

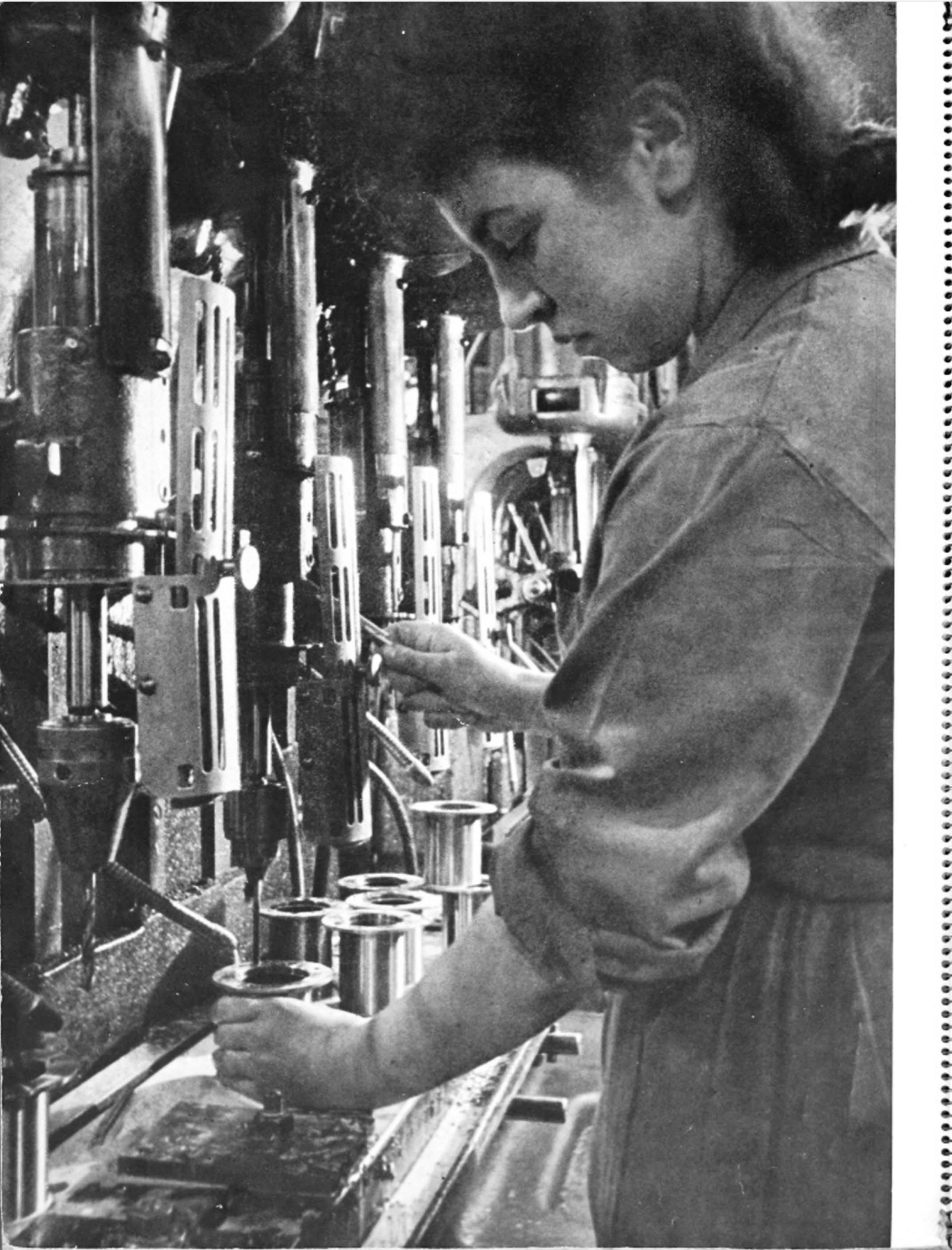


SWIFT

THE FACTORY OF TOMORROW, TODAY!



SWIFT



THE FACTORY OF TOMORROW— TODAY



THE age of the craftsman isn't dead; the craftsman has merely changed his tools and altered his standards. Gone are his rule-of-thumb methods of a hundred years ago; modern craftsmanship combines the skill of both scientist and engineer. It is that synthesis which enabled Britain to make on a large scale the precision products needed for victory. The experience gained in war has not been lost in peace.

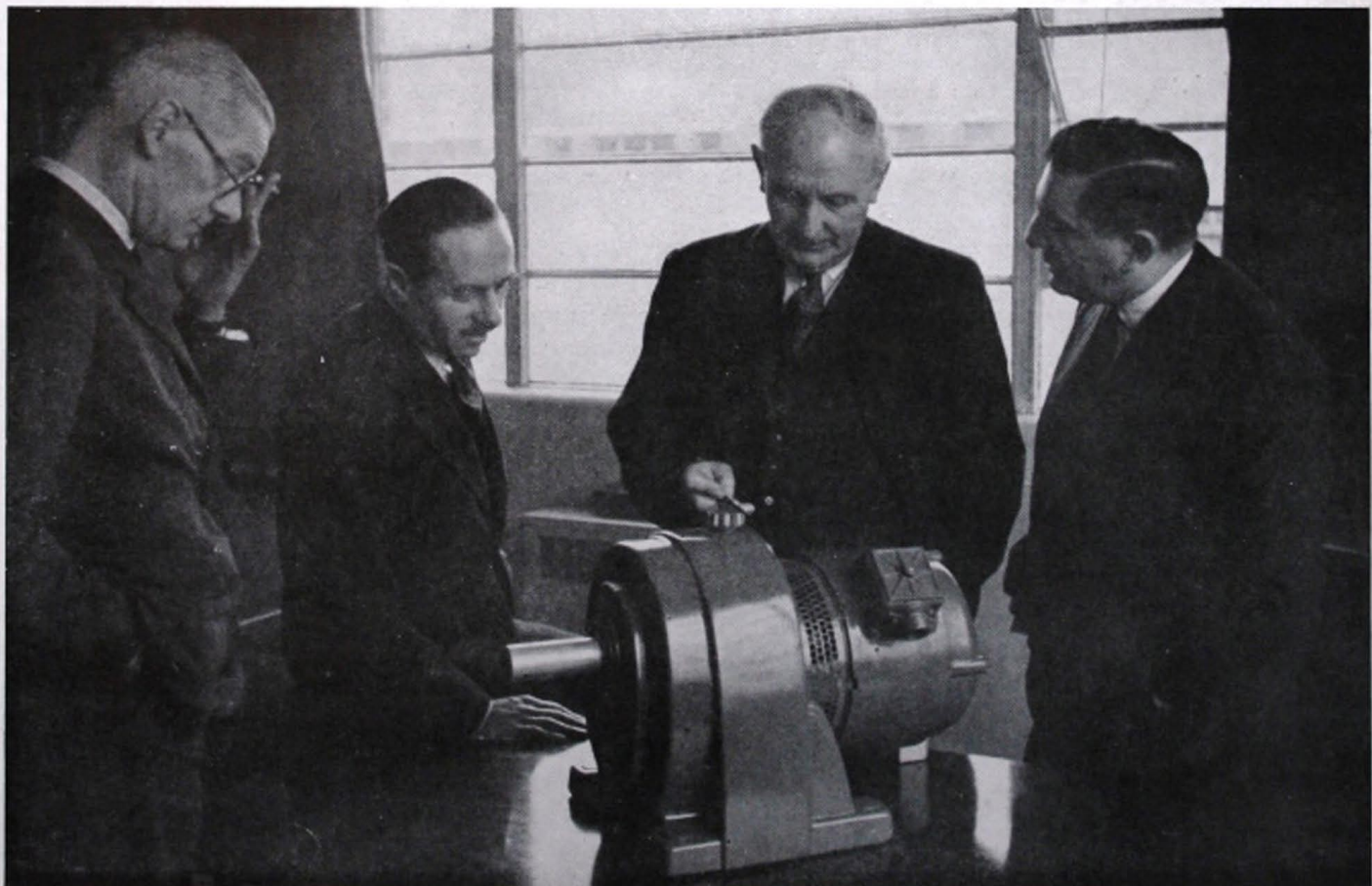
At *Swift's*, I have seen how the New Craftsmanship, practised by engineers and scientists with the highest academic and practical qualifications, and making use of the most modern tools, is serving the purposes of peace-time industry.

Where does Britain's industrial future lie? I have never doubted that her greatest strength lies in the work which skilled hands apply to her raw materials. Britain will remain what she has been for a hundred and fifty years—a workshop of the world. Other nations will continue to join in productive emulation. This will remain a healthy stimulus to British

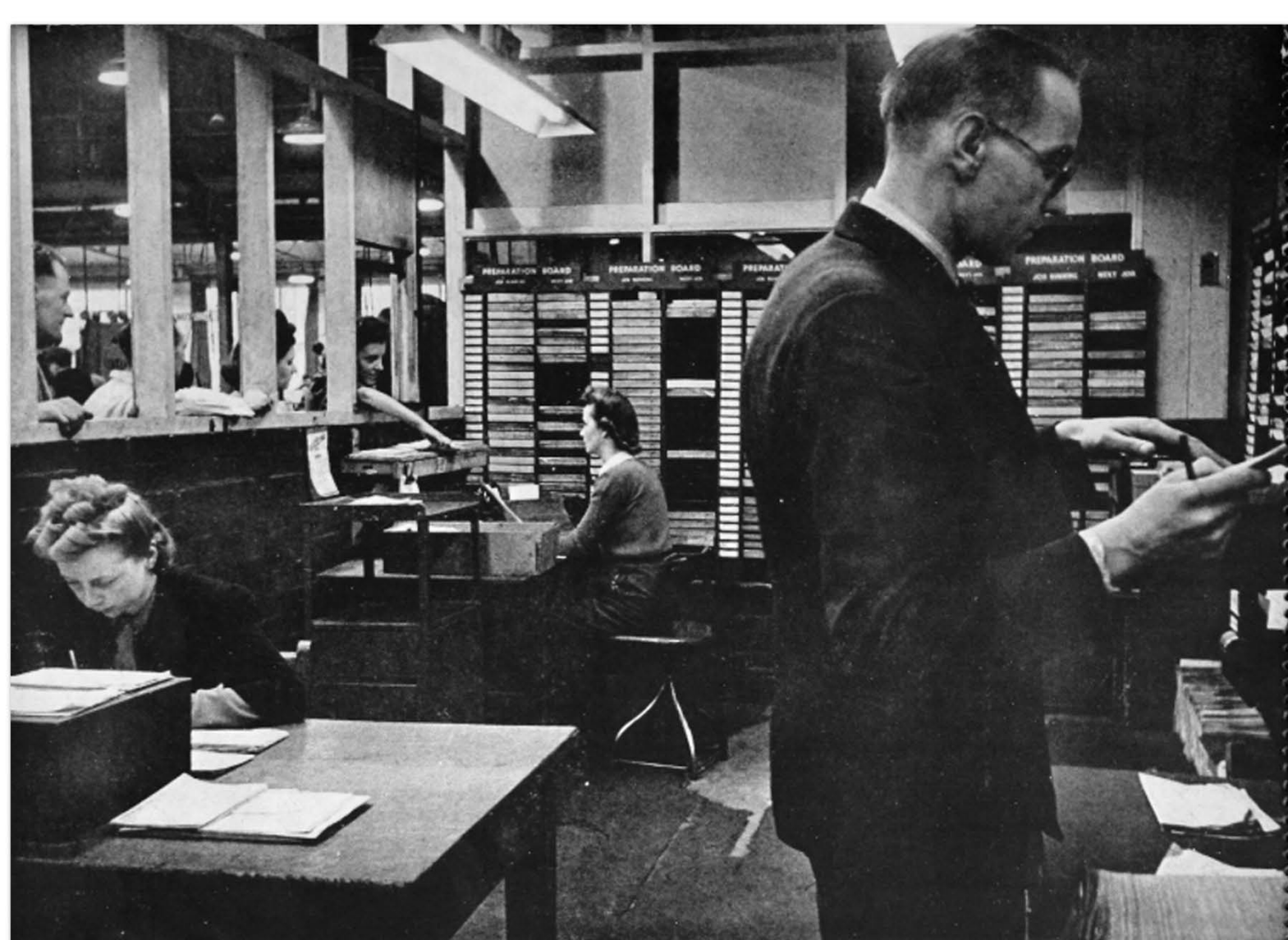
industry, encouraging the ingenuity of British technicians. In a world where the specialists are rapidly being swallowed up by the mass-producers, Britain aims at combining high productivity with the fine finish and accuracy of specialised work. "Made in Britain" has always been a proud slogan. "Made by *Swift's*" is an extension of that slogan. To the traditional virtues of British manufacture, it adds "precision"—a virtue to be measured by the microgauge.

As I walk through the machine shops, I recognised why *Swift* products, with their hundred different uses, have become a byword of precision. The machine tool factories of Europe and America have combined to equip one of the most modern plants in the world. *Swift's* believe that only the best tools are good enough for the best products.

When the component emerges from the first operation machine, it has begun a journey round the Factory which will only end when it has been 'dimensioned' to a tolerance of



A Production Conference at the Swift Works. Examining a model of a new Motogear unit during one of the senior management meetings. From left to right are Mr. I. Peel, General Manager; Dr. L. Ross, Technical Director; Mr. A. A. Rowse, Chairman and Mr. L. Bagrit, Managing Director.



Where the orders of the day are issued; a view of the machine loading room. On the Preparation Board is the card with a description of the "job." The operator is "clocked in" and "out." In this way a record is kept of every item passing through the works and its production position at any moment.

anything up to one-tenthousandth part of an inch. During the war, *Swift's* worked to these fine limits for the many operational units in aircraft which must not fail. You don't get a second chance in the air; nor can you send for the maintenance mechanic.

Precision is a relative term. The radio announcer who says that the time is "11.39 precisely" is probably inaccurate to the extent of several seconds and a few hundredths of a second. Even if I have to catch a train, I can afford to disregard the impreciseness of the announcer's precision. But



Inside the Planning Department. Here every operation is detailed.



"Progress" reports to "Production." Close Dept. liaison is kept.



Printing Production Instructions. In this department all works information and instructions are embossed and printed in a standardised form by the Adrema method.

in certain forms of engineering, precision must be so precise that the record of measurement corresponds exactly with intended dimension.

To achieve this final standard of accuracy, the greatest care has to be taken in maintaining standards of accuracy at every stage of manufac-



Preparing new designs. Where Swift products of the future first take shape.



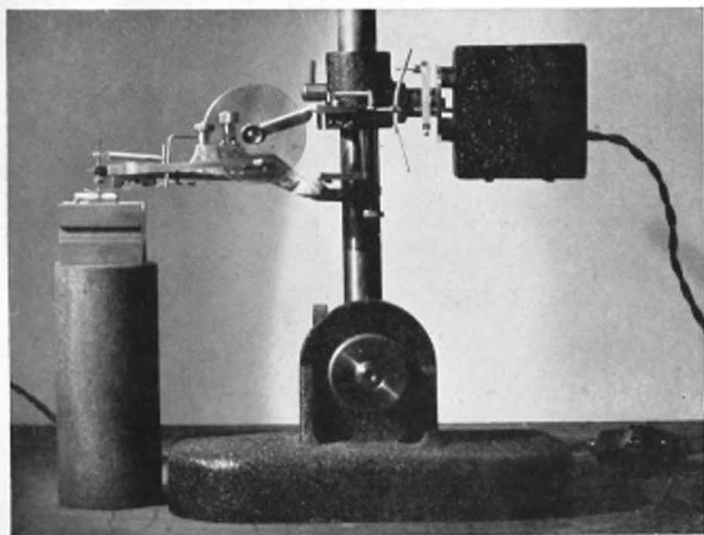
A Progress Check. Watching the position of every component.



The metal is analysed. Samples are carefully checked with specification.



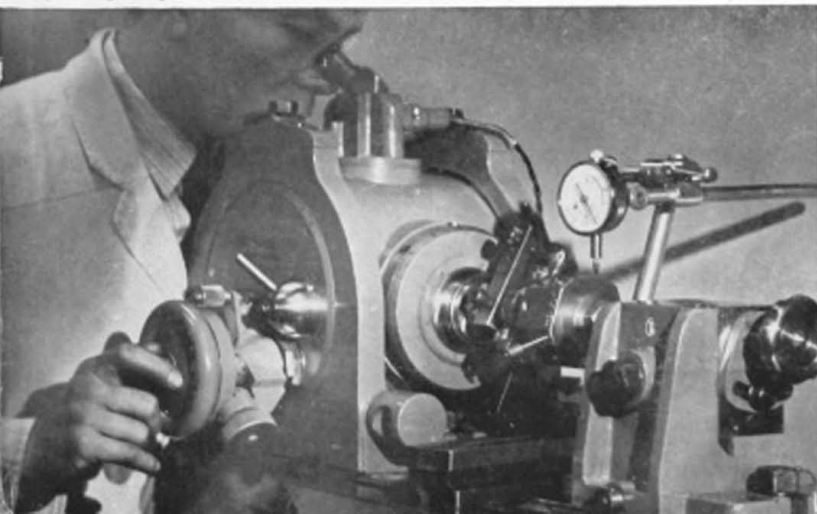
Electrically Measuring Surface Finish. Wear depends on quality of surface.



Checking Accuracy in Micro-inches. A Tomlinson N.P.L. Surface Analyser.
Splitting Angles. Optical Divider measures six hundredth part of a degree.

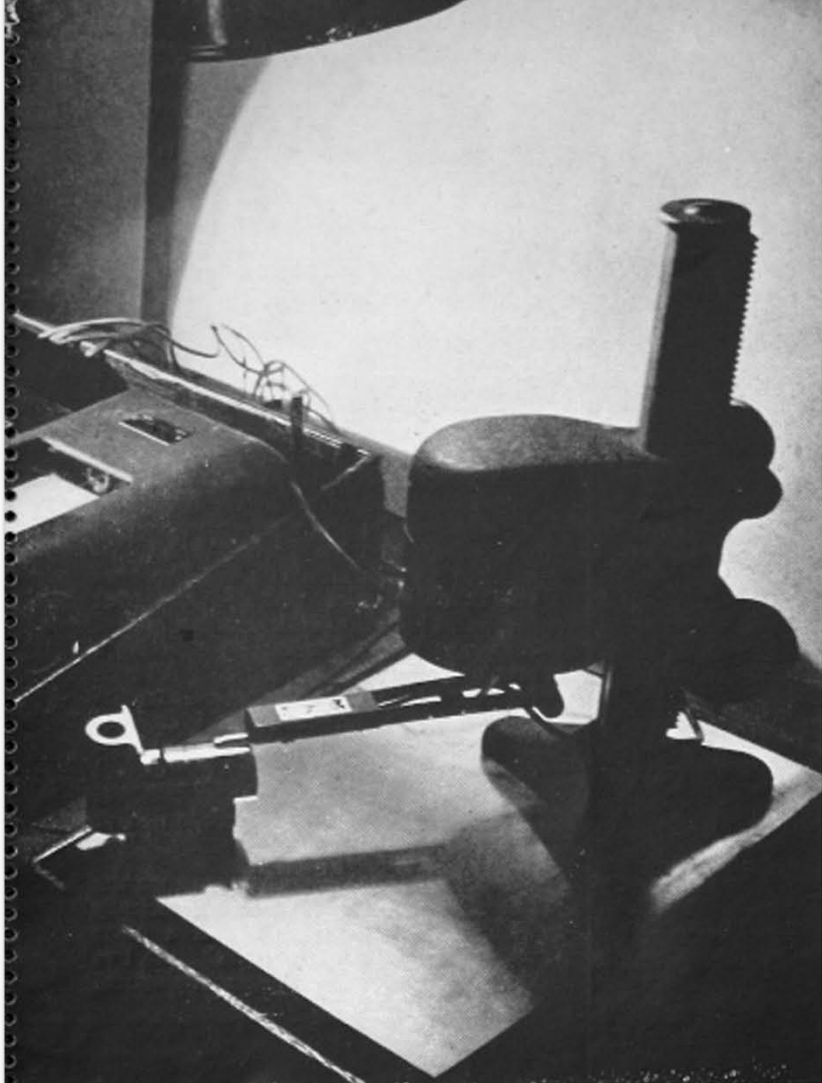
ture. In peace as in war *Swift's* are applying this technique in order to manufacture superlative products. Its Physical Laboratories are equipped with microscopic and electrical apparatus for surface measurement; its Standard Temperature Room has the most up-to-date micrometric gauges and other precision-measuring instruments. In this room where the tools and gauges are under continual inspection, measurements are made in minute fractions of "thous." (And a piece of paper or a hair might easily be as thick as four-thousandth of an inch).

So fine are the measurements, that the Standards Room has to be maintained at a constant temperature of 68 deg. in order to



The Swift Standards Room. Kept at a temperature of 68 deg. and constant

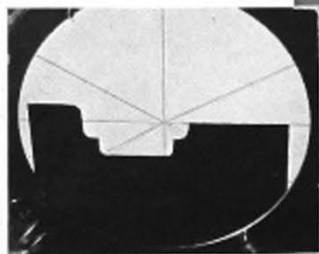




Making sure by checking in millionths of an inch, by the Brush electrical method.

avoid variations due to changes in temperature. When a gauge is checked, the Inspector holds it in a gloved hand, because the warmth of his bare palm would be enough to alter its dimensions. And the Engineer-in-charge will willingly prove it experimentally for the doubters.

More than any other part of the *Swift* works, the Standards Room, with its superdelicate instruments for measuring dimensions which the naked eye, unaided, couldn't comprehend, impressed me with the remarkable

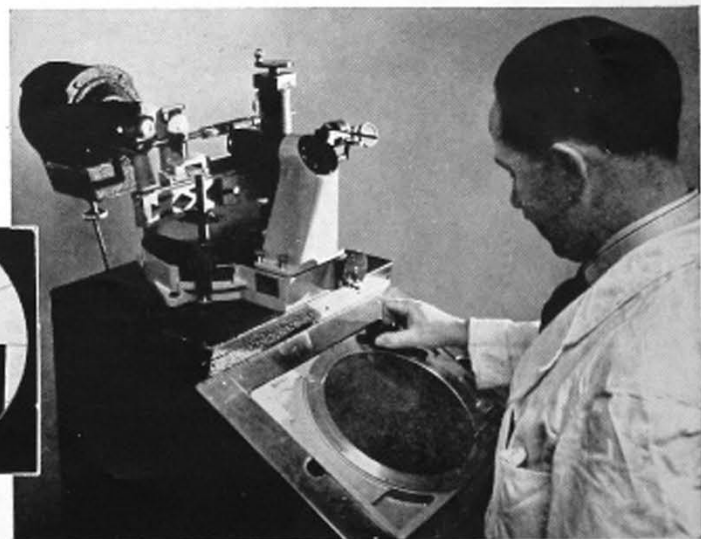


humidity.

Photographing a Micro-structure. Metallurgy plays a vital part.

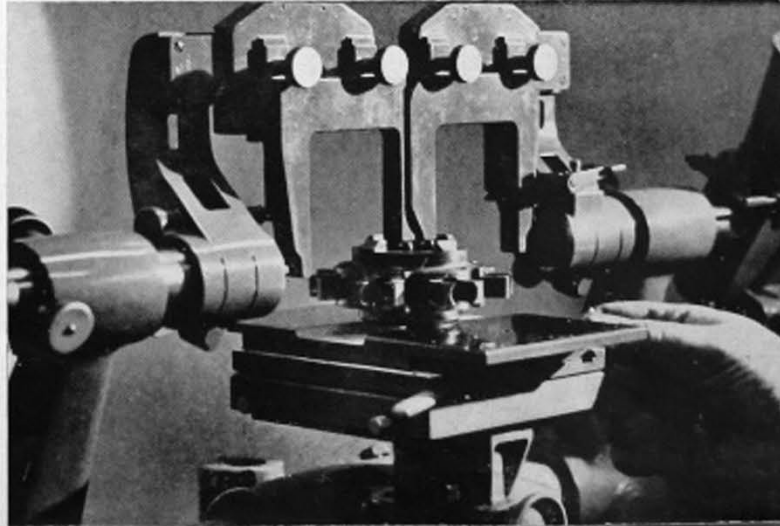


The Oscillograph. It records oscillations of time, pressure or sound.



The Projector. A magnified silhouette is thrown on a glass screen.

Measuring an Internal Bore. Optical Projection method Comparator.





Tungsten-carbide tipped tools. Such tools are extensively used and are carefully ground and lapped on special machines to predetermined shapes.

Standard cutting tools. All cutters and tools are ground to correct standard forms.

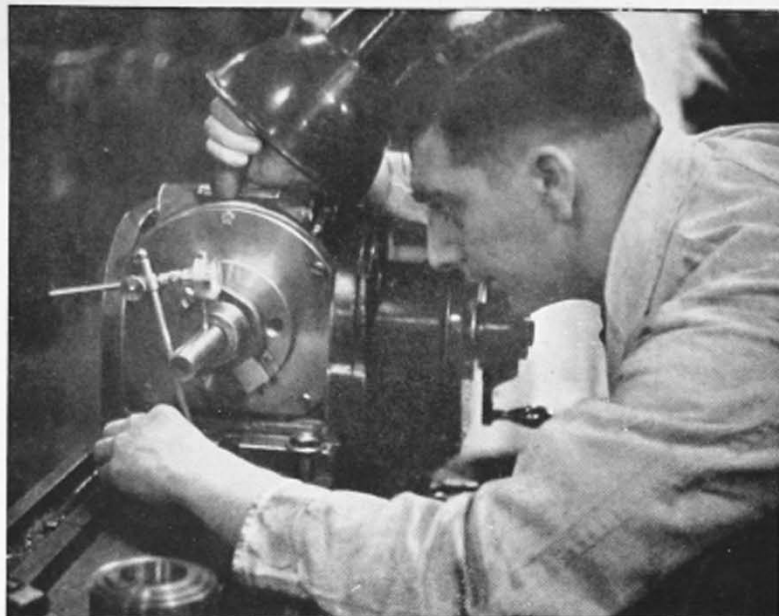


Sharpening Milling Cutters. Must be made, and kept, sharp and accurate.

developments during the last six years in the technique of engineering inspection. On one machine, a surface is being measured in micro-inches. On another machine—an optical divider—a physicist is measuring an angle to six seconds of one degree. A third machine photographs a micro-structure. Electricity allies itself with optics in order to achieve a final measurement of what seems to a layman—infinite precision.

The laboratories complete the thoroughgoing *Swift* system for making sure that the end product is exactly as specified. All factories have an inspection department; some are more efficient than others; some are more conscientious than others; I have seen factories where the inspectors have been reluctant to reject for fear of "letting the side down"; I've seen other factories where inspection has been slipshod "in order to get the stuff out"; and I've seen yet other factories where incompetent inspectors have insured themselves against complaint of carelessness by rejecting a standard quota "on principle." All such inspectorial aberrations demonstrate inefficiency. The testing-rooms and staff of *Swift's* seemed to me to be an integral part of production. The result of this careful check at all stages of manufacture resulted, I observed, in a very low proportion of final rejects.

Swift's main machine shop gave me the impression of energy allied with efficiency which I have sometimes felt in a plane when, after three or four hours' flight, I've awakened from a doze to hear its powerful



The Setter gets to work. *Painstaking accuracy is the essence of 'Swift' methods.*

engines steadily throbbing with the reliable, unflinching beat of an healthy heart. Factories are like that. Sometimes, you can go into a "shop" and, without being told, you feel at once that something is wrong. You know that some machines have too much material for the machinist, and that some haven't enough. You know that the work isn't flowing properly through the "shop."

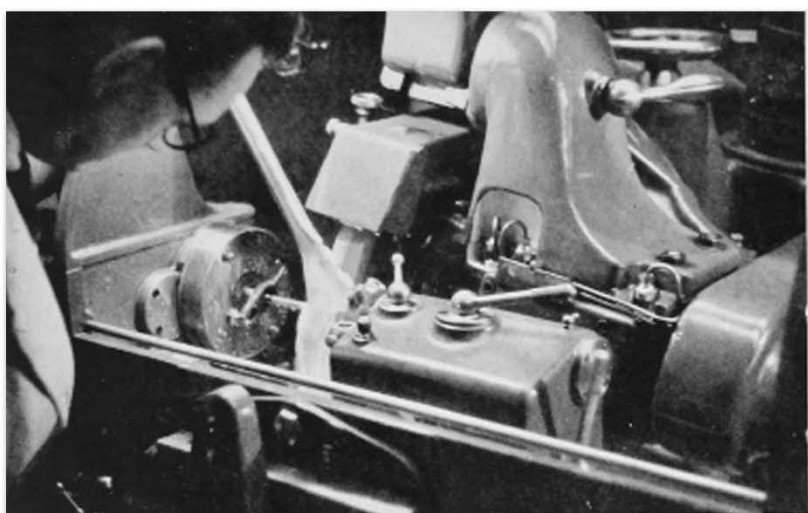
You sense that the foreman isn't popular; that the charge hands are discontented; and that the labour turnover is excessive. At *Swift's* you feel the opposite. The mood is good; the "ship is happy."



A case of extreme precision. *Jig-boring in an air-conditioned, temperature-controlled room away from the noise and bustle of machine shops.*

What does it read? *"Marking off" a component in the tool room.*

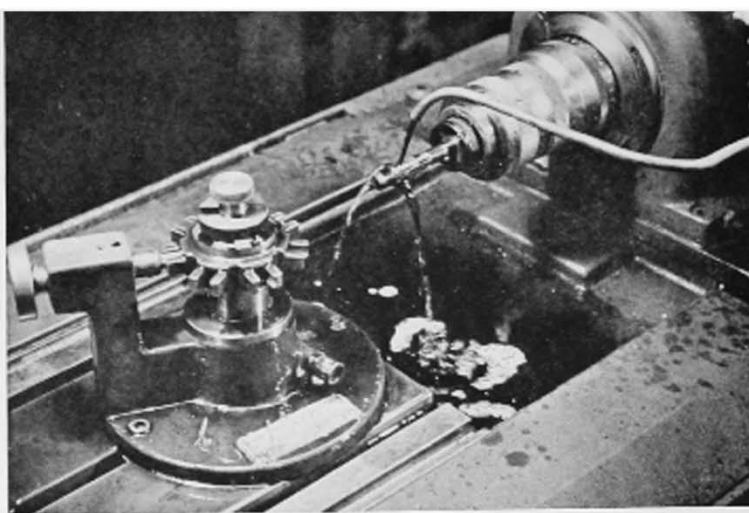




The right machine for every job. Thread grinding on a Matrix Thread Grinder.

No layman in the machine-shop can fail to be fascinated by the delicate work done by powerful, complex machines. Here you see the tools being prepared. The operators work on tough metals, and their tools have to be constantly resharpener. The cutters of the milling machines must be kept sharp and accurate. The tungsten carbide tips must be ground and lapped. Then come the "setters-up," preparing the machines with that sensitive fatherliness that all engineers have for their machines.

Now the machines are "set" with the maximum of precision, ready for actual production. The borers, the worm-wheel generators, the thread grinders, the micro-honers working to a finish of 2 micro-inches and the surface lappers go into action like a highly trained battery. The products

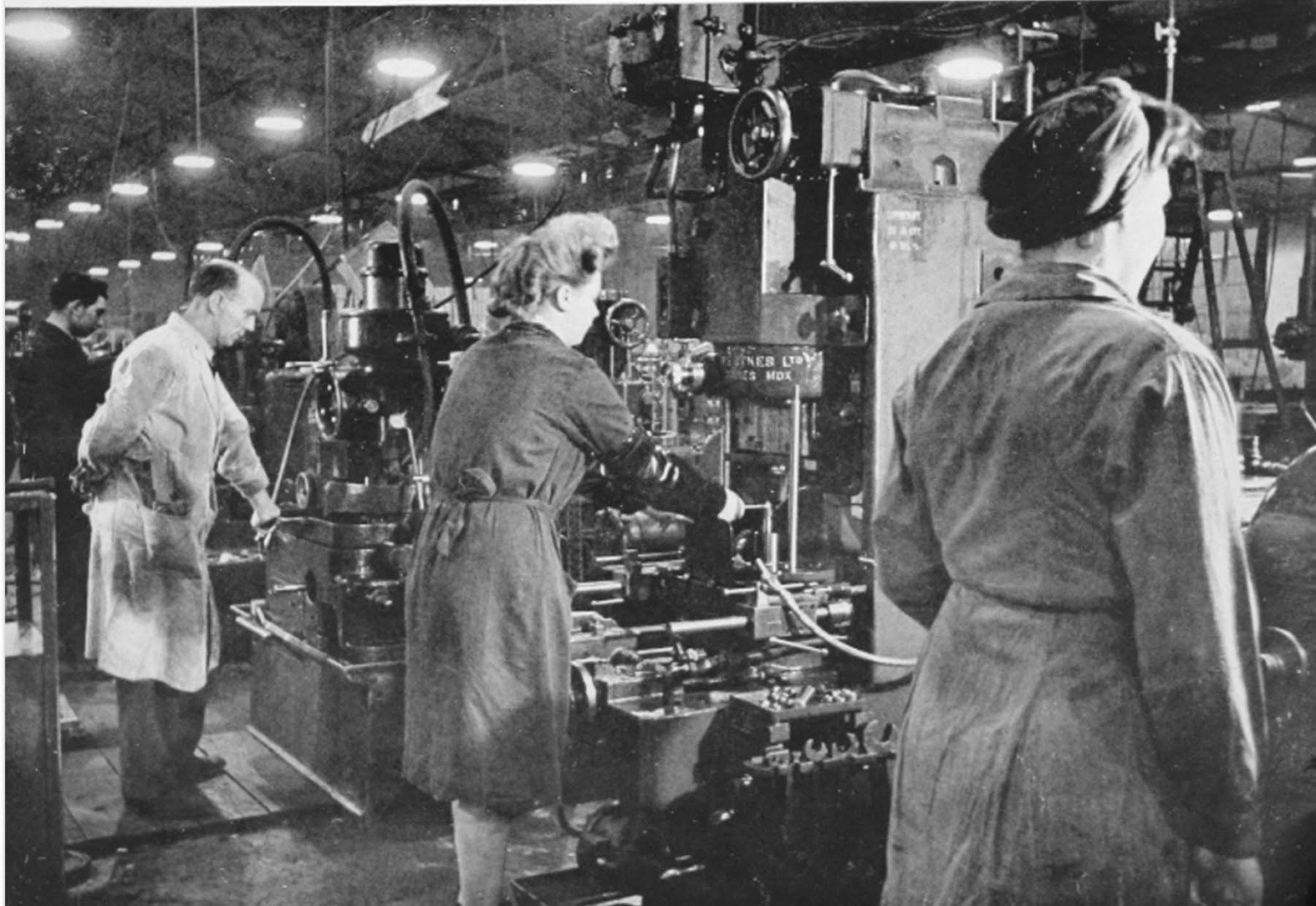


Hydraulic Honing Machine. It hones to a finish of one micro-inch.

pass from one stage to another, steadily taking form and acquiring finish. At last they are ready for final assembly. This is the article which the drawing office at the other end of the works has planned.

Now that the *Swift* Company has re-converted its vast store of engineering knowledge and experience to purposes of peace production, the products leaving its machines, bear the same hall-marks which the *Swift* symbol has represented before and during the war—precision, efficiency and quality. But to these the *Swift* designers have added a non-utilitarian virtue which a less austere life in peace-time demands—and that is "attractiveness in design."

"It is not enough," say the designers of *Swift's* new models, "for the article merely to have sales appeal; every



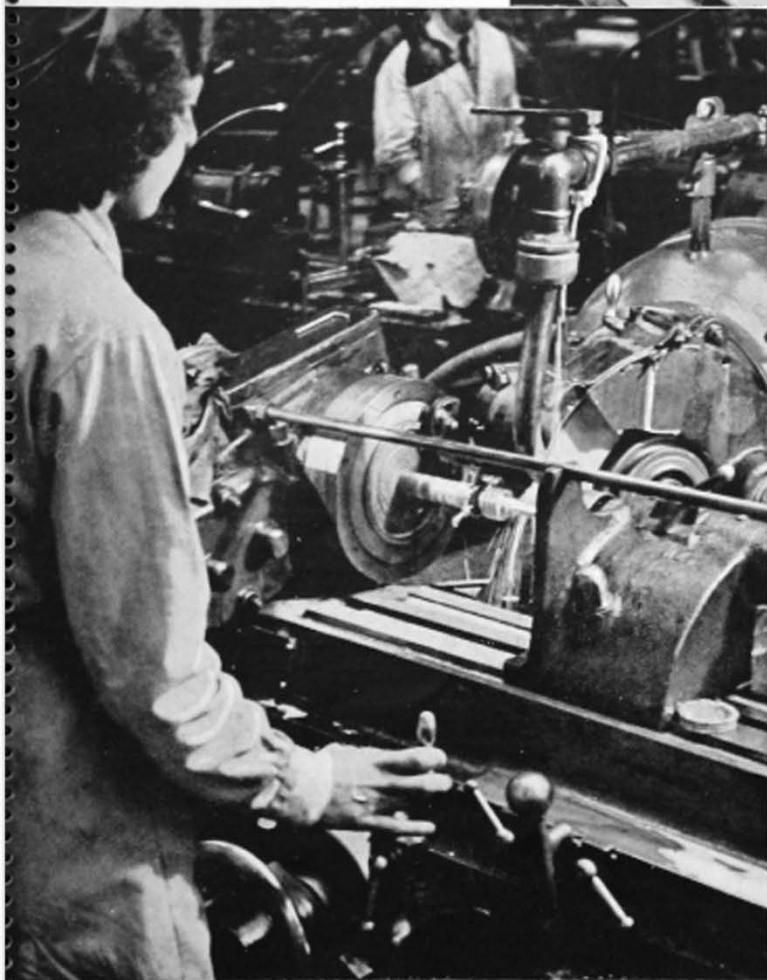
machine, every product is something that has to be lived with. And so we have designed ours to be agreeable to the eye, not only when seen in a catalogue, or at a salesman's demonstration, but also as a functional item of equipment." The aesthetics of machinery are only of second importance to their functional virtue, but at *Swift's*, aesthetics are based on functionalism. In plain English a machine must not only look good; its very design must help its efficient working. The *Swift* Company believes that the highest precision must be allied to a care for exterior design.

Go into the drawing offices at the *Swift* works, and watch the



Another highly specialised job. A close-up view of worm-thread grinding.

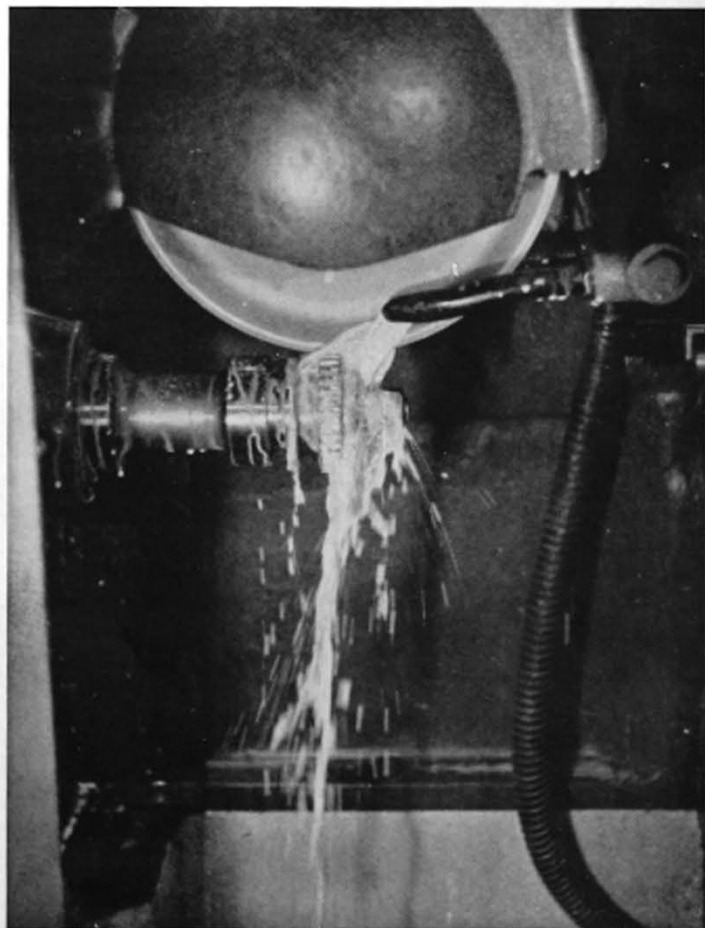
in the planning department. Once it has been sent to the machine shop for production, its steady growth from paper to the finished product is watched by the Progress Supervisory Staff, as carefully as a mother watches the growth of a newborn child. Looking out on to the main machine shop is the department which "loads" the work on to the machines. On



Thread-grinding hard steel worms. A special purpose machine.

draughtsmen at work. You will see that the tool is designed with the same critical care as the detail of the finished product. Its production is as carefully planned as its function.

Efficiency and reliability are two other qualities—next to precision—which strike you in the administration of the Works. The exact check on the progress of a "job," as it passes from machine to machine, is one of the examples of the efficient organisation in the workshops which are equally impressive both to the non-professional and to the expert. The life history of a "job" is forecast, as it were,



Grinding a gear tooth. *Swift's* are noted for Precision Gearing.



A general view of Swift's main machine shop with its long, neat rows of precision machine tools.

The products of the best machine tool factories

the preparation board, there are cards for each job of work. Here the workers come for their orders; nearby, the progress of the job is recorded; and adjoining, is the Control Room which directs, measures and records production.

One of the misfortunes of war is that the civilian begins to regard unpunctuality as a normal condition of life. Trains arrive late; the newspaper boy doesn't deliver the papers in the morning; and telegrams come by post. Happily, *Swift's* in their rapid switchover to peace-time production have retained their war-time punctilious-

ness. The goods must be there on time. Jobs mustn't be "lost." Delivery dates must be respected. Those are axioms which the management doesn't have to emphasise. Consequently, *Swift's* customers who have their own programmes on a delivery promise can sleep soundly at night in the assurance that their orders will arrive on the due day, and that if at any time they want to know what stage of manufacture their order has reached, a



Helpful advice. Inspector assists an operator.



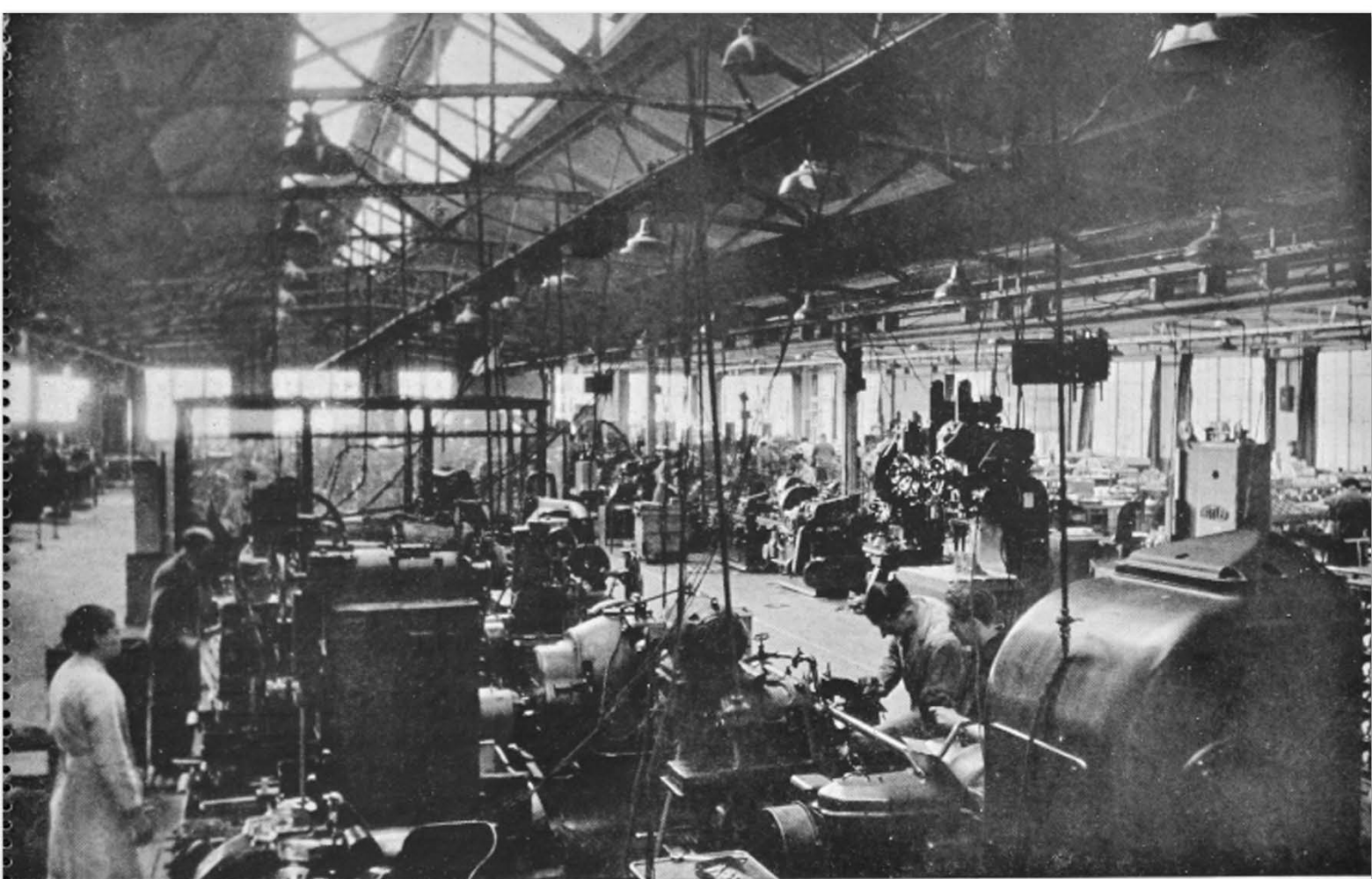
Fine Boring. For high finish and accuracy.



Worm-wheel generation. A high-speed machine.



Lapping Surfaces. A high-class finish for long life.



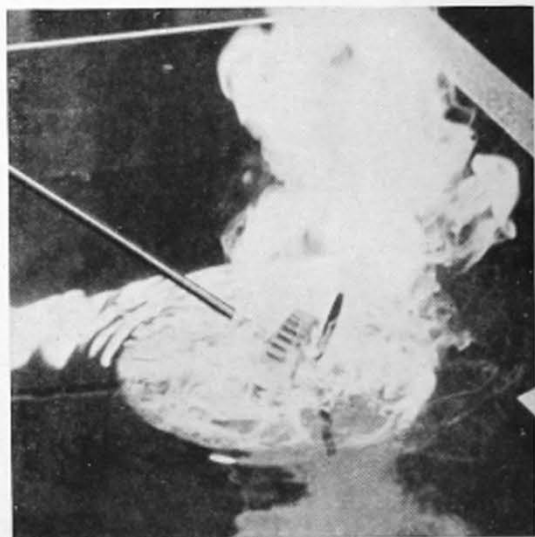
of Europe and America have been assembled to equip one of the most modern plants of its kind.

call from the Sales Manager to the Progress Department will tell them exactly the state of their purchase and its location in the works.

But even the most exact and perfectly operated machine sometimes fails in its theoretical performance. And so, the Swift works use a thorough system of inspection which can claim to eliminate defective products. The View Room is

always fully engaged; the inspectors have a tradition of loyalty to "the customer."

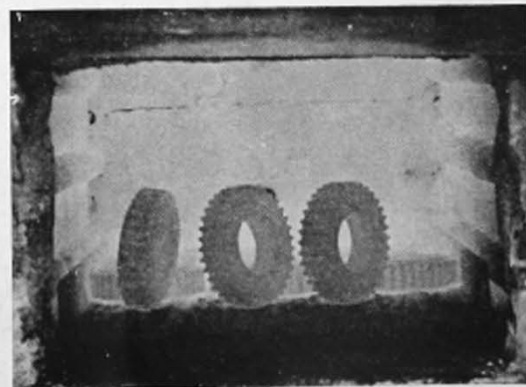
This regard for the consumer has entered into the atmosphere of the Swift works. British craftsmen have always thought that it would be a dishonour to themselves and an insult to their customers, if they were to produce and sell a shoddy piece of work. The machine-age, in breaking down the personal relationship between the



Sudden Cooling. "Quenching" a gear.



Modern Hardening Methods. Every type of Heat Treatment is employed in the Hardening Shop.



To avoid oxidation. Heating behind a gas screen.



craftsman and the purchaser, also led, very often, to a decline in standards of craftsmanship; but at *Swift's*, both the relationship and the standards have been preserved. The men in charge have managed to combine the most modern industrial machines and methods with a strong feeling for fine and scientific workmanship, and this in turn has been combined with a sense of personal contact with the customer.

When the purchaser enters into communication with *Swift's* he immediately has the assurance that his order will receive personal attention; that the planning department of *Swift's* will willingly discuss with him any special requirements; and that, however small or large they may be, they will be fulfilled at their due time, exactly as contracted.

When you leave *Swift's* Works, your mind searches for a word to describe your general impression of modern scientific production. You try to sum it up in a word. Efficiency? Precision? Reliability? Yes, all of those. And yet, there are many factories with those virtues. But *Swift's* has a special quality added to these which is harder to grasp. And then, you think of a phrase—"the factory of tomorrow, today." That seems, somehow, to describe the *Swift* works. It isn't a scheme on paper; it isn't just something which somebody said could be. It is! A factory, humming with activity, throbbing with the urgency of men with jobs to be done, a factory producing the peace-time goods which we have waited so long to see. In a hundred and one different places, *Swift* products are in use, efficiently serving the needs of the community.

It must be dead right. An Inspector at work.

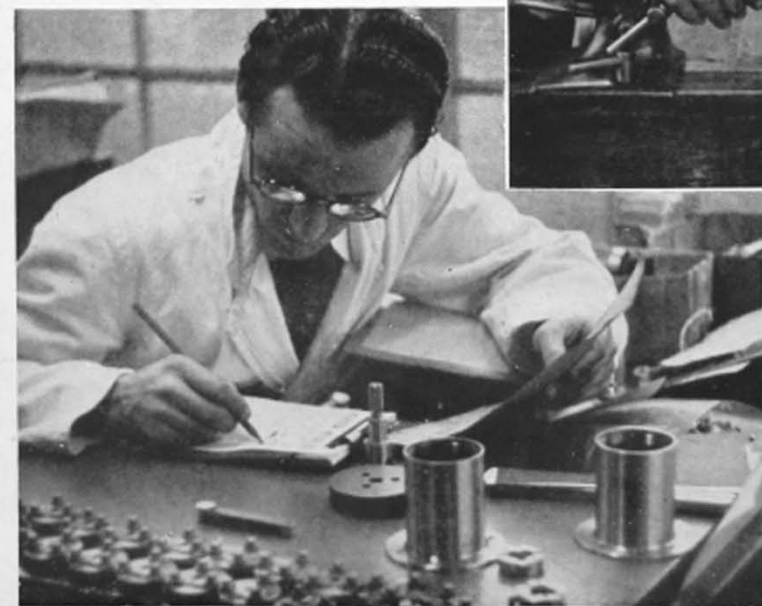


Gear Testing. Checking running performance.



Keeping a watchful eye. The Chief Inspector does some spot-checking.

Inspector rejects a component. Very rigid standards are enforced.



But *Swift's* is "the factory of tomorrow, today." And you see why a walk through *Swift's* drawing offices is like turning a page in the industrial book of tomorrow. *Swift's* new designs are not merely to cater for changes in fashion; they are intended for new purposes, for better function and for better service.

Genius has been described as an "infinite capacity for taking pains." That is the kind of genius which goes into the manufacture of *Swift* products. Often the apparent

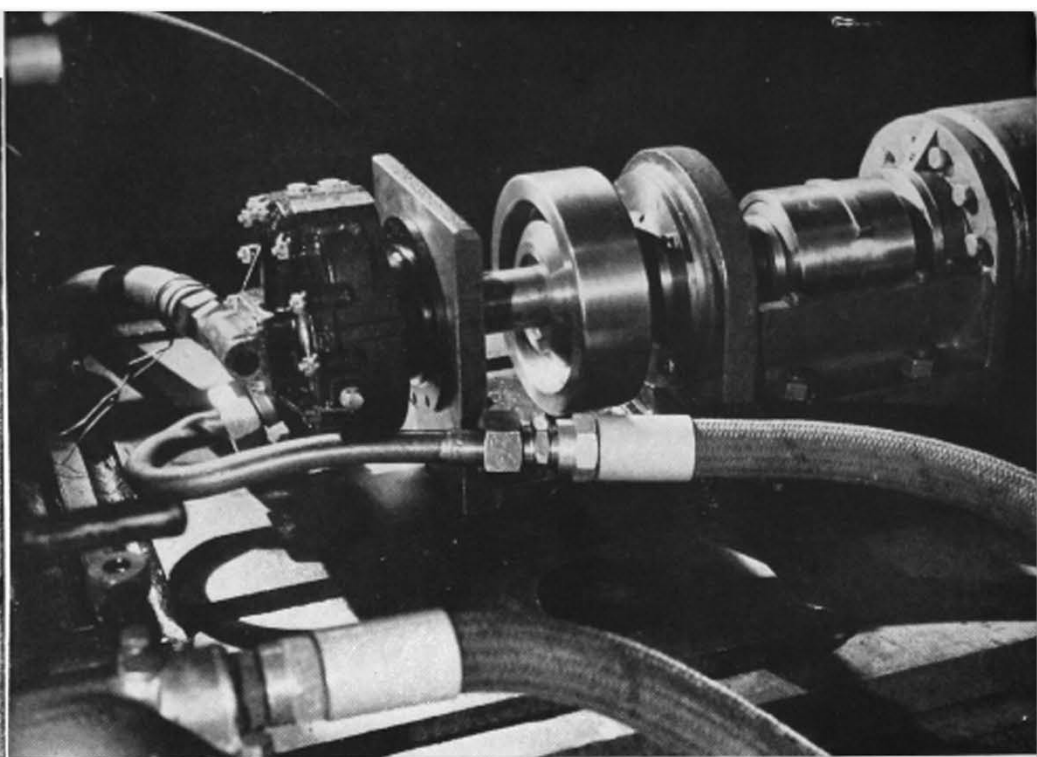


Taking the readings. Testing an hydraulic pump running at pressure.

simplicity which makes them so agreeable to the user is only the consequence of the engineer's disentanglement of manifold complexities and difficulties. It is the engineer who takes the pains, which, otherwise, the user would have to endure.

We have become accustomed to the idea of "Press a button and it works." Such an idea is a useful one, and can only be achieved by making sure that it does work. There is nothing more painful to a user than pressing a button—and finding that nothing happens.

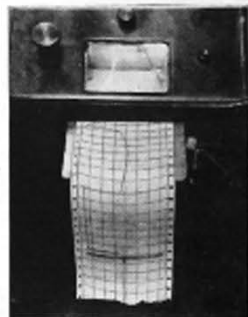
The *Swift* management has entered enthusiastically into the task of making things easier for those who, day by day,



Exhaustive testing. *Swift's* subject all hydraulic pumps to long, rigorous performance tests.

have a job of work to do. Behind the product is the brains of the *Swift* organisation, ever ready to take trouble, ever anxious to simplify the complex.

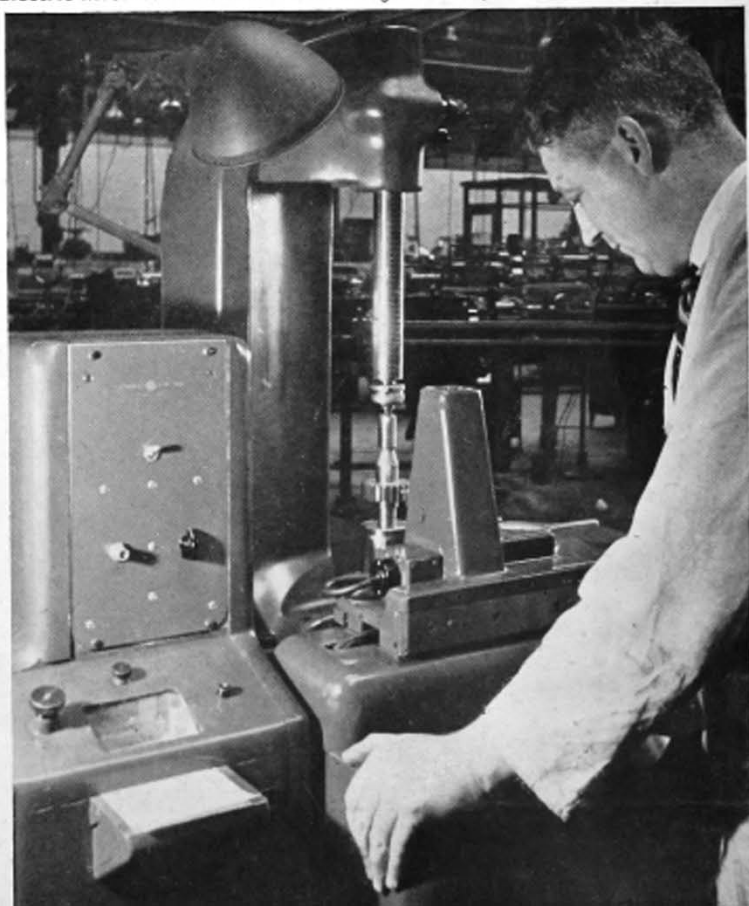
Although the idea of "Press a button and it works" may aptly describe the thoroughness of design and workmanship that goes into every *Swift* product, it certainly does not apply to the factory organisation as a whole. There is no super-human secret in the way things get done; no atmosphere of mechanical robots



Electric Involute Gear Tester. Recording deviations from theoretical involute.



In the View Room. Every component is subject to careful inspection.





Component tests complete. The gear unit is heavily greased, for many years of trouble-free wear, and assembled.



A Sub-assembly. Part of an hydraulic pump.

working automatically to some intricate and involved production schedule which allows no latitude for human problems, personal co-operation or individual enterprise. In fact, the very reverse of this is probably the most potent force of all underlying the efficiency and pride of workmanship everywhere evident in the *Swift* factory. The greater the sense of personal responsibility implanted into even the most junior of operatives, the better will be the quality of the work. The happier, too, will be the worker, and happiness is the first essential of good workmanship.

An important element in the high standard of efficiency at *Swift's* is the effective co-operation of management and workers. The Joint Production Committee is the forum for the discussion of special problems which affect the employers and men. It is the clearing-house for complaints and grievances; but these meetings are also a valuable means of shedding light on to problems of production. When you see a J.P.C., where discussion is brisk and eager, you know that the factory itself is a vital place, reflecting in its



The birth of a Weighing Machine. Mechanism being assembled.



A frank discussion. Personnel Manager and Shop Steward discuss a problem.



The Joint Production Committee. *Management and workers get together.*

efficiency the enthusiasm of workers, foremen, managers and directors.

The J.P.C., meets every four weeks. Round the table sit members of the management and representatives from each section elected by the workers. All meet together as one body, not as negotiating or opposing sides. All have equal standing and all meet for the sole purpose of seeking ways to improve production. A suggestion is put forward by one of the members for an improvement in a detail of organisation in the shop he represents. Another suggests the more efficient use of a tool. Discussion turns to a practical suggestion for overcoming a bottleneck or the more efficient layout of bench equipment in a certain section.

Another committee deals with the working conditions and



Every point of view is considered.



A Shop Steward states his case.



Hot Meals for Workers. The Swift Canteen.



"Help-Yourself" Cafeteria Service. The canteen is used in the evenings for dances, plays, concerts.



The Works Surgery. Infra-red treatment.

Relaxation. Workers read, talk or play



comfort of employees. This is the Welfare Committee comprising elected representatives from the works and presided over by the Personnel Manager. Here the discussion turns to such subjects as protective gloves or the use of anti-dermatitis ointments for those engaged in certain processes. Or the question may be raised for providing cheaper canteen meals for juvenile workers, or the elimination of draughts near doorways in the winter, or an appeal for better bus services outside the works and a hundred and one similar items affecting the general comfort, convenience and welfare of *Swift* workers. Still a further committee concentrates on the safety-first aspect of working conditions and deals similarly with innumerable suggestions and improvements for maintaining the highest possible standards of safety.

Factory welfare has made a bound forward in recent years. *Swift's* is one of the leading factories in caring for its workers, both in health and morale. There is a canteen which provides excellent three-course lunches at a very nominal price and remains open during working hours for serving hot drinks and light refreshments. In addition, canteen trolleys tour the works during the morning and afternoon ten-minute breaks. The health of the worker is looked after by the Sister-in-charge in her well-equipped surgery where a medical history card is kept for every employee. A medical officer is at the disposal of workers who seek advice or consultation. There is free infra-red treatment available for those who need it.

A highly organised social side to the *Swift* factory is largely responsible for encouraging the "family spirit" so essential to close co-operation and singleness of purpose in working hours. The Social Club is divided into active and enthusiastic sections catering for football, cricket, swimming, boxing as well as indoor recreations of all kinds. Within the wide circle of these amenities centres the social and recreational life of many *Swift* employees and their families. There are dances every week in the canteen. Periodically during the summer months large scale week-end outings are made to the coast or country. Perhaps the most popular event of the year, at least so far as the "families" are concerned, is the Children's Xmas Party at which the coming generation demonstrates in no uncertain manner the same qualities of vitality, enthusiasm and human co-operation which, in their parents, so largely contribute to the success of *Swifts*.

It is this spirit, this common endeavour to see a sound job well done, combined with scientific methods, superb equipment and highly efficient organisation, that makes the *Swift* symbol the mark of modernity



'Swift' gives a Christmas Party for the Children. Father Xmas distributes his load of presents.



wherever British products are known, both at home and abroad. That is why, in the forefront of the products which are emerging from post-war Britain, *Swift* products are regarded as representative of British precision, British enterprise and British reliability.



Doing fine! The Managing Director and a "satisfied client."



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