and nails, and half a ton of glue were used in the construction of the wooden patterns for the moulds. Everything done by hand, and the greatest discrepancy before these mammoth castings reached their finished state was one-sixteenth of an inch.

### Elaborate Cable Tests

There are four manganese bronze propellers; each weighs 35 tons and is worth about £7,000. The propeller shafts are like great guns, only much longer. They have linings of lignum-vitæ; an inexperienced eye can see at once with what care each of the thousands of little wooden blocks has been laid. Is it not curious that lignum-vitæ acts as a lubricant when in contact with water, and yet as fuel on your fire at home it is unsurpassed?

The two great anchors, each weighing 16 tons, of special design, are the largest, naturally, that have ever been constructed for an ocean liner, and they will be recessed into the bows to obviate wind resistance; with 165 fathoms of cable (990 feet), weighing 145 tons, attached to each. Elaborate tests were





AN OVERPOWERING IMPRESSION OF IMMENSITY

*Stewart Bale*

## Masterpiece in the making (continued)

made during the manufacture of these cables to ensure their strength. A three-link piece of chain was successfully subjected to a strain of nearly 700 tons. This exceeded official requirements by over 400 tons. Then they took separate links, haphazard (each has a diameter of  $4\frac{1}{8}$  inches) and bent them double while cold. During this ordeal they showed no signs of strain.

Writing of cable, the mind flicks for a moment to another kind of cable on board; the cable required to carry electric energy throughout the ship. There will be 4,000 miles of this. Visualize a length of cable stretching from New York to San Francisco, and nearly 800 miles beyond into the Pacific Ocean—and there you have it. That amount will be needed.

### *For the Moment of Movement*

Any one man, or any crowd of men, waiting and watching intently on the great day that crowns endeavour, will see very little of the actual means whereby she takes to the water. There will be a low growl, increasing to a thunderous roar, and sparks and a great cloud of dust; tremendous human tumult; massed excitement and fervour. One's heart will surely seem to miss a beat or two. For this is the greatest mass that has ever been moved by man on land in the history of the world.

Preparation for this crucial moment has governed the builders' minds from the day her first keel plate was laid; and it would be idle to suppose that anxiety will not rest heavily upon them at the eleventh hour, despite the incalculable care, the generations of experience, the forethought and the inexorable discipline that has prevailed here

throughout not only eighteen months' intensive labour, but during the long, grim period of pause. But it is not for us to probe indelicately into their minds, the further to embarrass them. (They have combated courteously, patiently, but firmly, the very natural curiosity about their biggest job for three years and ten months, and need respite badly.)

To glean a general impression of what happens to 40,000 tons of hand-wrought steelwork at the launch you must walk about underneath her keel in semi-darkness, and for quite a long time. You will appear to be in a tube tunnel with timber sides and a steel roof. You will not be able to see more than about 100 yards ahead of you either way, and the sunlight of a summer day will be almost entirely blotted out. Acres of tree-trunks stand at a slant against her steel—they felled four forests for the timber purposes of No. "534"; and a quite uncountable number of massive wooden beams, piled upon each other, form her temporary bed. To penetrate herein with another man is almost instantly to lose him, for one baulk of timber is like unto another, and gloomy corners can be reckoned in hundreds.

### *Gigantic Drag Chains*

They have two "ways"—a "standing" way and a "slip" way. On the former they pack a thick layer of tallow and soft soap; on the top of this they wedge in the wooden "slip" ways on which the ship will rest, and at a given moment begin to slide, gathering momentum on the inclined plane. At the last moment, so to speak (but a long job as may be imagined), all other supports are removed, and the great hull is held in place





VIGOROUS YOUNG LIFE VIBRATING FROM HER IMMENSE BODY

*Stewart Bale*

## Masterpiece in the making (continued)

by six "triggers." These immense cams—for want of a better word—three on each side, on being electrically released, drop back, and resistance being removed, away she goes down the slippery incline to the Clyde. They have also six hydraulic rams (three on each side) to give her an encouraging push, if need be. She has brakes on either side to slow her up as requisite—drag chains, the ends of which are clamped to her hull. Piles of them lie in great heaps at intervals all along her sides, like enormous sleeping cobras; to be rudely awakened by her passing, and to rise up with monstrous screechings, breathing fire from the friction of their sudden wriggling movement. But it is no mere placing of heavy chains at intervals to hold her back; it took squads of men weeks to haul and coerce these gigantic brakes into position; yet the weight of every drag chain has been calculated to half-a-hundredweight.

And "the wan water of the Clyde" has been prepared to receive her. For months one has seen the monotonous perambulation of the dredger buckets out in the stream; their high-pitched protestations drowned by a fiercer, more dynamic noise on shore. Five and a half acres of the river bank hereabouts have had to be removed to let her pass without impediment. The Clyde Trustees have contributed £80,000 that the river may be ready for her coming. Unusual arrangements have been made in New York, comfortably to harbour her, and the world's biggest graving dock was dug out of the Southampton earth, expressly for her needs.

### Conviction before Construction

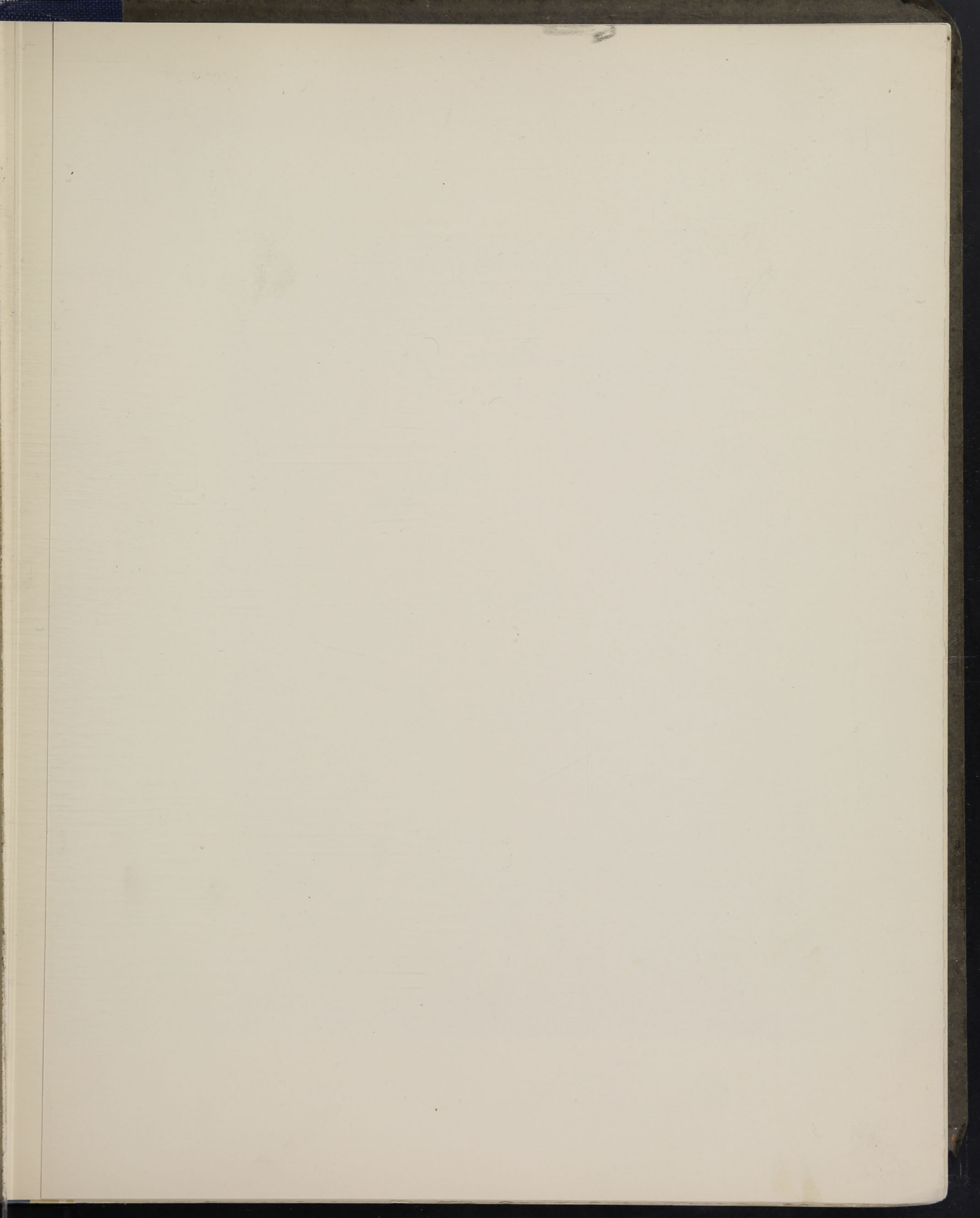
We shall never know, categorically, the extent and scope of scientific thought that

has been expended upon this tremendous project, because the men responsible for it all are by nature reserved, abhorring adulation, preferring infinitely to be left alone—that they may proceed unhampered, even further. Imagination tells us that there must have been great expectations that miraged into greater disappointments; perplexities that were but a spur; triumphs, minor and magnificent, that galvanized tired brains; calculations that cross-checked only to contradict; solutions that emerged suddenly to clarify gloom. But in the long end certainty.

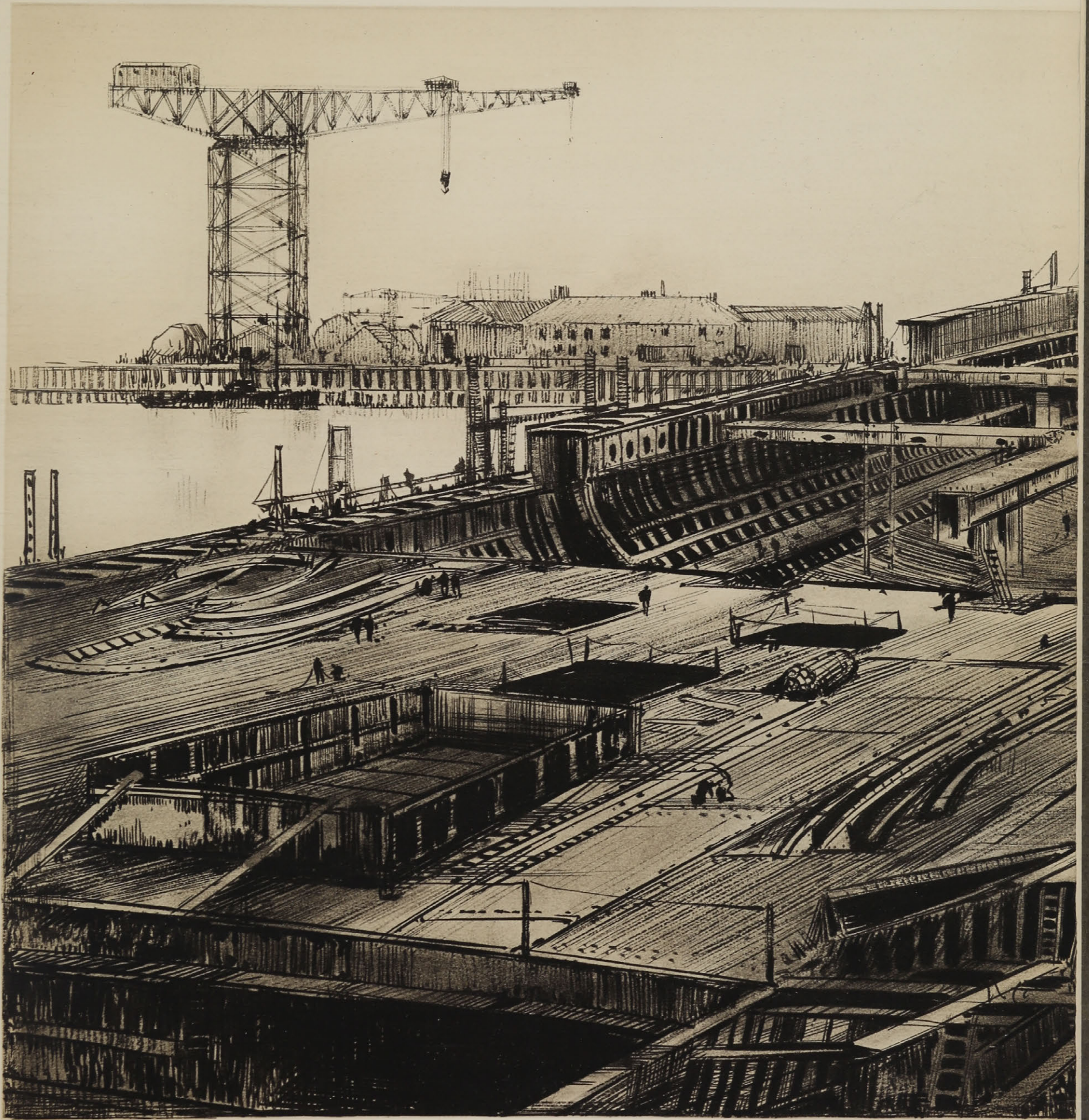
A few things, however, we do know, because reticence cannot hide them. We know—associate with the engineers behind the business even for one day in this yard and you become conscious of it—that every square foot of steel, every pound of weight, every measurable quantity, capacity or function that forms part of the ship's structure, equipment or capability is there only *because its quality has been superabundantly proved*, and British craftsmen's brains and hands mobilized thereafter to set it in place.

### Experimental Tank

If you insist on probing this matter deeper with them they will submit, with a wry smile, and give you some elementary examples—to keep you quiet. It is not to be supposed, they will tell you, that one builds a ship for which there is no precedent upon the seven seas, without knowing exactly what she will do and how she will do it, under every circumstance and contingency. They are helped to this end by an experimental tank; they have one on Clydebank. It is several hundred feet long, and in it they float a self-propelled scale model of their ship, 17 feet long and







Frank H. Mason.









## Masterpiece in the making (continued)

weighing 800 lb. Here they subject it to all the requisite tests, in calm seas and in the equivalent of 60-miles-an-hour North Atlantic gales. Over 7,000 experiments have been made by models in this tank, with results fractionally recorded on scientific instruments; and in their journeys up and down it the models have travelled a distance of about 1,000 miles.

They want to know exactly how the funnels will behave with the wind from all quarters. They are large funnels, those three; thirty feet in diameter, which is larger than the diameter of any of the tube railways in New York, and large enough to allow three "Royal Scot" engines to stand abreast in one, with all necessary railway clearances between them. So they build scale models of these funnels and subject them to every kind of test with a smoke-producing apparatus in a specially constructed wind tunnel. They vary the shape and the height until it is proved, conclusively, that under no circumstances of wind could the smoke be drawn down in contact with the promenade spaces. Then, but not until then, are designs and heights finally approved. But they had to make thirty models of funnels before they got it right.

Nor is it to be supposed that they have not already launched the ship, mathematically. They have—several times. And again a scale model is used, under the same circumstances, with the same appurtenances, structures, assistances and possible impediments; experience of past famous launchings sitting, as it were, in judgment throughout the trial.

### Other Minor Matters

The writer becomes startled (as a child hearing a sudden loud and strange noise)

when he thinks of the quality of mind and temperament of the naval architects who, at some particular moment, at the beginning of things, had to submit a definite figure of cost for this ship, delivered, fully equipped at the berth, ready for her maiden voyage—and stand by it. Mercifully a heavy blanket of technical fog intervenes to cover the scene. But outlined faintly in the thick of it one perceives horrible little details, blurred, yet apparent. Quite minor matters, such as 300 electric motors, 30,000 electric lamps, 60,000 cubic feet of sheet cork for refrigerating spaces, 4,000 beds, over 200,000 pieces of earthenware, china and glass, 10 miles of carpets, 9,000 pieces of silverware and cutlery. . . . Suppose something was forgotten? Or, worse, remembered but not charged for . . . .

### Symbol and Significance

Famous ships from time to time have set the nation tingling with pride. Little ships they were, because our vision was circumscribed. The displacement of Nelson's "Victory," as you know, is 2,162 tons. Drake's "Golden Hind," in which he sailed round the world, was of 50 tons burden. Grenville's "Revenge" was only 500 tons. But they flew the flag for England. If Samuel Cunard could only see what his initiative has engendered! He it was who conceived the idea of connecting England with America by a regular steamship line. He was, of course, laughed at as a madman. A sailing ship, said his peers, was hazardous enough; but these new-fangled steam affairs that were liable to blow up in the calmest waters! "no seaman in his senses . . ." Yet, undaunted, he had "Britannia" built. A wooden paddleship,

## Masterpiece in the making (continued)

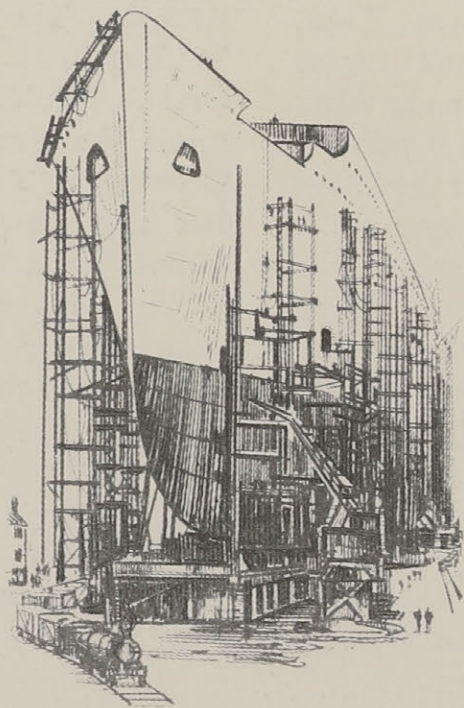
207 feet long and of 740 horse power, and 1,154 tons burden. Her average speed was eight and a half knots. Her maiden voyage was on Friday, July 4th, 1840. They got her to Boston, after a voyage of fourteen days and eight hours; and Samuel Cunard, who was on board, found himself confronted on arrival with the awful apparition of 1,800 invitations to dinner.

Less than a hundred years, and now what does the name imply? Not merely a magnificent ship, unsurpassed in merit before a watchful, scientific world; but inimitable in quality. She is the embodiment and expression of British genius and conscientiousness. But there is more to it than that. The brains and fingers of 300,000 workpeople about the country have been busy, directly and

indirectly, with her growth and adornment—and badly they needed her. Little, depressed towns perked up pluckily in the light of her requirements. The industrial pulse-beats of big cities were strengthened by her renewed activities. When they set to work upon her and for her once more, it was a symbol that the wounded lion was himself again. A thousand men and women will attend her during all her days at sea. Always will she be a source of much employment for upkeep, nourishment and replenishing.

So not only does she imply a great adventure and a challenge in a field where England has always been illustrious; but she signifies a wide and abiding usefulness. And therefore at her launching we do well to rejoice.

E. P. L-B.





DRAG CHAINS SERVING AS GIGANTIC BRAKES

*Hoppé*

## GIANT BREVITIES

The immense size, weight and other abnormal features involved the consideration of many unusual conditions in connection with the preparation of the berth.

The arrangements made to lay down the great vessel have been of a scale of magnitude never before required, and great changes had to be made in the shipyard.

Her unusual length actually encroached on the normal working space, and in consequence a bridge had to be specially constructed under the immense bows to facilitate the running of trains and other traffic bearing material to the ship.

The ground on which the ship had to be built was specially strengthened, piled and cross-piled. Over these cross piles were placed layers of steel plates and many tons of cement, as it was essential that the ground should not yield an inch.

In addition to the usual gangways, large electric lifts were fitted to the sides of the vessel to carry workmen to the towering upper decks over 100 feet above ground level.

### OVER FIVE ACRES OF LAND MOVED

A good deal of work has also been done in the river Clyde itself to facilitate the launching and docking of the new liner.

For the purpose of widening the river over  $5\frac{1}{4}$  acres of land opposite the shipbuilding berth were purchased by the Clyde Navigation Trustees.

This work included not only the excavation of the bank where the river Cart joins the Clyde, but also the dredging of the river in front of the ship's berth.

The builders' fitting-out basin to which the ship will be towed after the launch has also been dredged, and, owing to the immense length of the vessel, a boom will be placed across the entrance to the dock to protect its stern.

### 7,000 EXPERIMENTS

Very thorough researches were carried out by Messrs. John Brown & Co. Ltd. on the hull form in their experimental tanks at Clydebank, where it is possible to reproduce in miniature all the features of Atlantic weather conditions. Over 7,000 experiments on numerous models were conducted before the form was finally determined, in the course of which the models travelled a total distance of over 1,000 miles up and down the tank.

The massive hull with a sloping stem, clear-cut cruiser stern and three large funnels of suitable rake and height to ensure that the promenades on the upper decks will be clear of funnel gases, will emphasize the strength, power and speed of the ship.

### TWELVE DECKS

The hull structure comprises twelve decks from the sun deck down to the lower decks which are discontinued in the way of the extensive machinery spaces.

An unusual feature in the construction of the hull has been the use of special high elastic limit steel in the superstructure.

### LOUNGE WILL HOLD NINE BUSES

Accommodation will be provided for first class, tourist and third class passengers. The enormous size of the ship has resulted in the provision of unusually large spaces for the public rooms. In the first class lounge, for instance, it would be possible to place nine double-decked passenger omnibuses with three "Royal Scot" engines superimposed on their roofs.

### TWO ACRES FOR SPORT

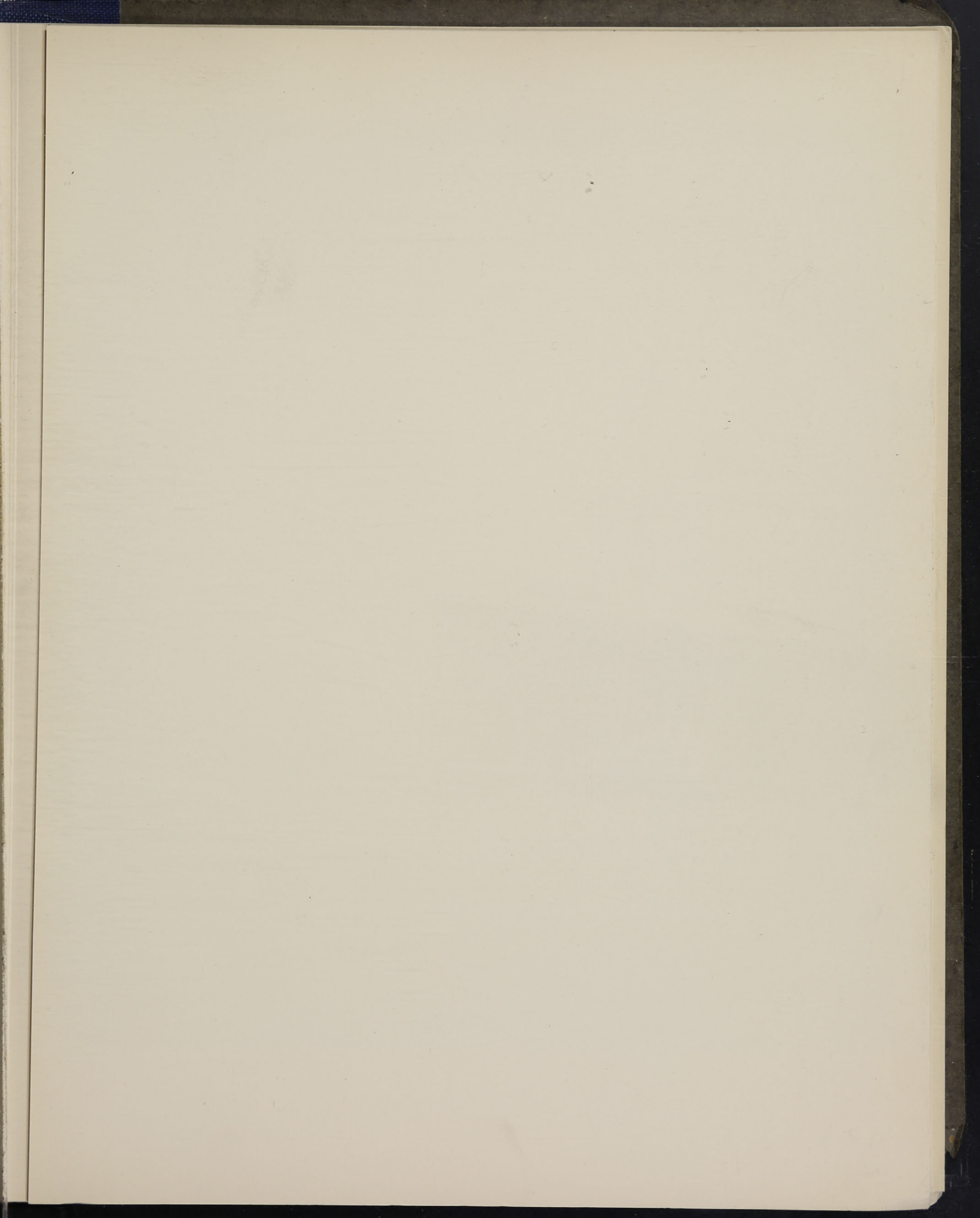
An area of nearly two acres in the ship will be available for promenading and deck games. In addition to the impressive sun deck, the whole of the space outside the first class public rooms on the promenade deck (which is over 750 feet in length) will be available for exercise. Large sliding windows in a steel screen along the promenade will afford protection from the weather.

### ALL-ELECTRIC SHIP

Apart from her actual means of propulsion, the new liner will be to all intents and purposes an "all-electric ship." Her vast turbo-generators will be capable of supplying electrical energy sufficient to meet the lighting and public services of a town of nearly 150,000 people.

### GYROS AND SEARCHLIGHTS

The latest and most complete apparatus is provided both for the navigation at sea and while docking and undocking. The ship will be steered by a powerful electric hydraulic four-ram steering gear, the largest ever constructed for any ship. A gyroscopic compass will be installed and other features of the bridge equipment include submarine signalling apparatus, depth-recording instruments, wireless direction-finder, telephone and telegraph system giving instant communication to any part of the ship, and powerful searchlight projectors.





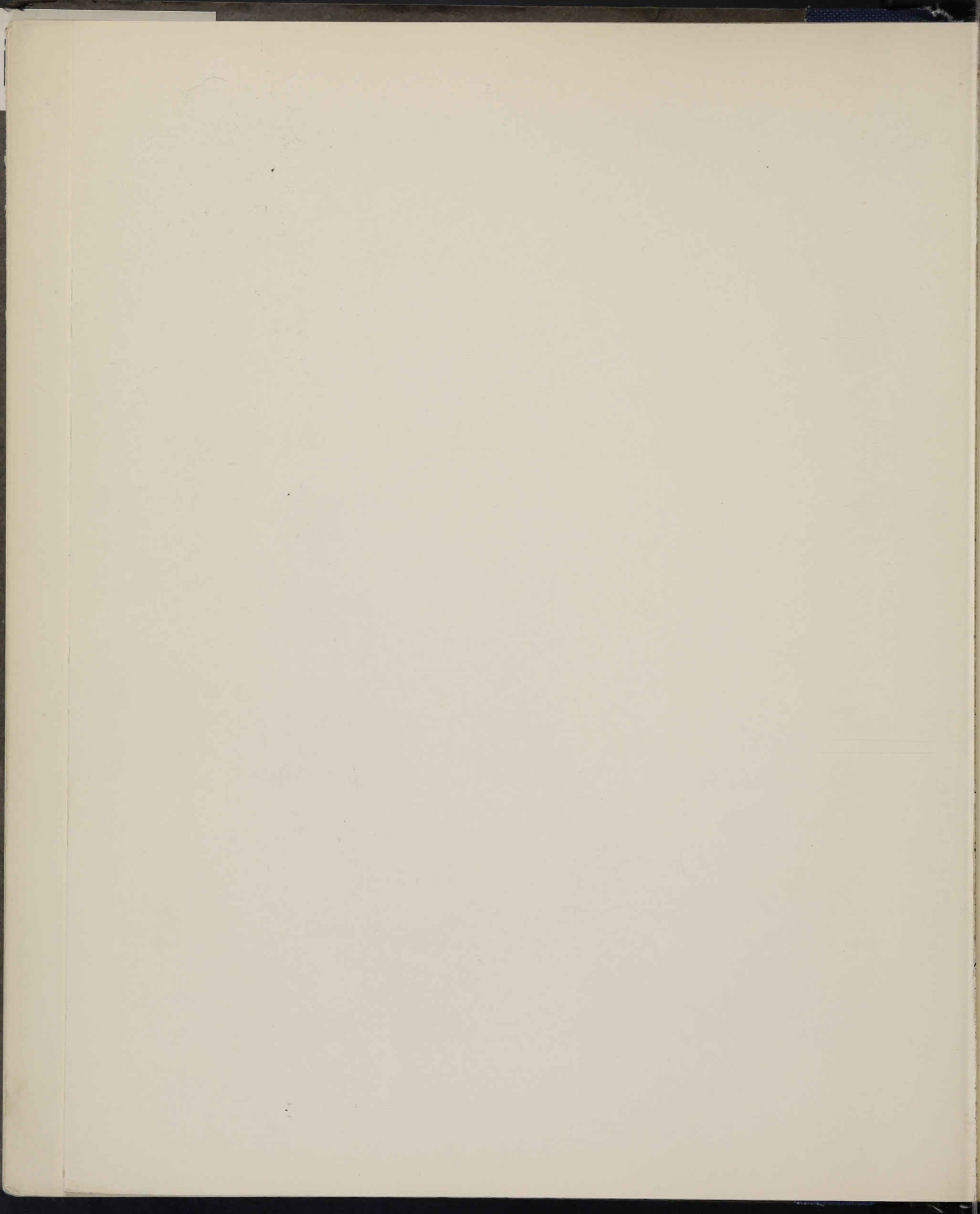






Frank A. Mason





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