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The Editor will be glad to receive MS. articles and also illustrations of current architecture in this country and abroad with a view to publication. Though every care will be taken, the Editor cannot hold himself responsible for material sent him.

THURSDAY, May 20, 1937. NUMBER 2209 : VOLUME 85

PRINCIPAL CONTENTS

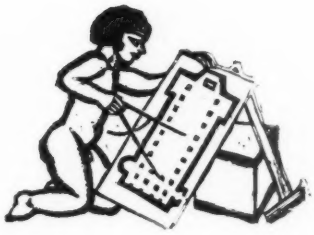
NEARING COMPLETION

OFFICE BUILDING, MINORIES, E.C.

THE frame is of steel, with an external facing of faience. Glass is used for about 50 per cent. of the exterior, the longest unbroken length of window being 70 ft. Messrs. Fuller, Hall and Foulsham are the architects.

FACTORY AT SLOUGH

This factory for Messrs. Berlei (U.K.), Ltd., stands on a site about 300 ft. square on the south side of the Great West Road, and is used for the manufacture of corsets. It is a steel framed structure, faced with faience, and has asphalte flat roofs, metal doors and windows, and reinforced concrete floors. The architects are Sir John Brown and Henson in association with W. D. Hartley.



THE NEW TRADING ESTATE

THIS issue is almost entirely concerned with Trading Estates. The term has become common during the last few years. Its faint suggestion of organized concentration has made it a popular term for publicity purposes. Because of this, and because the principal purpose of a Trading Estate is not expressed in its title, the JOURNAL's survey of a comparatively new industrial unit should begin with a definition. The term Trading Estate, therefore, is taken to mean an area specially selected, planned and equipped for lighter manufacturing purposes, factory sites or completed factory buildings being let to a variety of manufacturing companies. Today the term is used more freely, sometimes covering an area of heavy industries and sometimes describing any plot of land on which a speculator hopes to squeeze a factory or two ; but it is in the sense defined that Trading Estates are really important in the possible solution they may offer to some of our most urgent industrial problems.

What have Trading Estates to do with architects ? Today, very little. In the next ten years—if the possibilities of Trading Estates are in any way realized—a very great deal ; for gradually the directors of British Industry are beginning to realize that in the formation of any manufacturing centre which is to be thoroughly suitable for its purpose the architect must play a part. And this realization has been underlined by the appointment of the President of the R.I.B.A. and the Professor of Civic Design at Liverpool as consultants to the first two Government Trading Estates.

Such a first step makes it the more important for architects to understand the idea behind Trading Estates and even the reasons which led to the idea. The reasons are many and of huge importance.

Industries like coal, steel and shipbuilding, and to a lesser degree cotton and wool—the geographically fixed industries—have been declining since the war. Simultaneously there has been a great development in light industries—in wireless sets, hosiery, canned goods and the rest. And these light industries are geographically fixed to a much lesser extent. Local rates in the various districts, transport costs, availability of suitable labour and the personal whims of the owners are the chief factors which decide where a new light industry is to be situated.

In the result these light industries have poured into the area within forty miles from Charing Cross. The reasons for their so doing are understandable : in the south there was not any feeling of depression, high unemployment or such rigid trade unionism ; London was prosperous and was a huge doorstep market for semi-luxury products.

The final consequences of this movement are now recognized as certain to be regrettable. Highly skilled labour in Wales and the North is left unemployed, while the fringe of Greater London, urgently needed as extra room for a population already too large, is being filled with new industrial enterprise.

Ultimately new factory development around London must be stopped ; for the moment the Government is hoping to achieve a partial turn of the tide by offering industrialists counter attractions elsewhere. The most important of the possible attractions is the Trading Estate.

It is suggested that eventually in each of the Special Areas a large site should be carefully selected for new industries. Not a questionable piece of land so often scheduled for industry in town-planning schemes on much the same principle as some architects mark a cupboard in an awkward corner, but one specially suitable because of transport and power facilities and proximity to a labour pool. Once chosen, the site is to be prepared, roads and services laid out, administration offices, car parks and canteens prepared for and even a certain proportion of factories built.

Of Trading Estates of this kind two are being made ready by the Government and enough of their factory accommodation has already been rented to make certain that their possibilities will be thoroughly tried out. What remains, if the first trial is successful, is for Trading Estate development on a scale capable of preventing the drift to the south.

Sir Malcolm Stewart, the first Commissioner for the Special Areas, has written that while it may be unwise to tell new industry where to go, he believes that it should be told where it is *not* to go—that it should not be allowed to come into the Metropolitan area. If this suggestion is adopted, there is still a wide choice left to new industries and there would seem strong grounds in the first instance for attracting industry to Special Area Estates by quite considerable relief from local rates.

There is every probability if this is done of the new industrial group proving its superiority over the isolated factory in almost every way. Initial outlay will be reduced, transport and power services will already be in existence, and amenities for workers such as canteens and baths will be possible on a scale with which the single factory cannot compete. And new industry, even if it is unable to start business in a Special Area, will begin to weigh the advantages of settling on a well-prepared Trading Estate elsewhere.

The Trading Estate as it should be is a problem for the town planner, the architect and engineer. In the freeing of industry from fixed geographical location each has now an opportunity ; especially the architect. Since the beginning of the Industrial Revolution architects have contributed to industry only a few façades behind which the real work goes on. To the idea of a new kind of Trading Estate it is believed that they can give something more. This issue is intended to explain that idea and to illustrate Estates both new and old.

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NOTES & TOPICS

HOW WE CELEBRATE THE CORONATION

FIRST amongst those whom neither the patriotism of Mr. Selfridge nor the good taste of Mr. Wornum has reconciled to the Coronation, must be placed Mr. Robert Byron, whose renowned forbear it will be remembered sometimes showed a tendency to swing to the left.

*

Mr. Byron may have left wing tendencies. I shouldn't think so. As one who knows him I should say he was a man of ardent royalist convictions. He is not, however, one to suffer humbug gladly, and in his new pamphlet *How We Celebrate the Coronation** he has fired off a broadside into ye olde oaken timbers of our most august institutions, whose role of public auctioneers knocking down "historic London" (over which, as its trustees, they are prone to sentimentalize disgustingly) to the highest bidder, sickens Mr. Byron quite a lot.

*

Let us hope it still sickens some of the readers of this JOURNAL, who are urged to buy, read and give away this pamphlet to their friends—or enemies.

*

Starting with Carlton House Terrace he goes on to tell of some of the worst examples of official vandalism, ending with a picture of Mr. Herbert Morrison lifting the first stone to inaugurate the destroying of Waterloo Bridge.

*

Here is an example of his style :—

The Venetians when they fired on the Parthenon, or the Germans on Rheims Cathedral, had the excuse of an emergency—even if posterity has not accepted it. We have no excuse, acceptable or otherwise. Slowly and furtively, but only too surely, England and the Empire are being defrauded of their ancient capital, against their wish and without their consent, and must needs find comfort, not in a city more beautiful or convenient, but in one whose sole advantage over its predecessor is that it can be sucked of a few more halfpennies by the leeches of Whitehall and the spiders of the Church, by the long-nosed vampires of high finance and the desperate avarice of the hereditary landlords.

*

And here is another :—

The behaviour of the Church in matters which do concern it is, if possible, more odious still. In other days, the Church believed in good art; many of the finest works of English architecture owe their origin to ecclesiastical patronage. Now things have changed. It is not merely that our modern priests are ill-educated, lacking in taste, and incapable of detecting an object of beauty when they see one; not merely that for them, as for Ruskin, architecture is indissoluble from morality and must either therefore be Gothic or must stink to heaven of paganism. Such defects one could forgive them for their poverty, except in the case of Bishops, who are well enough endowed to acquire some pretence of culture to mellow their declining years. Ignorance and stupidity, however, are merely negative. What sickens is the positive rancour with which these befrocked and dog-collared vandals regard every place of worship that happens to employ the architectural language of the Renaissance instead of that of the Middle Ages . . . . .

Arthur Foley Winnington-Ingram, Bishop of London, has enjoyed the emoluments of his diocese for 36 years. One might suppose that in such a period he would have developed an affection, or at least a simulation of gratitude, towards the city that has cherished him and listened to him with such exemplary patience. Not he! In 1919 this prelate decided of his own wisdom to abolish 19 of the City Churches in a simultaneous holocaust.

I WAS IN HOLLAND

With a million odd people suffering from that peculiar semi-breakfastless six a.m. sensation at the bottom of their tummies and all struggling to reach their seats or retain their position in the gutter, I must confess to a feeling of satisfaction over the best omelette that Mitropa could provide. And simultaneously I could study the red, white and blue of the Haarlem bulb fields.

*

It was the late Cohen-Portheim, I think, who chose Amsterdam as a symbol of one of those tremendous national cultures which are worth preserving. The Dutch merchants who lived over their warehouses, who look at one from the Frans Hals' canvases and whose silver plate and candlesticks are housed in the Riks Museum really did raise domesticity to an art and, in modern *cliché*, gave dignity to commerce.

*

The Dutch, like the other civilized "northern neutrals" are as progressive as any people in the world and the culture that Cohen-Portheim admired still lives on. After all, two living rooms, two bedrooms, a bathroom and a garden, all looking on to a modern parkway, for 8s. 6d. per week isn't so bad. But a Scotsman on the train was quite hurt when I told him that his language shared a good many words with Dutch.

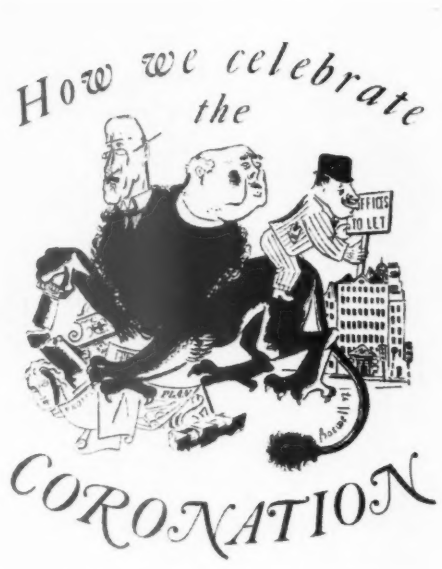
HILVERSUM—RADIO STATION

I looked again at the Town Hall (still good) and then went to the neighbouring Radio Station. This whole building seemed to show an almost Hellenic clarity of thought; the kind of building in which a Greek, coming back from the grave, would be so interested.

*

We were shown round it in the most charmingly hospitable manner—have you ever tried to get a permit

* *How We Celebrate the Coronation.* By Robert Byron. The Architectural Press. Price one shilling.



A reproduction, approximately half-size, of the cover of "How we Celebrate the Coronation."

to see the B.B.C. building?—and finished up in an all-glass restaurant looking onto the emerald lawns of Hilversum. My friend was wearing his kilt and I must say Hilversum seemed a little shattered.

*

At nine p.m. on Wednesday evening, in the Movietone Nieus we saw the Konig and Konigen krooned in Westminster Abbje, it was nice to know that our absence from England had not made any difference.

CAMBRIDGE AFTER DARK

A swift pre-coronation trip to Cambridge found me in time for a floodlighting rehearsal at King's, where the Chapel and the river front of Gibbs' building were both excellently done in plain white light with no pickings out of odd features in rose pink or old gold.

*

And I decided again that Gibbs' building is the best thing in Cambridge, in spite of the unorthodox fenestration at each end of the façade. Floodlit, it has none of those harsh upward-thrown shadows that make such nonsense of so many buildings: partly, I suppose, because it is only three storeys high and more so because that noble expanse of grass leading down to the river made it possible to set the floods about 15 or 20 yards away and get a reasonable angle of throw.

WINDMILLS

After Cambridge, combining business and pleasure in the way so much deprecated by our fathers, I managed a little tour in East Anglia and near Denver Sluice succumbed to another windmill—still in fine working order, and superintended by a most intelligent young man. I was shown how the windmill anticipated the main idea of the "variable pitch" airscrew by 200 years. (Is not a grouse fitted with Handley-Page wing slots?)—the pitch in this case remaining constant while the slats of the sails are weighted to open and shut according to the strength of the wind. I also admired the transmission and shafting of oak, with apple and thorn teeth; in the expert's opinion quite as satisfactory as steel and much cheaper. Individual teeth can be easily replaced.

*

So it was disappointing to learn that, on the whole, the single-cylinder Diesel engine in an adjoining building was considered the cheaper and better horse. For the windmill, running though it does for 300 days a year, will not speed up during rushes; and driving only one pair of stones can only be used for cattle and pig food.

*

Its guardian was, however, very fond of it; explained its little ways with all the kindly paternalism which I felt for a car I once had; so I am certain the mill will have a peaceful and happy retirement.

MAY DAY MISSTATEMENT

A fortnight ago, when still inspired by a 40-minute view of the May Day Procession from a tram, I mentioned some of its component parts; among them a group who had sufficient belief in their views to follow the banner "Architects for a Planned Society."

*

In that group I said that I recognized a member of a particular firm—and named the firm. In so doing, I have since learnt I did not choose my words with sufficient accuracy.

*

"Member of" is often used as synonymous with "partner in" and no partner in the firm of Messrs. Praxis was in the Procession. I withdraw: with great regret.

*

Secondly, I have heard that clients of the firm in question have been shown my note (no doubt with hints of "subversive tendencies") by several persons with nothing better to do. This is even more deplorable. I deeply regret inaugurating such a mischief-maker's Paradise.

£4,000 A ROOM

"Our cottage will be an exact replica of an ancient Persian mansion. It will have an attractive square-looking appearance because we have decided to do without the minarets, but the windows will be genuine Persian in shape." Thus Mr. James Cromwell, who is running up a little £20,000 shack on the millionaire's beach at Honolulu.

*

Not, I admit, my own idea of the perfect week-end cottage, but if my father were a Morgan partner *and* if my wife had £25,000,000 as well, I suppose I should have to spend it somehow. And ART, of course, is a terribly respectable outlet, even if it's only faithful reproduction.

ASTRAGAL

The usual weekly features—Working Details, Rates of Wages, Current Prices, etc.,—are held over from this issue; they will be resumed next week.

NEWS

POINTS FROM THIS ISSUE

CITY ARCHITECT AND ESTATES MANAGER, GLOUCESTER

The Gloucester City Council has received 96 applications for the above appointment, and the following have been selected for interview by the Estates and General Purposes Committee on May 28: Messrs. E. S. Ballard, Estates Manager, Birkenhead County Borough Council; F. W. Harvey, L.R.I.B.A., Architect and Building Surveyor, Newcastle-upon-Tyne Education Committee; A. Morgan, M.INST.M. & CY.E., Deputy City Surveyor and Waterworks Engineer, Gloucester; R. G. Morgan, A.R.I.B.A., F.S.I., M.INST.M. & CY.E., Chief Architect, Salford; K. Palmer, A.R.I.B.A., Estates Manager, Leicester Corporation; F. C. Ravenhill, L.R.I.B.A., Housing Manager and Architect, Gloucester Corporation; F. R. Steele, A.R.I.B.A., P.A.S.I., A.M.I.STRUCT.E., Assistant Architect, Borough Engineer's Department, Huddersfield; R. V. Taylor, A.R.I.B.A., Deputy County Architect, Somerset County Council.

THE ARCHITECTS' DIARY

Thursday, May 20

ROYAL ACADEMY EXHIBITION, *Burlington House, Piccadilly, W.1. Until August 7.*

REDFERN GALLERY, *Cork Street, W.1. Exhibition of watercolours, drawings and collages by Paul Nash. Until May 29. 10 a.m. to 6 p.m. (Saturdays 10 a.m. to 1 p.m.)*

THE BRITISH SCHOOL AT ROME, *Imperial Gallery of Art, Imperial Institute, South Kensington, S.W. Exhibition of works submitted in the Competitions for the Rome Scholarships of 1937 in Mural Painting, Sculpture and Engraving. Until May 22. 10 a.m. to 5 p.m.*

BIRMINGHAM MUNICIPAL SCHOOLS OF ARTS AND CRAFTS, *At the Museum and Art Gallery. Exhibition of Students' Work. Until May 22. 10 a.m. to 6 p.m.*

LONDON SOCIETY, *Visit to the Works of Crosse and Blackwell, Crimscott Street, Bermondsey, S.E.1. 2.30 p.m.*

Friday, May 21

INSTITUTION OF ELECTRICAL ENGINEERS (Scottish Centre), *At the Training College Hall, Park Place, Dundee. "Electricity in the Hospital." By R. S. Whipple. 7.30 p.m.*

Saturday, May 22

ASSOCIATION OF ARCHITECTS, SURVEYORS AND TECHNICAL ASSISTANTS, *Second visit to the University of London New Buildings. 2.30 p.m.*

Monday, May 24

CHARTERED SURVEYORS' INSTITUTION, *At 61, George Street, S.W.1. Junior Organization. Annual General Meeting. 6.30 p.m.*

Tuesday, May 25

ARCHITECTURAL ASSOCIATION, *36 Bedford Square, W.C. "Designing for the Films." By L. P. Williams. 8.30 p.m. Also, Exhibition of Work, including Sketches, Set Stills and Working Drawings, by Film Art Directors in various parts of the world. Until June 12.*

COUNCIL FOR THE PRESERVATION OF RURAL ENGLAND, *At 66 Portland Place, W.1. Annual General Meeting. 3 p.m.*

LONDON SOCIETY, *Visit to Working Men's College, Crowndale Road, N.W.1. 3 p.m.*

Wednesday, May 26

ST. PAUL'S ECCLESIOLOGICAL SOCIETY, *At 6 Queen Square, W.C.1. "Westminster Abbey." By A. E. Henderson. 8 p.m.*

GENERAL POSITION IN THE BUILDING INDUSTRY

"The position of the building industry showed a further improvement in 1936," states the current issue of *The Building Industries Survey*, the Board of Trade index of production, "the value of building plans approved, the number of houses completed during the year ended September 30, and employment all increasing to new record levels. Seasonal influences during the winter have had their effect, but to an extent no greater than usual."

"Activity in 1937 continues to increase, and it is anticipated that new record levels will be reached. The position is not the same in all areas, and in this connection it is important to note that an attempt has been commenced in this issue of *The Survey* to present main information in each area as a connected whole. In general, however, the available indications point to the conclusion that housing activity will be fully maintained at its present high level while non-residential building will continue to increase."

BRITISH BUILDING SOCIETIES' NEW RECORD

During 1936 British building societies lent on mortgage the record sum of £140,292,312, the bulk of which was advanced to enable people of moderate means to buy their homes. It was the fourth successive year in which loans by building societies exceeded £100,000,000.

ANNOUNCEMENT

Mr. Clifford Holliday, M.ARCH., F.R.I.B.A., M.T.P.I., has opened an office at 22 Suffolk Street, Pall Mall, London, S.W.1. Telephone: Whitehall 3273.

ON THE AIR

Thursday, May 20. Television. "The Architect and His Clients." By a well-known architectural critic. 3.15 p.m. The talk will be repeated at 9.15 p.m.

NEW COMPETITIONS

The Royal Burgh of Kirkcaldy invite architects practising in Scotland to submit, in competition, designs for new municipal buildings. The assessor is Mr. Thomas S. Tait, F.R.I.B.A., and the following premiums are offered: £200, £150 and £100. The last day for submitting designs is September 1, 1937, and the last day for questions is June 21. Conditions of the competition may be obtained on application to Mr. William Hutton, Town Clerk, Kirkcaldy. Deposit £1.

The Redcar Town Council has decided to promote a competition for the scheme of development which it is proposed to carry out on the Stray.

R.I.B.A.: ELECTION OF MEMBERS

At a recent meeting of the Council of the R.I.B.A., the following members were elected:

As Honorary Associates (3): Mr. J. Gloag (London); the Rt. Hon. W. Ormsby-Gore (London); and Mr. G. L. Pepler (London).

As Fellows (2): Major O. S. Portsmouth (Swansea), and Mr. W. Williams (Cardiff).

As Associates (23): Messrs. F. J. Crocker (Bondi, Australia); H. Doffman (Stoke-on-Trent); T. J. Gaskell (Oxford); W. B. Griffiths (Melbourne, Australia); H. Hall (Leeds); R. W. Higgs (Birmingham); A. Jawitz (Johannesburg); (Miss) J. Kirby (Birkdale, Lancs.); I. Leeb (Muizenberg, South Africa); H. R. McCauley (South Strathfield, Australia); C. A. Madden (London); F. G. Montgomery (Liverpool); F. A. Morrison (Edinburgh); M. H. Norris (Melbourne, Australia); R. C. Ogilby (Melbourne, Australia); M. Pearlman (London); R. A. Rogers (Summer Hill, N.S.W., Australia); J. M. Scott (Bridlington, E. Yorks.); (Miss) M. D. Sharpe (Shipley, Yorks); (Miss) J. Shufflebotham (London); J. W. Tucker (Sydney, Australia); J. H. Wales (Gargrave, near Skipton); and G. W. Wright (London).

As Licentiates (5): Messrs. F. T. Bettington (London); L. T. Colburn (Palestine); H. H.

Members of the Association of Architects, Surveyors and Technical Assistants at Victoria Station, London, on Friday last, prior to their departure for Paris to visit the International Exhibition.

Hounsell (Bridport); W. L. Wood (Bletchley); and P. V. Worthington (Manchester).

ARCHITECTS' BENEVOLENT SOCIETY

At the annual meeting of the Architects' Benevolent Society, the election of the Council for the year 1937-1938 was announced as follows: President, The President of the R.I.B.A.: Vice-Presidents, Sir Banister (Flight) Fletcher, Mr. H. S. E. Vanderpant, and Sir Charles A. Nicholson, Bart. Ordinary Members: Messrs. A. Hunter Crawford, H. Chalton Bradshaw, L. S. Sullivan, G. E. S. Streatfeild, S. Phillips Dales, Michael T. Waterhouse, F. R. Yerbury, A. Saxon Snell, Stanley H. Hamp, Gilbert H. Lovegrove, C. H. James, Charles Woodward, Maxwell Ayrton, Charles H. Holden, F. Winton Newman, Edward B. Maufe, A. H. Moberly, J. Alan Slater, Francis Jones (representing the Manchester Society); C. M. Hadfield (representing the Sheffield, South Yorkshire and District Society); Ernest Bird (representing the Hampshire Society); Percival C. Blow (representing the Essex, Cambridge and Herts Society); L. H. Bucknell (representing the Architectural Association); Percy W. Lovell (representing the London Society); E. Hadden Parkes (representing the Mount Pleasant Artists' Rest Home); Maurice E. Webb (Honorary Treasurer); Sir Charles A. Nicholson, Bart. (Honorary Secretary).

BUILDING INDUSTRIES NATIONAL COUNCIL

The fifth annual meeting of the Building Industries National Council was held recently at the R.I.B.A.

The work of the Council during the past year was reviewed and decisions taken by the appropriate Committees on behalf of the Council were approved. Among the main subjects reported as having been dealt with were the following:—

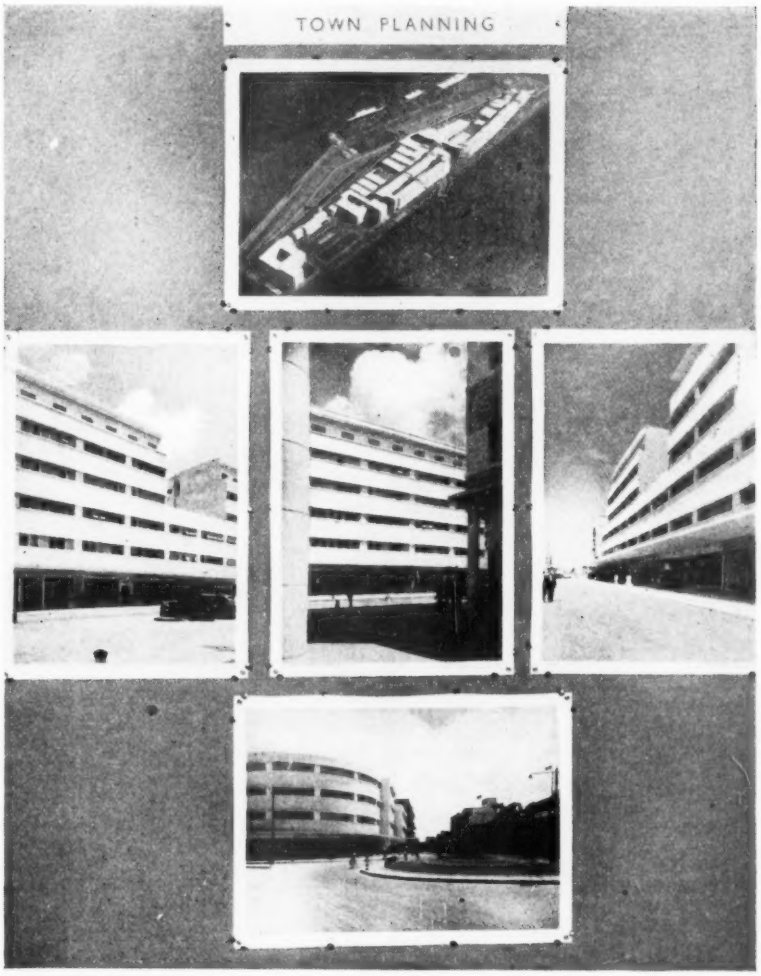
(1) *The London County Council's Proposed Building Bye-laws.*—The progress in this matter was reported upon, and the Advisory Committee on Building Acts and Bye-laws was empowered to consider the extent to which objections made with regard to the original draft bye-laws had been met in the revised draft, and to decide which, if any, objections lodged on behalf of the Council should be withdrawn.

(2) *Code of Practice for Roof Tiling with Plain Tiles.*—The relevant committee reported that the draft of the "Code of Practice for Roof Tiling with Plain Tiles" was completed and the document would be published in the near future.

(3) *Research and Information.*—It was reported that consideration had been given to the possibility of co-ordinating much of the research carried out into matters connected with the industry, and especially the technical, economic, medical and sociological aspects, with a view to preventing overlapping and enabling the results of research undertaken from different standpoints to be co-ordinated to provide a body of data of greater use to the industry. Further investigation into the whole matter will be undertaken by a Committee set up for the purpose.

(4) *Defence and the Building Industry.*—It was reported that the defence programme of the Government was regarded by the Special Committee for Public Relations as a major consideration in relation to the economic policy of the industry, especially from the point of view of the mitigation of the alternation of boom and slump and the necessity of so organising special work on defence in relation to the other demands on the industry, that its cessation will not cause widespread unemployment and distress nor inflict lasting damage on the industry.

The office bearers for the forthcoming year are as follows: Patrons, The Lord Amulree, P.C., and Mr. Alfred C. Bossom, M.P.; president, Mr. John M. Theobald, P.S.I.; past presidents, Sir Raymond Unwin, P.P.R.I.B.A., and Sydney Tatchell, F.R.I.B.A.; senior vice-president, Mr. H. J. C. Johnston; vice-presidents, Messrs. Geo. Hicks, M.P., G. H. Parker, Lt.-Col. C. W. D. Rowe, M.B.E., and Mr. Maurice E. Webb, D.S.O., M.C., F.R.I.B.A.; hon. treasurer, Mr. Oswald Healing, F.S.I.; hon. secretary, Mr. I. Ernest Jones, M.A.



Messrs. Holliday and Hubbard's work at Haifa. From the Liverpool Exhibition at the R.I.B.A.

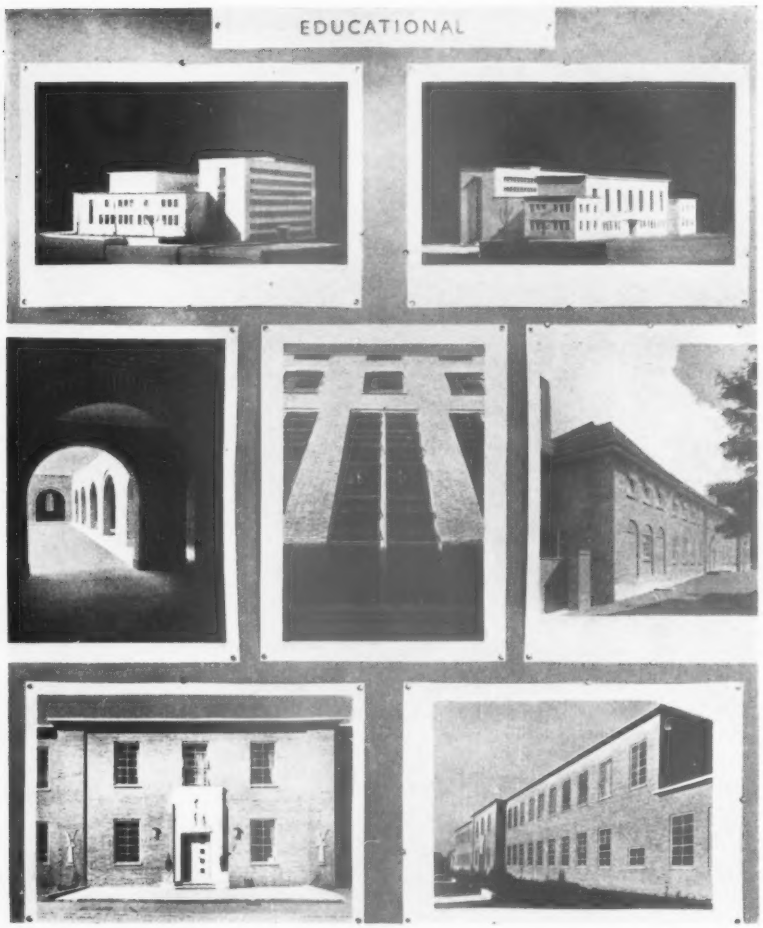
THE WORK OF THE LIVERPOOL SCHOOL

[*BY H. MYLES WRIGHT*]

IT is impossible to avoid thinking of Professor Reilly in moving amongst the photographs of completed work by Liverpool men and Liverpool staff at the R.I.B.A.—just as it is impossible not to think of him in trying to put into order some of the impressions felt there. The Liverpool School, to one who has never been to Liverpool, has always been an assembly of vague associations. Because it is in the north it was credited with determination and hard work; impeccable drawings for the big prizes gave a Beaux Arts flavouring; and its liaison with the U.S.A. conjured visions of rather soulless, enormously efficient graduates who could turn out perfect Florentine banks or Chester shop fronts with the same absence of feeling.

But Professor Reilly seemed different, although I am the least qualified of persons to write of him. Even twelve years ago it was difficult to reconcile Professor Reilly with an image of the right kind of head for the school of extreme but somewhat dryly classical competence which was my general conception of Liverpool. The present exhibition shows finally that I was right about Professor Reilly and wrong about Liverpool. And as nearly all the architects whose work is illustrated at the R.I.B.A. must have been at Liverpool with the man who made it really great, it is fair that it should be regarded as Professor Reilly's *apologia*. And one who is as free from the influence of that great personality as it is possible to be, can say firmly that justification is more than proved.

It is probably true, even though this may not be the best place to say it, that architects nowadays talk too much about



A screen of school buildings. From the Exhibition of work by Liverpool men at the R.I.B.A.

their work. Or, at least, that they talk about it too much in the wrong way. Architecture must to some extent reflect the society it is built for; today too much of it seems to express—even to accentuate—particular aspects of that society which specially appeal to the individual designers. The fixed idea does sometimes produce the greatest results; but it is a dangerous kind of inspiration. But unfortunately this is not all the danger—there is the opposite extreme of thinking too little, and of all the careful pallid mediocrity which is most of contemporary architecture.

The outstanding impression of the Liverpool Exhibition is that the buildings illustrated neither batter nor bore one. So well used have all the terms of architectural praise or abuse become by now that there seems no better way than that of expressing a quality shared by, nearly, all the exhibits. To call it balance might mean anything; to call it modern without being freakish might mean Neo-Georgian. But it is none of these things. It is a quality of rational thoughtful progressiveness, devoid of *ad hoc* dramatics, which is general enough in the work shown to make a common starting-point certain; the starting-point of Liverpool and Professor Reilly.

The R.I.B.A. Exhibition may not be representative of all of Liverpool's graduates, but what is shown proves that the classical studies of Liverpool were properly digested, that they were realized to be studies. Perhaps this thorough digestion of first lessons may explain much of the first impression, just as it expresses Professor Reilly's ability to move with the times while never forgetting the value of anything he knew before.

The Exhibition covers buildings of many kinds, and even a large part of a town in the case of Messrs. Holliday and Hubbard's work at Haifa. There is an architect's office, and a church hall, flats blocks and pithead baths, a high school in the U.S.A. and much more diversity. Here and there, in perhaps a tenth of the total, there is a work which dates and may date more. The rest, in my judgment, will manage to escape dating; and what is more (whether or not it is a merit nowadays) Liverpool seems to have succeeded in producing a progressive architecture which is British.

Mr. Checkley's houses at Cambridge are one well-known example of this native exploration of architectural possibilities; Mr. Maxwell Fry's house at Hampstead is another.

I have always felt privately that Mr. Fry was one of the few British architects who are completely masters of this treacherous modern business. I now suspect that Liverpool has something to do with it; even that Professor Reilly may be behind it all. For some of Mr. Fry's strong points appear here and there all over the Exhibition. Mr. Forshaw's pithead baths, Messrs. Mitchell and Bridgewater's own office and Mr. Gardner-Medwin's church hall all share with Mr. Fry's work an emanation of a sound classical education, concentration on the work in hand and progressive opinions thoroughly kept in order. And Mr. Lyon's work in Cairo, the work already mentioned in Palestine and Messrs. Perry and Lightfoot's Library at Johannesburg raise the wish that Liverpool men would not go abroad so much—until one remembers that it is easier for good influences to make themselves felt in official circles outside Britain.

It must not be supposed, however, that this exhibition is confined to those graduates whom a Liverpool education has made into the most advanced pioneers. Mr. Herbert Rowse's ventilating towers for the Mersey Tunnel, Messrs. Minoprio and Spenceley's Fairacre flats prove the second half of the first impression: that even work at first glance more conventional has always, on closer inspection, qualities which are interesting. Part of this may be explained by technical competence—there is a feeling that all of the buildings shown were thoroughly half-inched—but most of it must come from the general discovery at Liverpool of what matters in architecture.

Who it was that made this appreciation common to Liverpool men can be guessed, can even be proved, by looking at Professors Reilly and Budden and Mr. Marshall's new School of Architecture. The elevation is a composition which could hardly be simpler. Changed ever so slightly it could be a very ordinary building; as it is, it is something very special and worth looking at for a long time. It contains the merits spread all through the Exhibition—an approach from the human being outwards through contemporary structure, almost a Greek sense of proportion, and detail of distinguished fitness.

More broadly the work at the R.I.B.A. shows that there is a body of architects, and a school, which bring to bear on contemporary architecture the breadth of mind which it needs most. And after seeing Liverpool's Exhibition I think architects will want no other explanation of the genius of Professor Reilly.

The Architects' Journal Library of Planned Information

INFORMATION SHEET

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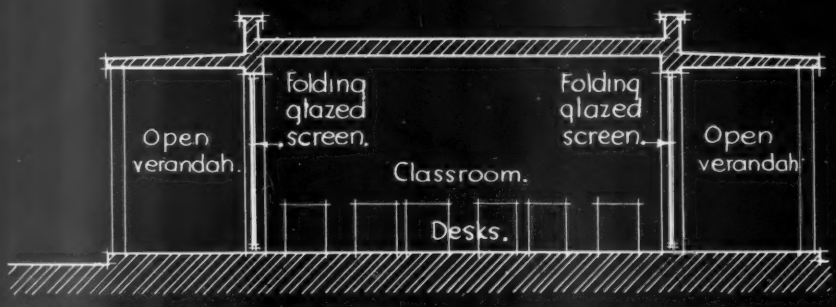
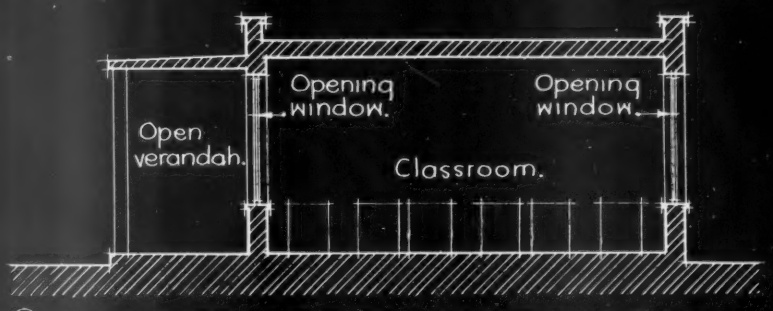
THE VENTILATION OF GENERAL CLASSROOMS.

The best ventilation for classrooms is natural cross-ventilation through open windows, which should be on opposite sides of the room and should extend to a uniform low level. The windows should open over at least 1/2 their area. Suitable types will be dealt with in a later sheet.

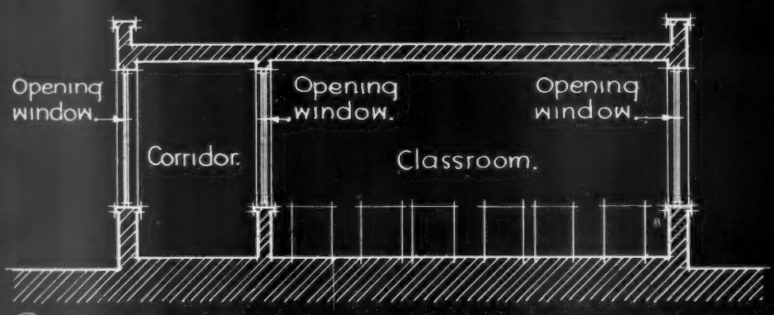
DIAGRAMMATIC SECTIONS SHOWING TYPES OF CROSS-VENTILATED CLASSROOMS.



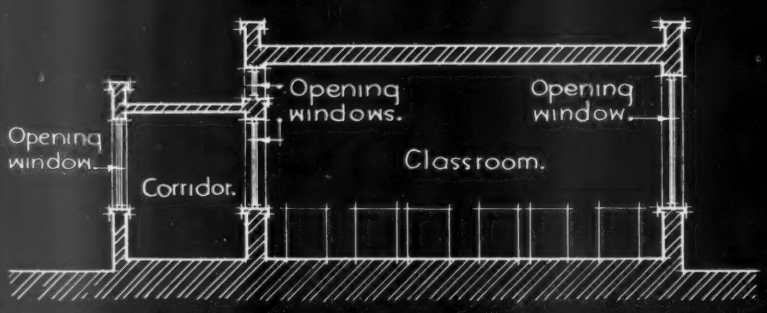
① DIRECT CROSS-VENTILATION.



② DIRECT CROSS-VENTILATION.



③ INDIRECT CROSS-VENTILATION.



④ INDIRECT CROSS-VENTILATION.

Classrooms 1. and 2. are ventilated direct into the open air on both sides. This is considered ideal cross-ventilation.

Classroom 1. is an "open air" classroom. Another type of "open air" classroom not illustrated has only one verandah but is similar in all other respects.

The air movement in these rooms is extremely free and necessitates special heating arrangements

Classroom 2. is not an "open air" classroom. The side walls are of any normal construction with large opening windows in them.

A disadvantage of open verandahs is the sharp contrast in temperature often existing between the verandah and the classroom. This exposes the children and teachers to the risk of chills while changing classrooms.

Classroom 3. is indirectly cross-ventilated, as it opens into the outside air on one side only.

This arrangement gives perfectly satisfactory ventilation if there are low-level, freely opening windows in the wall between the corridor and the classroom as well as in both outer walls.

Classroom 4. has similar indirect cross-ventilation, supplemented by high-level windows opening direct into the outside air above the corridor.

It is stated that these windows are apt to cause down draughts of cold air.

Extracts from "Elementary School Buildings" issued by the Board of Education 1936.

INFORMATION SHEET: ELEMENTARY SCHOOL BUILDINGS: No 2

SIR JOHN BURNET TAIT AND LORNE. ARCHITECTS ONE MONTAGUE PLACE BEDFORD SQUARE LONDON WC1 - Oscar A. Bayne

THE ARCHITECTS' JOURNAL
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INFORMATION SHEET

• 511 •

ELEMENTARY SCHOOLS—II

Subject : Ventilation of General Classrooms

The information on this Sheet is a summary of the recommendations regarding the ventilation of classrooms contained in the Board of Education pamphlet No. 107, " Suggestions for the Planning of Buildings for Public Elementary Schools " published in 1936 by His Majesty's Stationery Office, and is reproduced here by permission of the Controller.

Methods of ventilation :

The Board considers that general classrooms should be ventilated by a natural system of cross-ventilation by means of windows with a large opening area placed in opposite walls of the room, and deprecates the use of mechanical ventilation systems, or of combined systems of hot-air heating and ventilation.

The diagrams on this Sheet illustrate various methods of cross-ventilating, all of which fulfil the Board's recommendations. In all these examples, the windows are placed on opposite walls, but it is acknowledged that cases may arise where this cannot be arranged. Where this is so, it is recommended that cross-corner ventilation should be adopted, the windows being in adjacent walls, but in all other respects following as far as possible the arrangement of windows used for normal cross-ventilation. Care should also be taken that none of the windows is in the direct line of sight of the children or teachers.

Windows :

Windows may be of several types, and will be described in detail in a later Sheet. All windows should, however, conform to the following principles.

(1) They should open over at least one half, and preferably, the whole of their area.

(2) They should open in such a way that they can be regulated to suit the weather conditions.

(3) All windows depended on for ventilation should open down to a uniform low level. This is to avoid the creation of down-draughts of cold air.

Heating :

Where the ventilating system allows the free passage of very large quantities of unwarmed outside air, the heating system may have to be specially designed.

The Board recommends that, whatever system is used, it should be capable of providing radiant heat, as this is to some extent independent of air heating.

Previous Sheet :

The first Sheet in this series was No. 486.

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DIAGRAMMATIC CROSS SECTION OF A CLASSROOM SHOWING DAYLIGHT QUANTITIES AT WORKING LEVEL.

CONDITIONS:

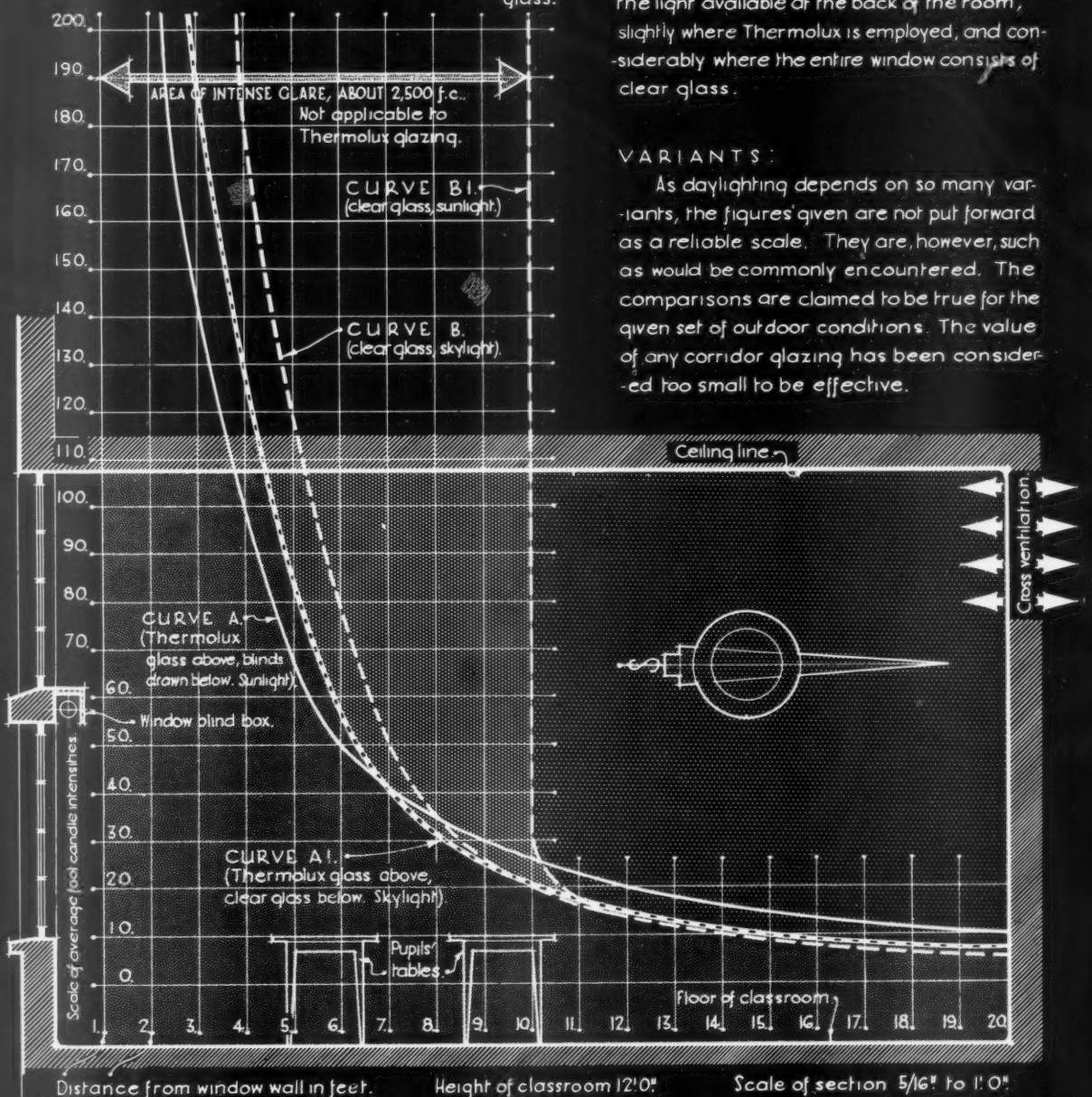
The sun is assumed as shining at 45° elevation on to a window containing above cill level either clear glass throughout, or clear glass 4'0" high & Thermolux 4'0" high, separated by a transom bar with blind to cover clear glass.

OBSTRUCTIONS:

It is assumed that there is no obstruction opposite the window & that a transom bar without a projecting canopy is being used. The existence of any form of obstruction would reduce the light available at the back of the room, slightly where Thermolux is employed, and considerably where the entire window consists of clear glass.

VARIANTS:

As daylighting depends on so many variants, the figures given are not put forward as a reliable scale. They are, however, such as would be commonly encountered. The comparisons are claimed to be true for the given set of outdoor conditions. The value of any corridor glazing has been considered too small to be effective.



CURVES A & A1.

Curve A shows the light distribution when Thermolux glass is used without blinds in the upper 4'0" of the window and clear glass is used below with blinds drawn: Light conditions: direct sunlight on window.

Curve A1. shows the light distribution when Thermolux glass is used without blinds in the upper 4'0" of the window and clear glass is used below without blinds. Light conditions: skylight only.

CURVES B & B1.

These curves show the light distribution when clear glass without blinds is used in the whole window

Light conditions: B. skylight only.
B1. sunlight direct on the window.

Sunlight is assumed to be of an intensity of 4000 ft. candles, skylight of 1500 ft. candles.

Information from the Thermolux Glass Co. Ltd..

INFORMATION SHEET: SMOOTH-SURFACED LAMINATED DIFFUSING GLASS: No 4

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INFORMATION SHEET
• 512 •
SCHOOL LIGHTING

Subject : Natural-Lighting of Classrooms

General :

This Information Sheet is intended to show the practical value of dividing windows of workrooms—in this case school classrooms—into two horizontal sections separated by a transom bar.

The upper section serves for illumination only, the lower section for vision and for illumination in the absence of sun. The transom bar provides a suitable recessed member to which a blind can be affixed.

The Curves :

These distinguish between internal conditions when there is available : (1) skylight only ; (2) skylight and sunlight.

(1) Skylight : Assuming skylight only (intensity about 1,500 foot-candles) and the glazed areas devoted to vision and illumination both fully exposed, the presence of Thermolux in the illumination area leads to increase in the amount of light available at the back of the room, shown by curve A1. This increase can be only slight where there is no obstruction opposite the window, i.e. where the amount of sky visible from the back of the room is roughly equal to the window area.

The existence of any obstruction opposite the window which tends to reduce the amount of sky visible, reduces the illuminating capacity of a clear glass window more rapidly than it does a window containing Thermolux. Thus, while in the absence of any obstruction the existence of Thermolux in the upper 4 ft. of the window offers an advantage at the back of the room of little more than 15 per cent., the existence of, for example, a 45° obstruction opposite the window would transform that advantage to about 400 per cent.

(2) Sunlight and skylight : Assuming sunlight with beams incident at an angle of 45° from the horizontal (intensity about 4,000 ft.-candles) together with skylight (intensity about 1,500 ft.-candles), and that the upper and lower sections of the window both contain clear glass, it is calculated that half of the room which is nearest the window will be reached by the direct rays of the sun and that the intensity of light at working level will be in the neighbourhood of 2,500 ft.-candles. This degree of illumination indicated by curve B1, constitutes intense glare in which ordinary classroom activity would be impossible. Ignoring reflections, the remainder of the curve which extends over the furthermost half of the room will be that applying to skylight only, coinciding with curve B. Under sunny conditions if the upper section of the window is glazed with Thermolux, and the lower section consists of clear glass covered with blinds (the light transmission of which is assumed for the purpose of calculation to be nil) it appears from curve A that the light distribution is as "even" as that obtained with clear glass during conditions of unobstructed skylight, with a further advantage at points remote from the window. The area of glare disappears completely.

The Illumination and vision areas :

It is suggested that for psychological reasons (avoidance of claustrophobia) it is desirable that workrooms should contain a strip of clear window. It is thought that the ideal position for this is from cill level to a height of about 6 ft. 6 ins. The glazed area above this should be devoted to illumination only, i.e. contain glass which diffuses light, insulates against radiant heat and reduces heat losses in cold weather.

Previous Sheets :

Previous Sheets in this series are Nos. 372, 373 and 499.

Information from : The Thermolux Glass Co., Ltd.

Address : 1 Albemarle Street, Piccadilly, London, W.1

Telephone : Regent 8171

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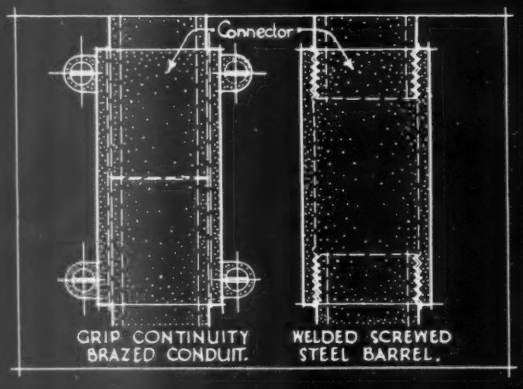
SERVICES AND PRELIMINARIES

PRICES ARE THOSE CURRENT DURING JANUARY, 1937.

APPROXIMATE ESTIMATING:

The following are approximate prices for Electrical, Heating, and Hot Water Installations, Internal Plumbing, and Preliminaries. Prices are for a medium sized job in the London area & include for overhead charges & profit.



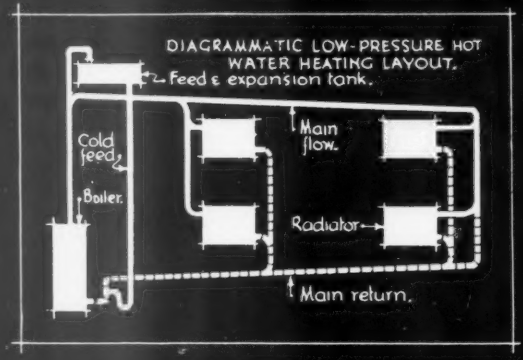
ELECTRICAL INSTALLATION.
INCLUDING GENERAL CONTRACTOR'S PROFIT, CUTTING AWAY, MAKING GOOD & ATTENDANCE.

IN WELDED STEEL SCREWED BARREL.

Lighting, per point	27/9.
Power, per point	54/-.
Clocks, per point	27/9.

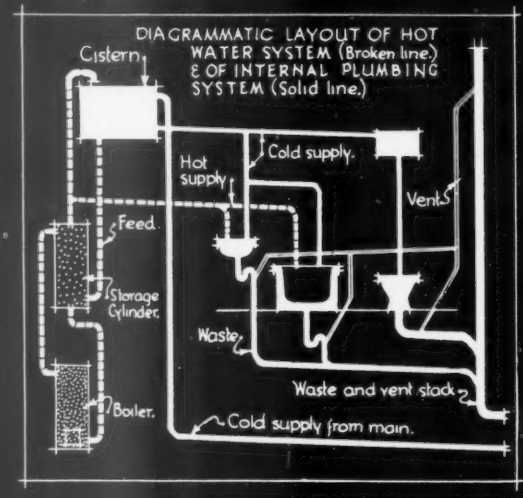
IN GRIP CONTINUITY BRAZED CONDUIT.

Lighting, per point	25/-.
Power, per point	48/9.
Clocks, per point	25/-.
Electric Bells, including transformer	17/3.



LOW PRESSURE HOT WATER HEATING INSTALLATION.
INCLUDING GENERAL CONTRACTOR'S PROFIT, CUTTING AWAY, MAKING GOOD, ATTENDANCE & PAINTING.

House, per radiator	£14/-/-.
Flats, per radiator	£12/-/-.



INTERNAL PLUMBING.
INCLUDING CONNECTION TO MAIN, SERVICES, WASTES ETC, FITTINGS OF THE P.C. SUMS STATED, PROFIT AND WORK IN CONNECTION.

HOUSE.

Bath.....(p.c.£10/-/-)	£21/-/-.
W.C.....(p.c.£5/-/-)	£15/15/-.
Sinks....(p.c.£2/10/-)	£13/2/6.
Lavatory.(p.c.£3/-/-)	£13/13/-.

FLATS.

Bath.....(p.c.£10/-/-)	£18/10/-.
W.C.....(p.c.£5/-/-)	£13/5/-.
Sinks....(p.c.£2/10/-)	£10/12/6.
Lavatory(p.c.£3/-/-)	£11/2/6.

HOT WATER INSTALLATION.
INCLUDING GENERAL CONTRACTORS PROFIT CUTTING AWAY, MAKING GOOD & ATTENDANCE.

HOUSE.
Per fitting ..... £8/10/-.

FLATS.
Per fitting ..... £5/5/-.

PRELIMINARIES: INCLUDING FOREMAN, PLANT, NOTICES & FEES, WATER & INSURANCES ETC. Add 5% to the total cost of the Estimate.

Note: Architect's and Quantity Surveyor's fees should be added to the Estimate separately.

Figures by Davis and Belfield, P.P.A.S.I., Chartered Quantity Surveyors.

INFORMATION SHEET: UNIT SYSTEM FOR APPROXIMATE ESTIMATING: 14

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INFORMATION SHEET

• 513 •

APPROXIMATE ESTIMATING—XIV

Subject : Services and Preliminaries

This series of Sheets, taken as a whole, forms a complete system for the preparation of detailed estimates. Alternatively, less detailed estimates can rapidly be made, merely by multiplying the areas or quantities of the different component parts of the building by the appropriate unit prices, varied by judgment alone.

For all normal estimates, and whenever time permits, account should be taken of the difference in cost of the various types of finish, etc., shown with each typical form of construction. These have been kept to a minimum for the sake of simplicity, but other materials, if the prices are known, may easily be compared.

The system is not intended to replace the complicated pricing data necessary for a very close estimate, but it should, in all cases, prove more accurate than cubing, and it should be found particularly useful in alteration work, or work where the price per foot cube is not well established. An additional advantage is that firm estimates obtained for lifts, plumbing or other services, fittings, etc., can be used in conjunction with this system much more readily than with the cubing method.

The prices of steelwork and reinforced concrete work fluctuate considerably, and sufficiently accurate approximate figures cannot be given. These items, therefore, have not been dealt with, and this Sheet, the last of the series, deals with Services and Preliminaries.

Normal types of electrical work, heating, hot water and internal plumbing have been dealt with and the figures given should be increased slightly for small jobs with few fittings, or where there are long runs of pipes, conduits, etc., to each fitting. Similarly the price may be reduced if a larger number of fittings are grouped together.

Prices for gas installations vary too much to allow of an approximate price being given.

FOREWORD

BY SIR GEORGE GILLETT

COMMISSIONER FOR THE SPECIAL AREAS, ENGLAND AND WALES

IT gives me much pleasure to contribute a Foreword to the Trading Estates Issue of the JOURNAL. Anything you can do to help to preserve the beauty of our towns and countryside has my warmest support.

It is, I think, of general knowledge that an important part of the present industrial development of this country consists in the emergence of a great variety of manufactures of the lighter type. A modern community consumes a bewildering variety of goods, a considerable proportion of which are specialized articles and luxuries. The manufacture of goods to meet special and limited needs is often necessarily organized on a relatively small scale ; yet industrial units producing many different varieties of goods have common needs for services and amenities which can most economically be provided from common sources.

It is almost a matter for surprise, therefore, that little has so far been consciously done to bring industries together for their mutual benefit. The idea of the trading estate is not a new one, but it is one which may be expected in the future to produce visible results far beyond anything which we have so far seen.

The advantages of trading estates to the small industrialist are too obvious

to need detailed description by me ; the estate is able to provide him with a factory of suitable size which he may lease, and with such services as light, heat, power and transport, as well as recreational and other facilities for his workpeople, in a way which might well be beyond his reach if he were to seek them individually instead of communally.

The estates have, however, a further advantage which affects the community at large and which all architects will already have appreciated. Factories built at random, even though in themselves they may be both costly and well designed, may often be unsuitable to their ultimate surroundings (which the architect may have no opportunity to foresee) and produce an impression of disproportion and ugliness where co-ordination might have produced beauty. A trading estate, on the other hand, can be planned from the outset in such a way as to produce harmony both between its separate units and between the whole estate and its surroundings.

The object of my predecessor and myself (as well as of the Commissioner for the Special Areas in Scotland) in establishing trading estates in the Special Areas has naturally been first and foremost to further the work of economic revival with which we have been entrusted by the Government ; our hope has been that by providing Exchequer assistance to set up estates in the North-East, in South Wales, and in Scotland, we should attract to the Areas a variety of undertakings which might otherwise have been established in districts less in need of economic development. But we ourselves and those who have undertaken the immediate conduct of these enterprises have been fully alive to the need of making the estates not merely efficient industrial units but as pleasant architecturally as is possible within the limitations of industrial requirements and of reasonable expenditure.

Perhaps as an instance of the importance attached in all three estates to this aspect of the work I may mention what has been done in the first of the estates set up, that in the Team Valley near Gateshead. With the assistance of the Royal Institute of British Architects, a consulting architect was appointed at the outset with the duty of imagining the estate as a whole and of ensuring that each individual factory erected should in design and situation be a part of a general plan of development. In this way it is hoped that without interference with the special needs of individual enterprises, the estate when completed will bear evidence of a well thought out and properly co-ordinated plan. I am convinced that the development of these estates will not only be of great importance for the Special Areas themselves, but will be of widest interest as examples of modern co-ordinated industrial architecture.

In conclusion, I should like to mention a point which concerns those who are responsible for the management of properties adjacent to the estates. It will be agreed, I think, that the amenities of industrial property are of considerable importance—a point to which the Trading Estates Companies are paying constant regard. It seems to me, therefore, that neighbouring industrialists and local authorities may well give consideration to the buildings which may be erected in proximity to the estates, so that, having in mind the spirit in which those estates are being conducted, they may harmonize with the general plan of development. I am sure if this consideration is borne strongly in mind that it will be of common benefit to the estates and to themselves.

THE PROBLEM

"THE majority of those who have studied the problem of the location of industry may reasonably be assumed to agree that the colossal post-war growth of Greater London is the aspect of the problem which occasions most concern, and can be rightly regarded as calling for control in the national interest."

". . . Unless something occurs to check the present tendency, London will go on growing for a very long time, even after the population of the country as a whole has become stationary or begun to decline. When this happens, the disproportionate size and growth of London will form an even greater contrast to the remainder of the country and constitute an even greater danger to balanced economic and national life."

"It is important, therefore, if the land adjacent to the Administrative County of London is to be available, as it should be, for its own development, that the inward flow from the provinces and elsewhere should be checked and diverted to other areas."

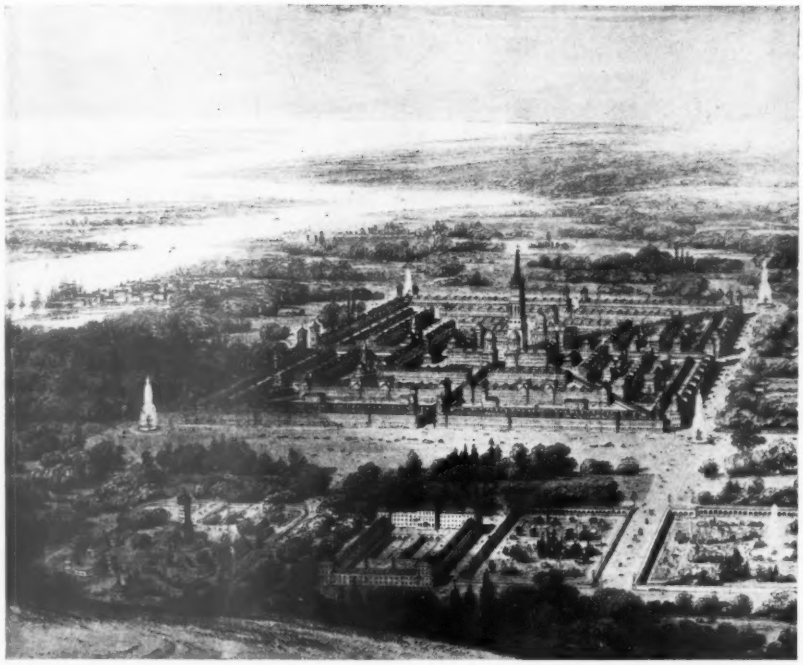
"From any points of view this indiscriminate growth of London is undesirable, and the chief dangers may perhaps be usefully grouped under three heads :

a : Dangers to the general welfare of London's present population.
b : Industrial and strategic dangers.
c : Danger to the national well-being."

"I have stated that I am opposed to the Government using compulsion to dictate to industry where it should *go, but is there not justification for instructing it where it should* not *go, unless good cause can be shown for so doing ? If this principle were adopted, it would be possible to a considerable extent to place Greater London out of bounds for further factory construction" . .*

" Industry is not seeking the Special Areas ; therefore, it must be attracted to those districts of the Areas which are endowed with suitable economic facilities, and many are available. How can this be effected ? My recommendation is that by means of State-provided inducements a determined attempt should be made to attract industrialists to the Special Areas."

[Sir Malcolm Stewart : Third Report of the Commissioner for the Special Areas (England and Wales). Cmd. 5303. H.M. Stationery Office. Price 3s. 6d.]



A design for model working and living conditions in 1848. James Silk Buckingham's plan for the town of Victoria.

THE FACTS

BY HUGH QUIGLEY

THE tendency for factories to huddle together is by no means new : the availability of certain necessities common to industrial processes inevitably brought productive enterprises into close proximity to each other, so much so that we still associate certain areas with certain well-defined groups of industries. Not the least revolutionary of the changes that have characterised a period of economic and social revolution has been the disintegration, in certain regions very rapid, of what were apparently well-established industrial activities and it is only recently that the economics of industrial location have been worked out in detail—particularly in Germany.

Unfortunately, such a study came rather too late to help our political and financial legislators to solve what appears now to be an immensely difficult problem. It has always been a weakness of our universities that they have occupied themselves least with what they term somewhat scornfully descriptive economics and immersed themselves in historical and theoretical considerations.

When, therefore, the industrialist, striving to find out why his industry should decline and the government, as representing the body of industry, have asked for guidance—no information and no data of moment have been forthcoming. Recently, the work of the University of South Wales and the authors of the social survey of Merseyside and the large scale assessment of London outlined by the School of Economics have given some factual data of importance, although not conclusive in definition or interpretation.

I have made those points at the beginning in order to emphasise ;

That we have no means of determining at what stage in the period of industrial transition we are at the present time ;

What deep underlying factors have been responsible for the disintegration of existing, and the formation of new, industrial areas ;

What limits of economic change must be reached before industrial stability sets in again ;

What relationship should exist between those who are responsible for the planning of the national, social and economic life and the entrepreneur who uses the national resources for industrial advancement.

If that knowledge were possible of realisation, then we should have less uncertain diversion of function as between the State in its various activities and industry in its more limited range of activity ; we should have more intelligent regional planning schemes (something that could be placed beside the Tennessee Valley Authority's researches or those investigators who surveyed the Southern Appalachians in the U.S.A.) and not the well-illustrated guide books which pose as regional plans ; we should know what to do with the special areas and, lastly, what we should expect to find in the factory estate.

The factory or trading estate is by no means a new development ; it has always been an essential section of industrial alignment—but in its present great extension, it is something new and possibly even menacing. Questions like these arise—is this development the sequel to disintegration of older industrial areas, is it something to restrict and push aside as an excrescence on the economic planning of the country, or is it something which holds in itself the one sure possibility of sound industrial planning in the future? It may be a very small or an immensely significant movement.

One can make a classification of the 40 or 50 factory and trading estates which have been developed, or are being laid out or planned, into estates that have been efficiently planned with some regard for at least architectural amenities and those that have simply happened.

The point should be made here that in our definition of a factory or trading estate we include all groups of factories located in an area and let or sold by one promoter or dealer in real estate or any other agent—this may appear excessively broad, but it is necessary to allow a proper survey of those developments in industry which distinguish the contemporary world from that of 50 or 100 years ago.

The definition can be narrowed down to cover only government trading estates or estates which are actually controlled by one directing group or syndicate, but it would mean nothing beside the fact that the majority of all new factories are being built and commissioned in factory estates and that the majority of such estates are not trading estates in the narrow sense of the word.

The estates which have been carefully planned on modern lines with proper architectural supervision are few in number—The Team Valley Trading Estate near Gateshead and the Treforest Estate in South Wales, both part of a scheme to attract new industrial enterprises to the depressed areas ; the Welwyn Garden City and possibly the

1924–1930 CENSUS
REGIONAL DISTRIBUTION
[Output in £ mill., and Employment in Thousands]

Area	Gross Output		Net Output		Employment	
	1924	1930	1924	1930	1924	1930
Greater London :						
Factory Trades ..	511·0	560·1	214·0	240·3	809	844
Non-factory Trades ..	64·1	77·4	37·3	48·2	139	171
Totals	575·1	637·5	251·3	288·5	948	1,015
Lancashire, North Cheshire, Glossop and New Mills :						
Factory Trades ..	735·5	505·6	230·8	187·9	1,106	982
Non-factory Trades ..	72·9	54·9	51·2	37·2	267	185
Totals	808·4	560·5	282·0	225·1	1,373	1,167
West Riding of Yorkshire and City of York :						
Factory Trades ..	360·5	232·4	122·1	90·8	588	487
Non-factory Trades ..	64·3	52·4	48·5	39·6	246	232
Totals	424·8	284·8	170·6	130·4	834	719
Northumberland, Durham, Cleveland District of Yorks :						
Factory Trades ..	98·6	96·2	33·3	34·7	167	178
Non-factory Trades ..	62·0	46·6	47·2	35·7	266	221
Totals	160·6	142·8	80·5	70·4	433	399
Warwickshire, Worcestershire and Staffordshire :						
Factory Trades ..	282·6	267·4	129·1	124·8	598	602
Non-factory Trades ..	37·4	32·4	26·6	22·3	138	115
Totals	320·0	299·8	155·7	147·1	736	717
Rest of England (ex. Monmouth) :						
Factory Trades ..	488·3	510·6	185·9	204·1	801	875
Non-factory Trades ..	119·9	129·9	75·3	84·0	417	445
Totals	608·2	640·5	261·2	288·1	1,218	1,320
Glamorgan, Monmouth and Carmarthen :						
Factory Trades ..	93·1	58·0	26·8	19·6	101	81
Non-factory Trades ..	62·9	42·5	48·3	33·3	274	206
Totals	156·0	100·5	75·1	52·9	375	287
Rest of Wales :						
Factory Trades ..	15·3	5·5	6·8	2·9	24	12
Non-factory Trades ..	10·2	8·2	7·9	6·2	48	39
Totals	25·5	13·7	14·7	9·1	72	51
Lanarkshire, Renfrewshire and Dunbartonshire :						
Factory Trades ..	153·3	135·0	59·1	53·9	276	256
Non-factory Trades ..	25·0	20·0	18·1	14·3	88	64
Totals	178·3	155·0	77·2	68·2	364	320
Rest of Scotland :						
Factory Trades ..	136·3	117·3	53·4	46·5	247	232
Non-factory Trades ..	34·0	26·3	25·3	19·0	130	104
Totals	170·3	143·6	78·7	65·5	377	336
Great Britain :						
Factory Trades ..	—	—	1,061·3	1,005·5	4,717	4,549
Non-factory Trades ..	—	—	385·7	339·8	2,013	1,782
Totals	—	—	1,447·0	1,345·3	6,730	6,331

Letchworth Garden City and Wythenshawe estates, although it is probable in those cases that seemliness and decency have determined planning rather than deliberate arrangement and carefully considered elevations and layouts ; the Speke Estate at Liverpool approximates more closely to the first two than the last three.

The estates that have been only partially planned are much more numerous—from the Laing Estate and the Chase Estate on the Great West Road to the Trafford Park, Slough and King's Norton (Birmingham) estates—but they share in common a sordid, uninteresting ugliness which has not even the romance of early industry. The old Lancashire factories as they can be seen at Bolton or Oldham or Chorley were at least simple, clean-drawn, buildings, efficient for their purpose—but what is one to make of Trafford Park or Slough ?

The estates that have not been planned at all are all others, particularly those factory sites which have been cut out to permit of the disposal of surplus land and it is, in a sense, unfortunate that they should typify much modern development.

It is true that a certain amount of planning must go into the delimitation of any parcel of land or into the determination of certain types of factory suitable for general application. But the policy which inspires the formation of the Team Valley, Treforest or the Renfrew schemes—where the land most suitable for factory development with the most suitable and accessible utilities and transport facilities is selected and planned out as a unit composed of many sections harmoniously correlated—is different from that of the estate owner who possesses a vacant lot and desires to dispose of it to the best advantage and, in order to do so, finds it necessary to conform to certain conventions if he is to be successful.

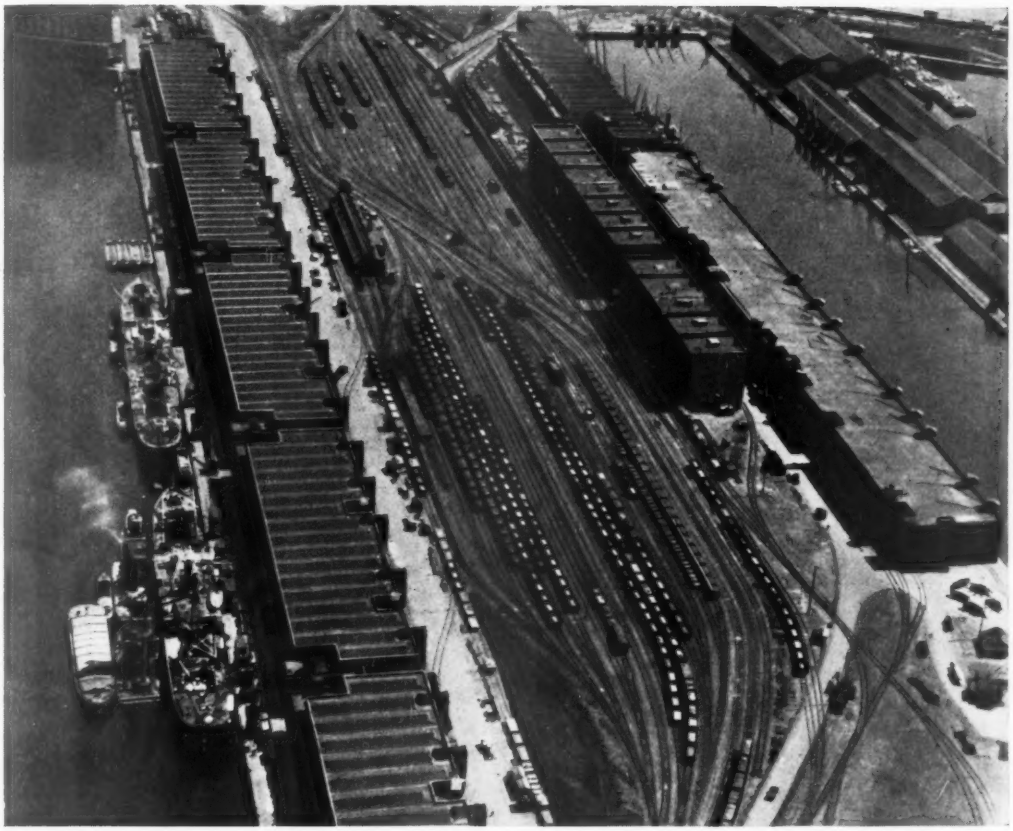
More rare is the builder or owner of real estate who believes that the service he can render to industry, particularly new industry, should not be less than he renders to the community when he works out an intelligent housing scheme or elaborates a fine block of residential flats ; more rare still is the entrepreneur who builds a group of factories as he would build a block of houses—not for direct sale, but for letting as a service or a utility for which he expects a reward commensurate with a continuing capital risk.

What then is emerging from this confused mass of activities of importance for the planner who looks to the future ; for the architect as well as for the employer of labour ?

One may perhaps distinguish five main tendencies no single one of which has worked itself out :—

1 : The tendency to apply deliberate planning to factory estates which are influenced, directly or indirectly, by the Government and the State. Slough has few points of resemblance with Treforest : the one came into existence to develop a derelict State industrial area, the other, as a contribution to the geographical realignment of industry. The latter conforms to public policy in the sense that it must represent a good social as well as economic activity.

2 : The factory estate, instead of being treated as a collection of isolated units with no single point of contact other than the real estate owner who disposed of sites for their erection and possibly a financial institution which provided some part or all of the primary capital, is being developed as a whole—particularly with reference to public utility services such as electricity, gas, water and transport.



A portion of the docks at the terminus of the Manchester Ship Canal. An example of a layout designed to the one end of handling goods in large quantities.

The estate developer now negotiates with those services for terms of supply to all factories at a special rate for large quantity and he uses the force of those special rates as a particular attraction to the industrialist : he must now take part in the modern practice of meeting competition by additional facilities.

3 : The industrialist, at a further stage in the process, becomes relieved of the capital liability represented by enforced investment in fixed assets. Under an earlier and all-compelling dispensation, he had to provide a site with the necessary economic and technical advantages, a building to house his manufacturing equipment, a power house to supply electrical energy and a railway approach to evacuate the finished articles—before he could begin to manufacture. He still can elect to do so, but in an increasing number of factory estates, he need not provide site, buildings, power-house or rail siding ; he can merely hire space in a standard factory with all services laid on and direct road and rail communication available ; he can devote his capital immediately to production. Under this system, the elasticity and mobility of industrial production is all but complete.

4 : Under the pressure of informed public opinion combined with an appreciation of publicity values, the standard factory designer is at last attempting to give some form and style to his structures ; it may take the character of Oriental frippery in tiles or fantastic Byzantine decoration or heraldic illiteracy, but the building behind the decoration is sometimes architecturally good and technically reasonably efficient.

Some inkling of social responsibilities and the wider social background is beginning to appear : the Slough Social Centre is a good example of the new kind of approach. New housing schemes linked up with the factory centres begin to show some faint indications of good taste and a desire to plan intelligently. The influence of Port Sunlight, Bournville, Stewartby, Corby and similar housing colonies attached to an industrial concern is filtering through, although it is questionable whether complete identity of factory and house will ever take place. The whole question is : Should the community centre with its housing be detached in plan and in control from the factory estate ? Or should the latter determine the former ? If the latter were under the direction of a local authority or responsible public body, there would be little objection to such a development, but the issues raised in the event of private enterprise are exceedingly complicated.

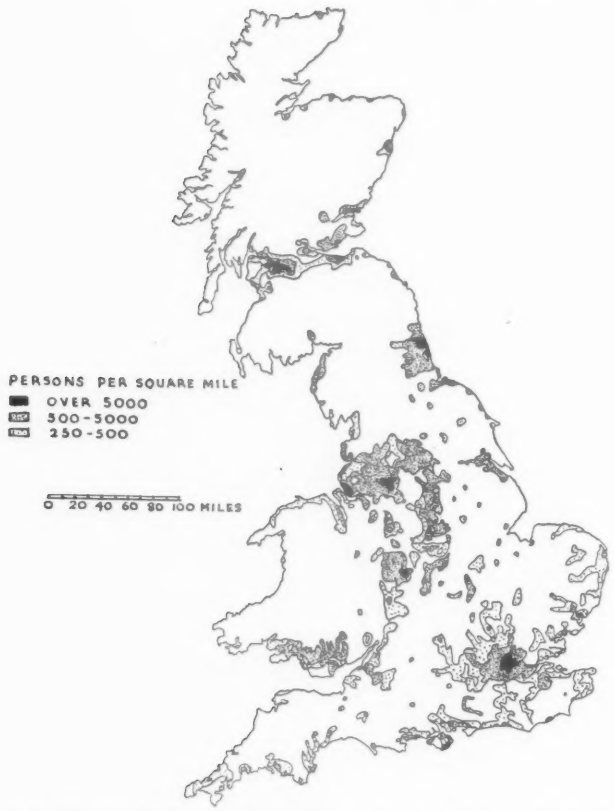
5 : The shepherding of new factories into estates and the comparative independence of the latter as far as location and extent are concerned raises afresh the question of industrial transference. There is theoretically no reason why all new factory estates should not be placed in the special areas, other than the high cost of land, there is equally no reason why they should not be laid out along the Great West Road, Western Avenue and other main arteries radiating out from London. The industrialist will not leave London unless conditions become non-economic as compared with the advantages of other areas.

Only national policy backed up by some special incentive will shift industry out of the most prosperous centres of population.

The truth is that the factory estate represents a development capable, under proper guidance, of effective and right planning : the estate can be fitted into a new community plan with few modifications, provided some plan is in existence for determining the location of the estate. In this connection, the Treforest example is extremely valuable. Here one can see an estate, located beside a modern power station, one of the Grid selected stations, supplied directly, with a minimum of distribution cost, not only with electrical energy, but with surplus steam for heating and process purposes. Is there any reason why all future factory and trading estates should not conform to this example ? The Treforest scheme provides a means for industrial planning combined with sure technical and economic advantage.

If it is successful, it may be decisive for the determination of industrial location in this country.

The factory and trading estate may be the great single contribution of this country to the rational replanning of the new industrial and scientific age.



A sketch map of population densities in Great Britain. With the exception of the London area, this map is also valid for densities of heavier industries.

TOWN PLANNING AND INDUSTRY

[*BY C. B. PURDOM*]

THERE has been town-planning legislation in this country since 1909. Until then, apart from a few local Acts, there was no legislative town-planning control. Hitherto, the planning and development of land had been in the hands of landowners, speculators and builders. Since 1909 there has been much further legislation. The powers now in force are contained in the Town and Country Planning Act, 1932, with which must be read the Restriction of Ribbon Development Act, 1935. Some local authorities and county councils have secured further special powers by local Acts. Practically the whole country comes under the influence of the above-mentioned legislation, and town-planning and regional-planning schemes are in operation or in course of preparation over nearly every acre of the land. In fact, however, only a very few schemes are in actual operation over a relatively small area. It still remains true that the planning and development of land is in the hands of landowners, speculators and builders.

What difference has this twenty-nine years of Parliamentary action made? It has set up a new government department and added new officials to the staffs of nearly every local authority in the country, it has called into existence a new profession, it has created several great reputations, it has made possible new chairs at two universities, and it has given a great deal of extra work to all who have to do with land and building. Above all, it has produced the great illusion that something has been done. Otherwise the planning and development of land is still in the hands of landowners, speculators and builders. Perhaps, however, it has helped in making one change : the landowner has very seldom anything to do, nowadays, with the development of land, having retired in favour of the speculators and builders.

It is not my object, however, to consider the general effect of town planning, but to examine what its effect has been in relation to industry. One of the objects of town planning is said to be to promote "the future welfare of the inhabitants of a district," and, included in the welfare, the interests of industry. (*See* the notes on the preparation and bringing into operation of schemes under the Town and Country Planning Act, 1932, published by the Ministry of Health, page 2). As town planning is conceived into land and its use, the promotion of welfare under the Act, so far as industry is concerned, means the control of sites for industrial purposes. The Act has in some instances prevented the intrusion of objectionable industries into residential areas. That is good. But it is usual for town-planning schemes to provide for the intrusion of industry into residential areas with the consent of the local authority and subject to appeal to the Ministry of Health. That is to say, if the owner of a site in a residential district wishes to dispose of it for the building of a factory, he can often do so unless the local opposition is strong. That is an aspect of the illusion of security under town-planning as it is at present practised.

But these are negative advantages to industry. What are the positive advantages of town planning?

Under town-planning powers, land can be "zoned" for uses. That is, it is possible for a planning authority "to ensure that land shall be allocated for the use for which it is best fitted and most needed." Thus, land can be zoned for residences, business purposes, public purposes, open spaces, agriculture and for industry. Also, land can be set aside for new roads. It is usual, therefore, for the land comprised within any planning scheme to be coloured on the map for various uses. And industry is included. Land adjacent to existing factories, or in proximity to railway sidings or canals, or, sometimes, land for which no other use can be thought of, is zoned for industry. This can be seen on any town plan or in any town-planning proposals. Here we get an example of the positive

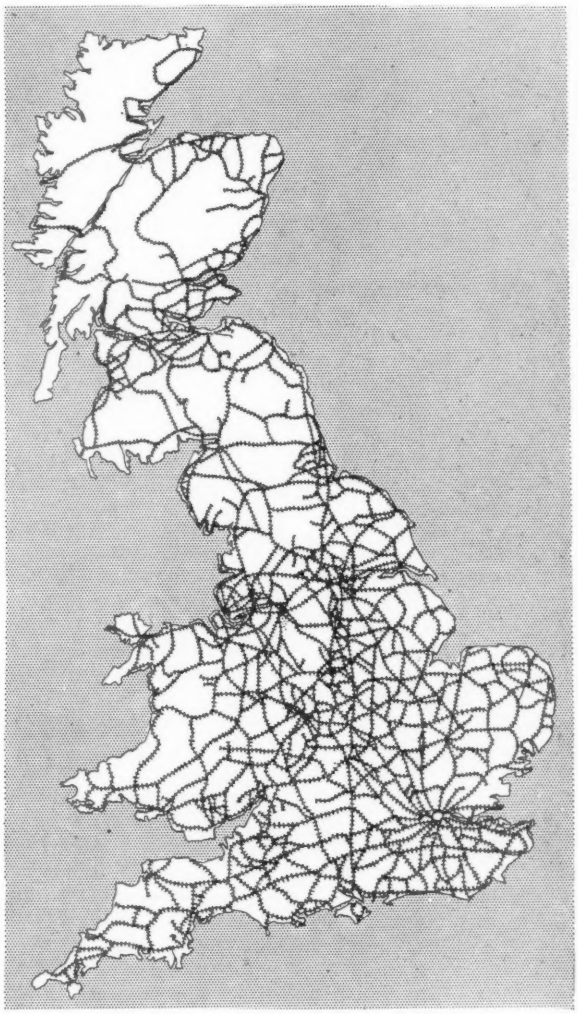
advantages of town planning to industry.

Let us ask ourselves, of what practical use is such "planning" to the industries of the country? As a result of the activities of planning authorities, large areas of land are being reserved for industrial purposes, and in theory the location of industry is being controlled by this means. But, in fact, is it being so controlled? The recent debates in the House of Commons and the decision to set up a Royal Commission to report upon the subject of industrial location show that where industry establishes itself is as much beyond town-planning control as it ever was, and that haphazard industrial development has by no means been ended in spite of the town-planner's plans. There is, indeed, no reason to suppose that areas that are being set aside for industry in town-planning schemes will ever be so occupied. It is impossible that anything beyond a small fraction of the zoned industrial areas in the town planning schemes of the country as a whole could be used, or will ever be required, for the purpose for which they are intended.

I have before me as I write a regional town-planning scheme in which relatively large areas of land adjoining a railway are zoned for industry. Contiguous to this area the land is zoned for agriculture, some of it is "indeterminate," a great deal of it is zoned for four houses to the acre, and some for six and eight houses to the acre. It is impossible that such zoning should be carried out in practice,and, if it were, what basis does it provide for anything that could be regarded even remotely as town planning?

The truth is that in relation to industry town planning as at present understood is theoretical and fanciful. Those who are responsible for town planning have no appreciation of the fundamental problems of industry and no serious attempt is made to meet industrial requirements. The reason for this is that there is no understanding in the practice of town planning of the economic and sociological bases of modern urban life, there is no sense of values apart from what is vaguely called "civic design," and there is no conviction that any powers exist or can be acquired to enable town planning, such as it is, to be effective. The only subject on which any heat is engendered in town planning is in relation to "architectural control," i.e. the control of the appearance of buildings.

This deplorable weakness of town planning is due partly to the fact that its powers are mainly "persuasive," and that those who are responsible have no desire to accept the responsibility of direction on behalf of public interests to provide private interests. Indeed, they are not in a position to accept such responsibility, for there is no definition of public interests in this matter that is so strong and so unchallenged that private interests can be sacrificed to them.



Sketch map showing the distribution of the principal railway lines.

There is plenty of evidence that the present lack of defined areas in town planning is detrimental to national interests. There is plenty of information in existence to show what is required to remedy the existing situation. We do not need further research or investigation. What we need is the conviction that standards of value in town planning can be established, and the determination to apply them.

At present town planning is dominated by the bureaucracy to a greater extent than any other social activity. Whitehall has the final word, and the entire profession dare not breathe against it. The attitude of the bureaucracy was expressed by Sir Gwilym Gibbon, who was for many years head of the town-planning administration of the Ministry of Health, speaking at a recent meeting of the Town Planning Institute, where he said again as he has often said before, that nothing can be done, that the difficulties are great, that the idealists must not be listened to, and that everything must be done as it has always been done. In brief, this witty and cynical civil servant, now retired, made the familiar plea for blessed inertia.

The non-serious attitude of the Government towards town planning was shown in the Restriction of Ribbon Development Act, 1935, in which highway planning, which is a fundamental structural element in town planning, was dealt with in an independent manner, without relation to building or land development or, indeed, to any other interests but those of highway authorities.

DISTRIBUTION OF FACTORIES ACCORDING TO SIZE—1933 AND 1930
ALL INDUSTRIES

Size Group	Factories*		Persons Employed									
			Males				Females				Total	
			Under 18 years of age		18 years of age and upwards		Under 18 years of age		18 years of age and upwards			
	No.	Per cent. of Grand Total	No.	Per cent. of Total	No.	Per cent. of Total	No.	Per cent. of Total	No.	Per cent. of Total	No.	Per cent. of Grand Total
1–25 ..	103,989	77·8	68,280	10·0	431,374	65·4	33,175	5·0	129,339	19·6	660,168	14·0
	103,730	*77·4*	*75,762*	*11·7*	*415,484*	*64·0*	*36,731*	*5·7*	*120,624*	*18·6*	*648,601*	*13·0*
26–50 ..	11,479	8·6	31,079	7·6	230,647	56·0	32,257	7·8	117,665	28·6	411,648	8·7
	11,571	*8·6*	*35,343*	*8·5*	*229,678*	*55·2*	*36,107*	*8·7*	*114,959*	*27·6*	*416,087*	*8·4*
51–100 ..	8,133	6·1	37,649	6·6	299,483	52·7	50,527	8·9	180,263	31·8	567,922	12·1
	8,113	*6·1*	*43,415*	*7·6*	*305,032*	*53·2*	*54,578*	*9·5*	*170,620*	*29·7*	*573,645*	*11·5*
101–250 ..	6,460	4·8	63,769	6·3	516,960	50·8	93,054	9·1	343,743	33·8	1,017,526	21·6
	6,830	*5·1*	*75,111*	*7·0*	*538,519*	*50·1*	*109,770*	*10·2*	*350,895*	*32·7*	*1,074,295*	*21·5*
251–500 ..	2,307	1·7	47,224	6·0	400,436	50·4	74,164	9·3	272,056	34·3	793,880	16·9
	2,421	*1·8*	*56,287*	*6·8*	*418,812*	*50·6*	*81,220*	*9·8*	*271,687*	*32·8*	*828,006*	*16·6*
501–1,000 ..	880	0·7	35,799	5·9	318,208	52·7	57,313	9·5	192,944	31·9	604,264	12·9
	949	*0·7*	*45,757*	*7·2*	*353,023*	*55·6*	*58,034*	*9·1*	*178,143*	*28·1*	*634,957*	*12·7*
1,001 and upwards ..	335	0·3	36,323	5·6	404,965	62·4	44,494	6·9	163,164	25·1	648,946	13·8
	421	*0·3*	*52,757*	*6·5*	*536,891*	*66·0*	*51,731*	*6·4*	*171,751*	*21·1*	*813,130*	*16·3*
Grand Total	133,583	—	318,123	6·8	2,602,073	55·3	384,984	8·2	1,399,174	29·7	4,704,354	—
	134,035	—	*384,432*	*7·7*	*2,797,439*	*56·1*	*428,171*	*8·6*	*1,378,679*	*27·6*	*4,988,721*	—

The figures in italics are for the year 1930 ; owing to a clerical error in the original calculation they differ slightly from those tabulated in the Annual Report of the Chief Inspector of Factories and Workshops for 1931.

* The grand total is confined to factories which have made Returns showing persons employed during the year ; it is therefore smaller than the total number of factories on the registers as shown in Table 13.

Here we come to the main fault in all our attempts at town planning — its problems are treated in isolation. It is forgotten that a town is a unity of interests, and that to combine traffic and land development interests, amenity, commerce, industry, residence and all the other component parts of social life, is the only way in which town planning in any genuine sense can be achieved.

The aims of town planners are too low.

Except for the garden cities, to which I will come presently, the development of industrial areas has been and is being carried out precisely in the manner to which I have just referred. These industrial areas have been in the past the work of private enterprise, and I do not lay their shortcomings on the shoulders of town planners. There has been an element of planning as at Trafford Park and Slough ; but the site planning—I do not refer to factory planning—has been elementary and confined to mere industrial considerations. The new trading estates in the depressed areas, which are Government enterprises, are being carried out with more site planning but with no real sense of industrial location as an integral part of town planning.

It is forgotten that the development of an industrial site involves the provision of every other kind of land development. Public services have to be provided, also houses for workers, shops, schools, places of entertainment and churches. Indeed, it is forgotten that industrial activity is that on which all other activities are based, and the industry brings in its wake the entire apparatus of civilization. It is for this reason that industrial or trading estates have hitherto been so unsatisfactory and have contributed nothing like what they should have done to the national economy.

But these estates are private enterprises. What can be done to bring them into relation with town-planning schemes so that they can function organically in town structure? The question is difficult to answer, because town-planning possesses no dynamic force, being a restrictive and negative power in action; otherwise, a dead thing.

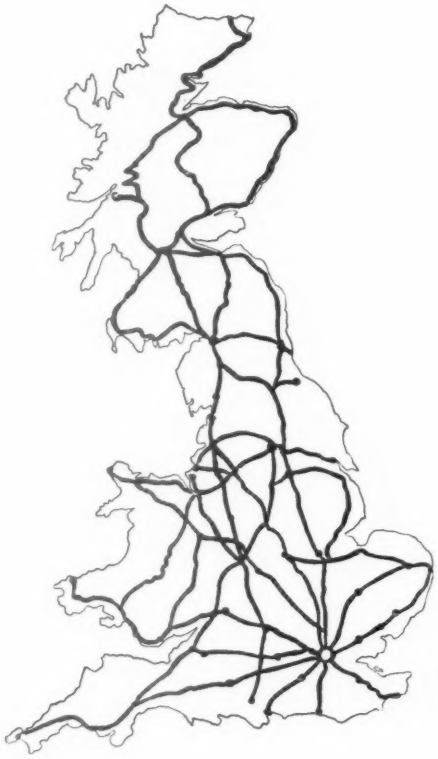
What could be done were town planning made dynamic is shown in the two garden cities. The sites of Letchworth and Welwyn were chosen primarily because of their suitability for industry. The founders of the garden cities placed industry first; they considered what industry required in land, transport, public services, and town equipment, and built up their towns on their industrial foundations. Nowhere else in the country except in these two towns has the entire range of problems of industrial location been adequately considered and worked out.

The question is sometimes asked, why has the industrial development of these garden cities been so slow? There are many reasons for it ; but one of the chief is that they were both attempts to establish entirely new centres in rural areas, borrowing nothing from the attractiveness of proximity to established centres, so that they had to start from scratch with no advantages beyond potential ones. Therefore, the offer of sites in these garden cities appealed only to manufacturers with some imagination who were prepared to take long views and were ready to incorporate themselves to some extent in the building up of the town. This was true in the first stages only, and does not apply today when both towns are well established.

Another reason for slow development is that there is definite attempt at control over the siting of particular factories so that the interests of the individual factory-owner are harmonized with the town's interests.

The two points I have mentioned go a long way towards accounting for slow progress at Letchworth and Welwyn at a time when rapid factory

An industrial area near Birmingham, showing a steel tube factory and its new administrative offices on the left.



Sketch map of the Trunk Roads for which entire responsibility has just been assumed by the Ministry of Transport.

development was taking place in the London area. There can be no question, however, that the organized development of industrial areas in the manner carried out in these two towns has advantages over all other methods of industrial planning and that those who share in them find them to have definite economic value, which increases with time.

If industrial development in the future were carried out in satellite towns on the garden city model, accommodating populations from 50,000 to 100,000 in each town, there would be a practicable alternative to the sprawling development of residential estates, essentially unplanned and unorganized, which is now proceeding around London and all the great towns, and an effective alternative would be provided to the radial straggling of industrial plants, equally unplanned and equally destructive of civic amenity.

Sites for fifty such towns in London and the Home Counties were proposed some years ago by the present writer, and had there been any reality in the practice of town planning those towns would now have been well in hand and the wretched hodge-podge of building in the London area, in which many millions have been sunk, and much amenity destroyed for ever, would have been prevented.

What are required are drastic powers to prohibit all large scale building

The Glenlee Power Station, Kirkcudbright. The care for internal design emphasizes that the provision of power for industry need no longer be associated with dirt. At the same time industry need not necessarily be close to a supply of solid fuel or water power.

operations except in sites selected for satellite town development, and the restriction of industrial location to such sites. The only real objections to such a scheme are that the activities of land speculators would be largely ended and the London Passenger Transport Board would be prevented from doing what it liked without regard for any other intents than its own! But is it possible to believe that objections of that sort are going to hold up for ever the orderly development of the London region and the welfare of its inhabitants, including its industrialists? For the manufacturer could be got to see that a planned industrial site is of greater advantage to him than the hugger-mugger of present speculative land development. With a more specific and scientific effort at organized group development of industrial sites the producer could be given the advantage of co-operative services, such as the sectional factories at Welwyn and the retailing of steam for power and heating at Slough. The extent to which co-operative schemes of transport and other services could be employed could be worked out in such organized centres.

We cannot suppose that the present trend of population and industry from the centre outwards has reached its peak. It is probably but in its early stages. The time has not passed when these trends can be organized and unconscious forces given conscious direction. We need to believe that it can be done even by us, that the lethargy of the past few years that has fallen upon efforts at public control can end, that the urban districts can be made orderly, that traffic problems can be surmounted, that industry can be co-ordinated into the planning of towns, and that full advantage can be taken of the elasticity in town design provided by electric power development.

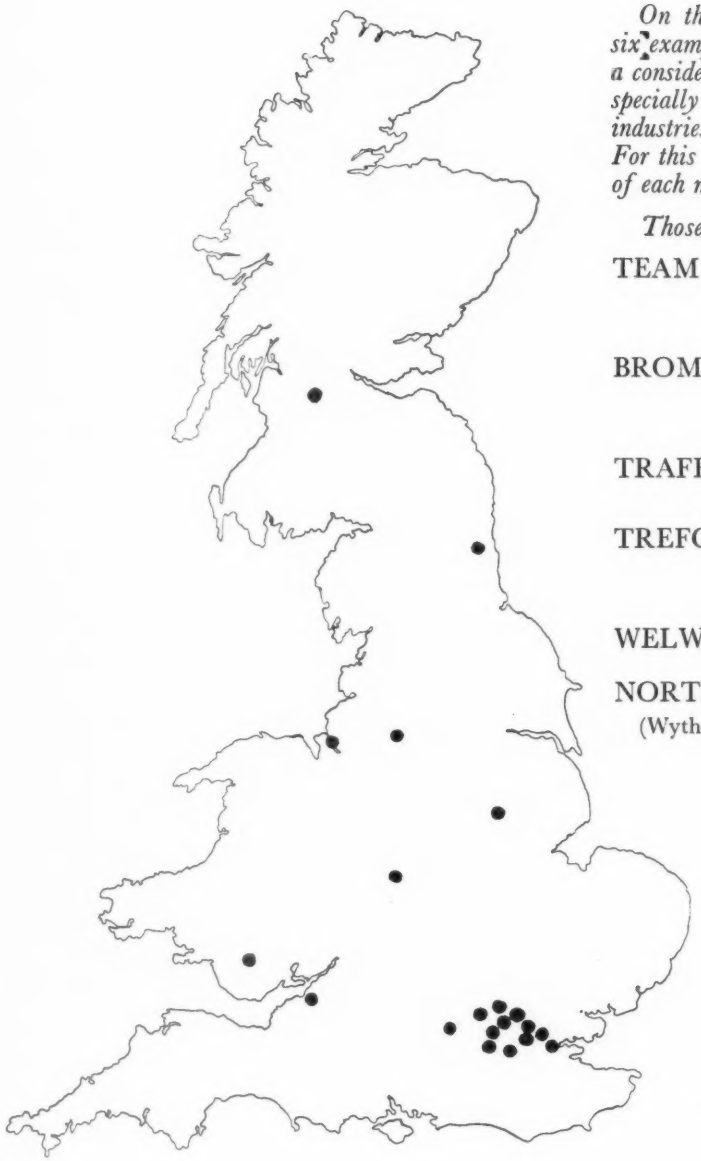
In a word our towns can still be made functional. To bring order, dignity, economic efficiency and real protection of the beauties of the countryside into the vast London region would probably cost no more in dead weight expenditure than what the London County Council is expending on its Green Belt, and would certainly yield immense gains to the public, to industry and to the nation at large. In fact, it would pay.

What is required is the courage to attempt it.

What stands in the way are the interests of those who get rich by land speculation. That means, land must come into some form of public ownership.

Let us be frank and admit that until this is done, town planning will remain where it is, and town planners will continue not knowing what to do, still chasing their beautiful tails.

SIX ESTATES



On the following pages are illustrated in sketch form six examples of industrial estates. It would now seem that a considerable increase in the number of Trading Estates, specially laid out, designed and equipped for lighter industries, is very likely to take place in the near future. For this reason it has been attempted to illustrate an estate of each main type now in existence.

Those illustrated are :

TEAM VALLEY : *A Government estate under the Commissioner for Special Areas.*

BROMBORO PORT : *A private estate being developed in accordance with a predetermined layout.*

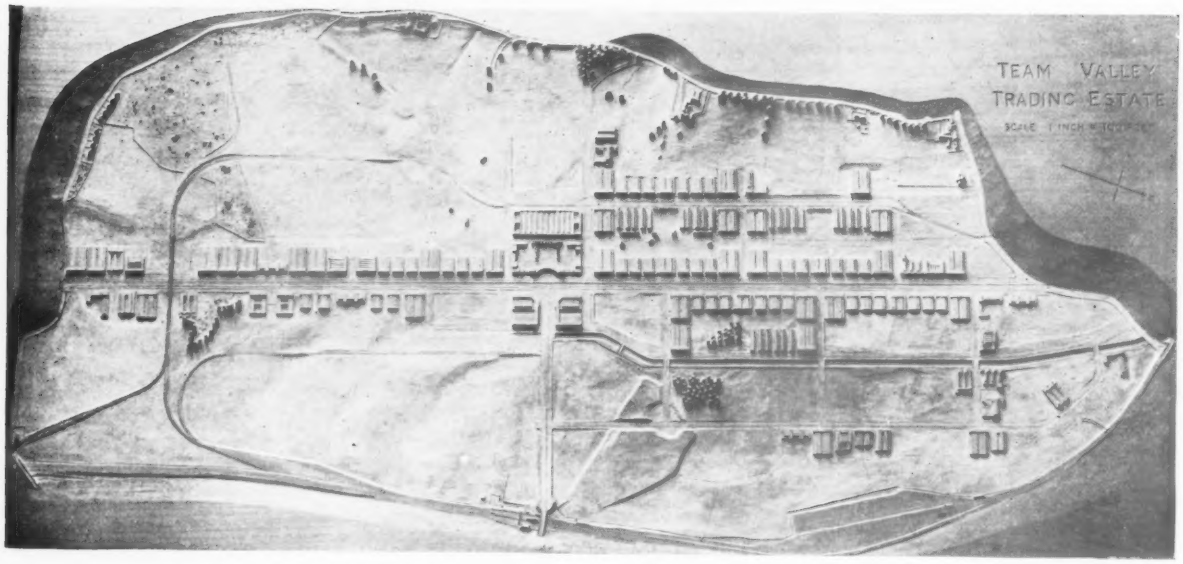
TRAFFORD PARK : *A private estate and one of the oldest in the country.*

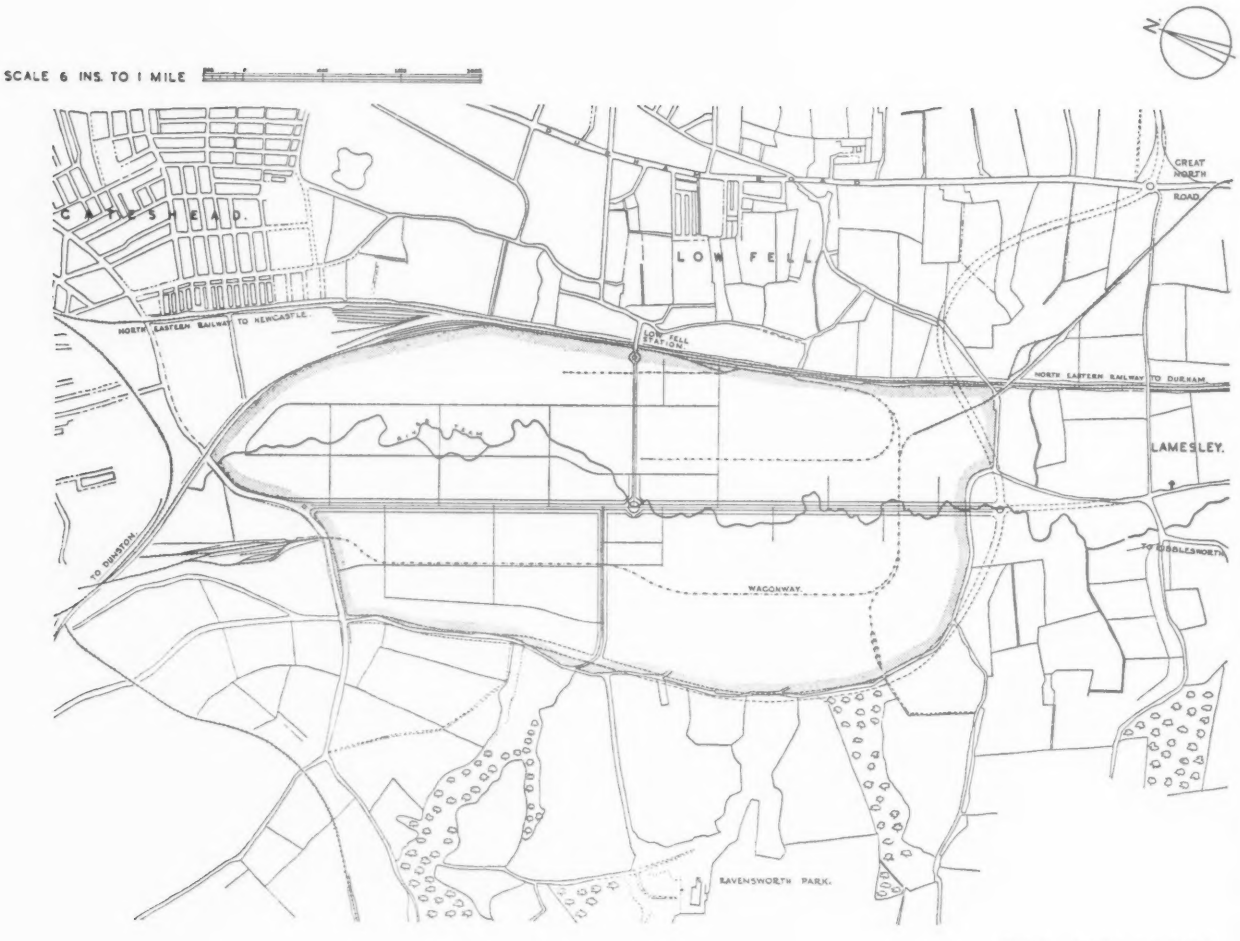
TREFOREST : *A Government estate under the Commissioner for Special Areas ; still at an early stage.*

WELWYN : *A Garden City estate.*

NORTHENDEN (Wythenshawe) : *An estate forming part of and being developed in accordance with the Manchester regional policy for Wythenshawe.*

Sketch map showing the position of the larger trading estates now in operation in Britain.





Top: A model of the estate showing probable development during the next two years. Above: Plan showing the estate's position near Low Fell and Gateshead and means of access.

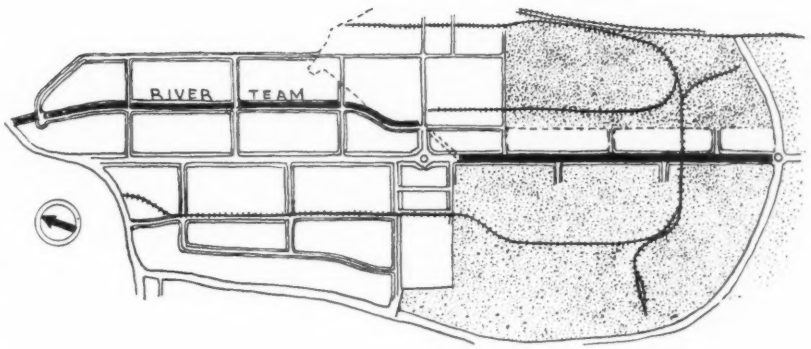
TEAM VALLEY

The estate is now under construction for the North-Eastern Trading Estates, Ltd., near Gateshead-on-Tyne. It is one of the first to be started by the Commissioner for the Special Areas. The funds are provided by the Government, through those allotted to the Commissioner for the Special Areas, but the company is entirely independent of Government control, although one of the directors represents the Commissioner himself and another the Treasury.

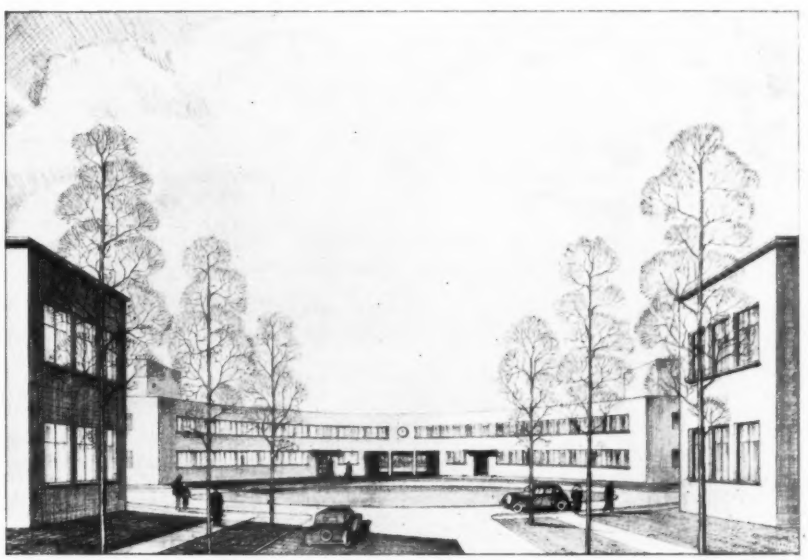
The basic idea of the scheme is that the company shall provide sites for factories (and in some cases the buildings) for private owners, together with all necessary services.

The site is a part of what has hitherto been a rural estate lying close to Gateshead. It occupies the flat bottom of the valley of the small river Team. The main L.N.E.R. line runs alongside one side, with an existing station at Low Fell. Beyond the railway is the Great North Road, which is being connected to the estate by a new road system. This system, together with a scheme of zoning of the surrounding country, is the work of a special committee, representative of the estate company, the surveyors of the local authorities, the joint town planning advisory committee, and the consulting architect, Professor W. G. Holford.

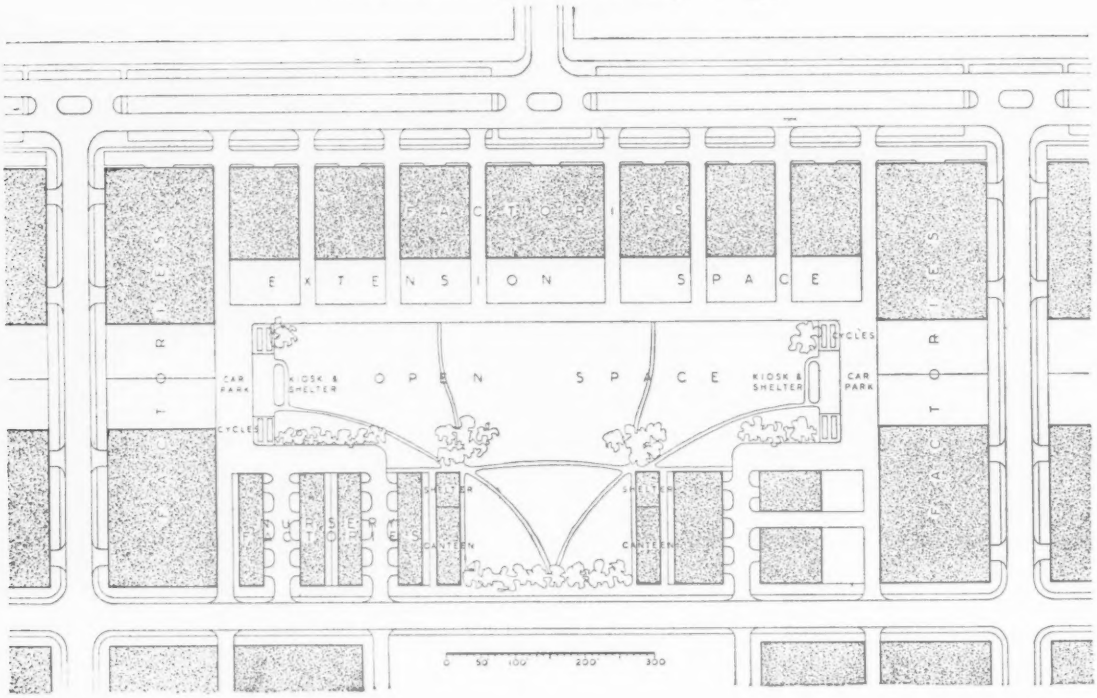
A double-track main road with 24 ft. carriageways runs the whole length of the estate from north-west to south-east. A secondary single-track main road from Low Fell station joins it at a round point. This is the centre of the estate, and here are situated the administration buildings. The estate is sub-divided by a rectangular grid of secondary roads, all 38 ft. wide, into areas each of which contains several factories. Each factory is allotted a space from one-third to half of its original area for extension.



Top and bottom: Two views of the administration building; from the central avenue and from the road leading to Low Fell station. Above is a road and railway plan of the site; the stippled area, being at present liable to colliery subsidence, will not be developed for twenty years.



T E A M V A L L E Y

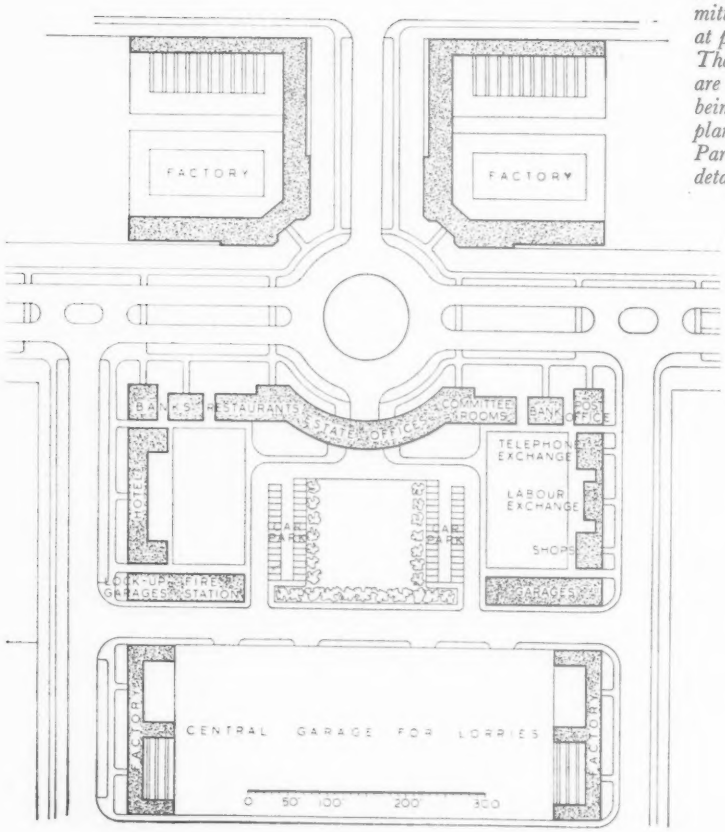


Each factory group has a proportion of its land reserved as permanent open space.

The central group of administration and public buildings occupy an island 600 ft. long by 300 ft. deep.

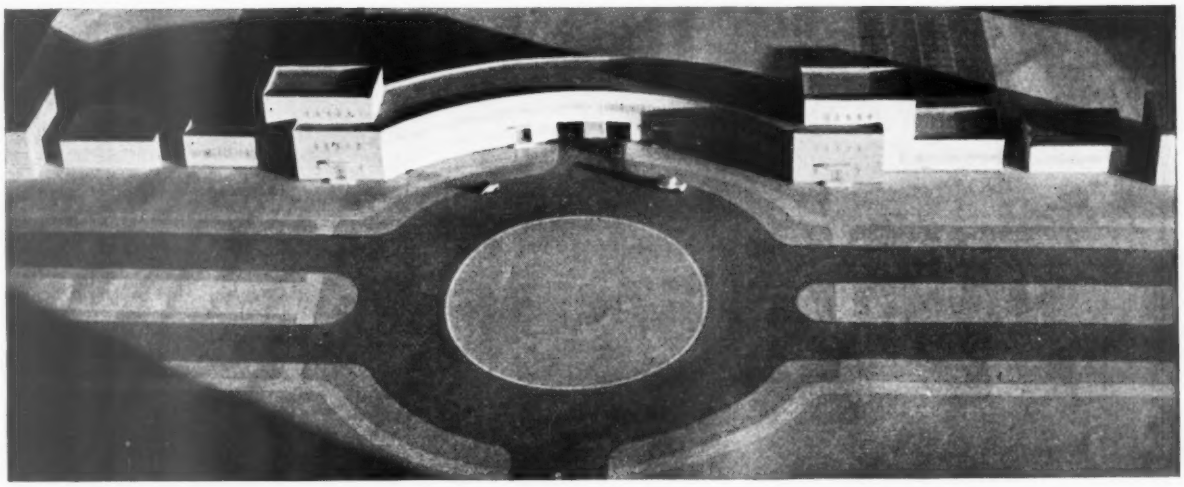
On the axis of the road from Low Fell station is the central estate office building. The road continues through to the car park. At each side are restaurants and committee rooms for the use of tenants. This central block is at present under construction.

The general plans and architectural design of the factories are controlled by the company and a few factories are being built as a speculation to let. These are being planned by the engineers (Sir Alexander Gibb and Partners) and the consultant architect, execution and detailing being carried out by local architects.



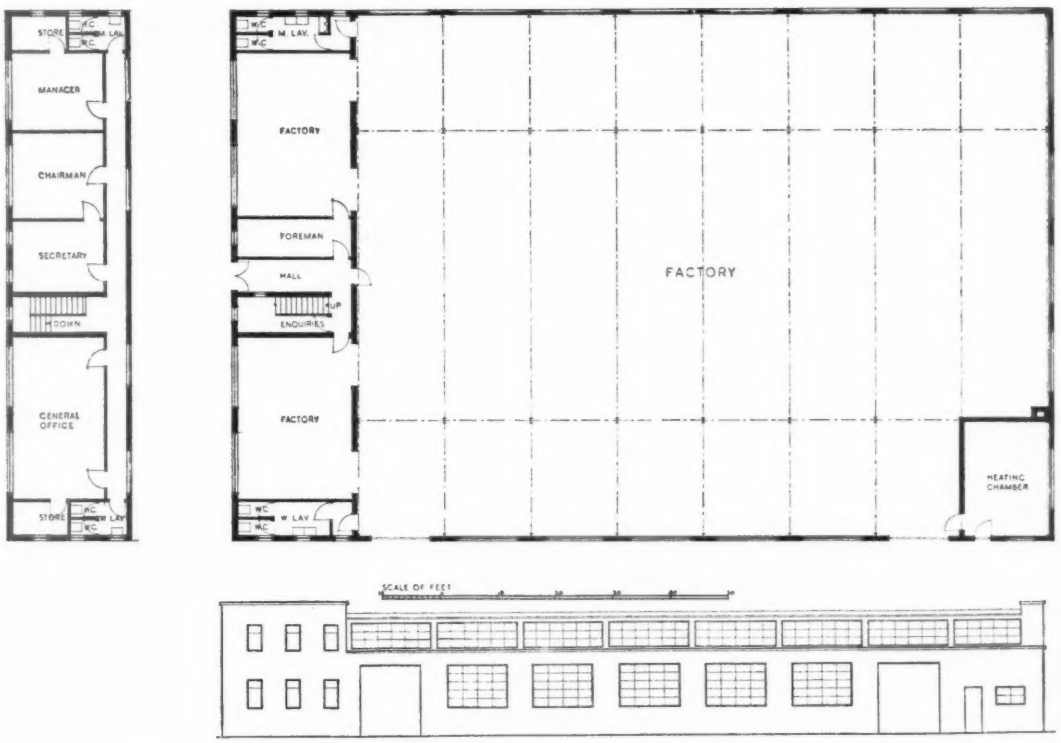
Top : Layout of the factory block adjoining the administration block to the north. Left : the layout of the administration block.

TEAM VALLEY



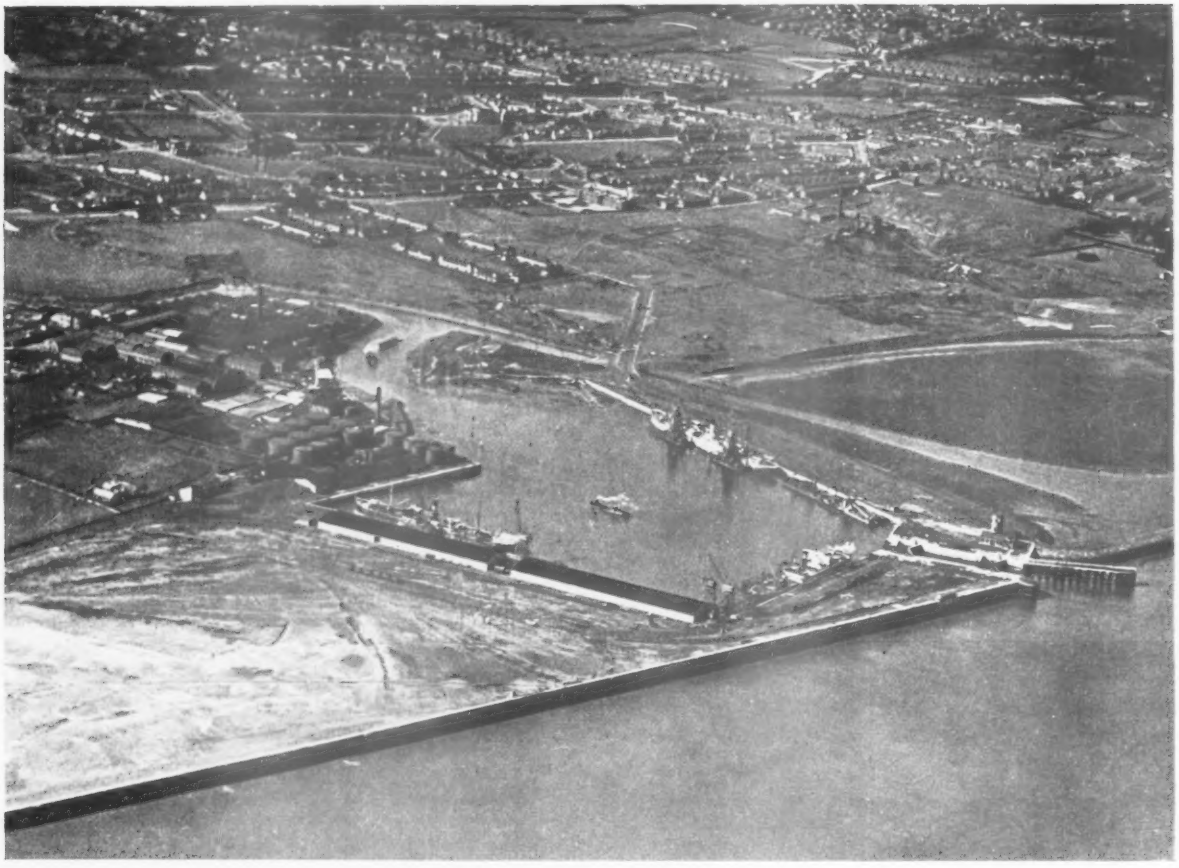
The administration building from a model.

Each factory group has its own canteens, kiosks, cycle sheds, etc., and also a set of "nursery factories." These are specially intended for the very small firm or one-man business, and are let at £1 a week. For this the tenant gets a single-room factory 45 ft. by 35 ft., together with lighting and heating. The nursery factories are so planned that as a business grows it can expand into adjacent compartments of similar size until it becomes necessary to move to one of the larger units. As each factory group comes to be developed the consulting architect and the general manager prepare a block plan showing the area available, building lines, circulations, open space, etc. The general manager uses this plan as a basis for negotiations with intending factory owners. The consultant architect is responsible for the general development plan, block planning, standardized requirements in factory buildings and general appearance of the estate.

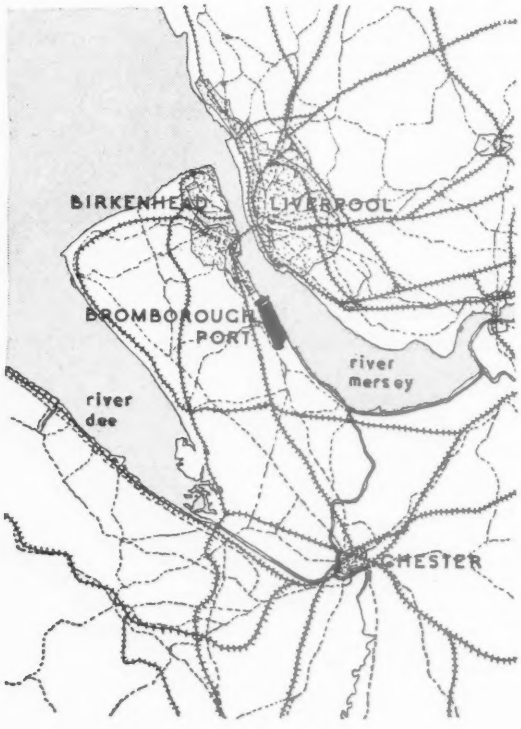


Side elevation and ground and first floor plans of one of the first factories to be erected on the estate.

TEAM VALLEY



The deep water basin of the Bromborough Port Estate, off the River Mersey.



The Estate lies between the Birkenhead–Chester road and the Mersey at a point half-way between the Birkenhead Docks and the entrance to the Manchester Ship Canal. Road access to the estate is from the Birkenhead–Chester road, railway sidings connect with the L.M.S. and G.W.R. joint line to Port Sunlight, and Bromborough Dock, a deep-water basin of 18 acres in area, can handle ocean-going ships and provides access to Liverpool, the Manchester Ship Canal and inland waterways. Both gas and electricity are available at low rates, a power station being on the Estate, and coal from North Wales and Lancashire has only to be carried a short distance.

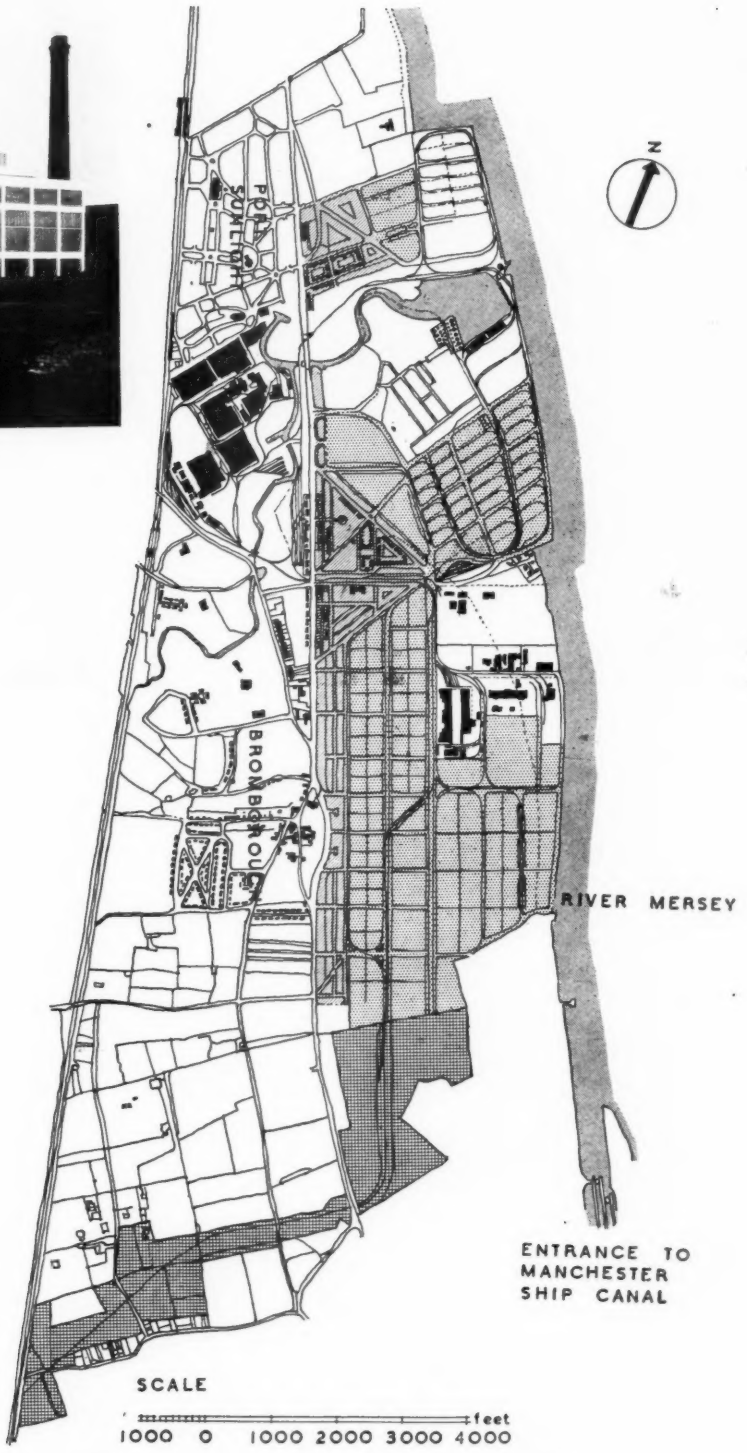
The Estate is about 600 acres in area and on ground falling slightly to the Mersey, with a good foundation of sandstone within a few feet of the surface over the bulk of its area.

There is a population of about 7,000,000 within 50 miles of the estate, a good pool of labour in the neighbourhood, and a considerable area is reserved for future housing.

The Estate is owned by the Bromborough Port Estate, Ltd., and the layout has been prepared by the Estate Architect, Mr. J. Lomax Simpson, who must approve all purchasers' schemes.

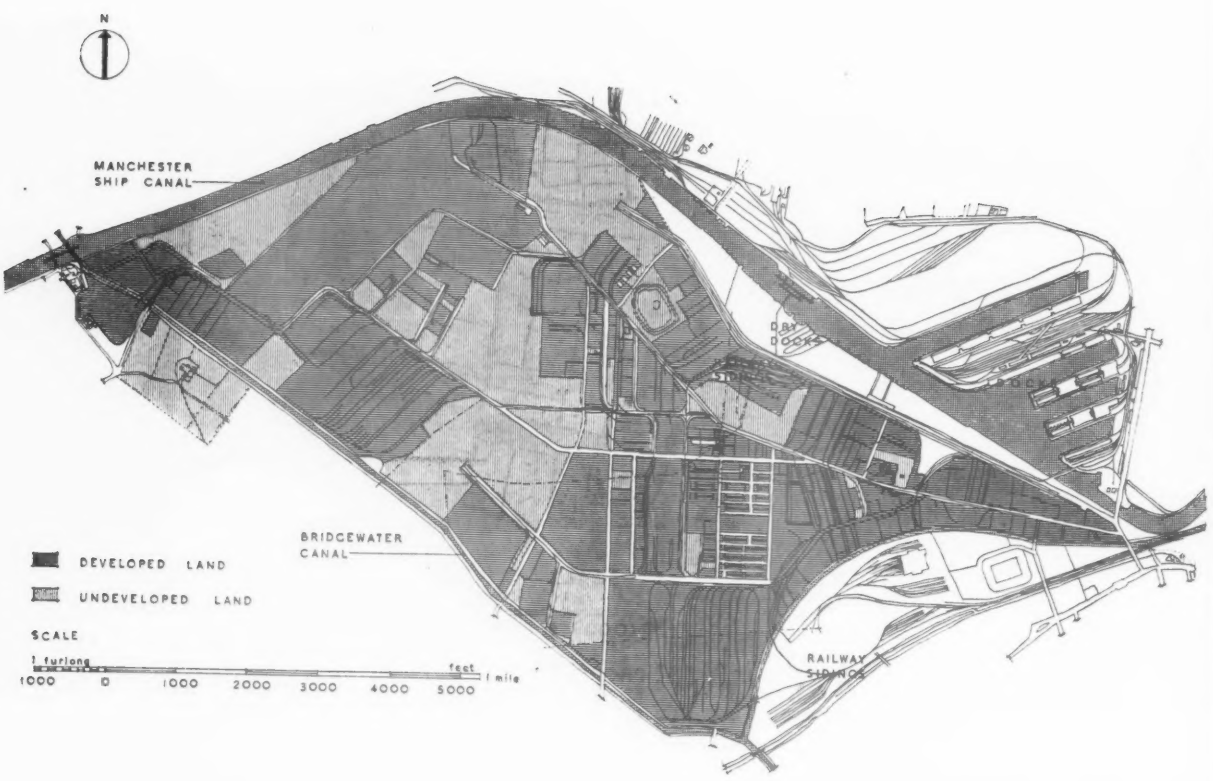
B R O M B O R O U G H P O R T

One of the new factories on the estate.



Site plan of the estate, showing general layout of roads and factory plots and proximity to Bromboro Village and Port Sunlight.

BROMBOROUGH PORT



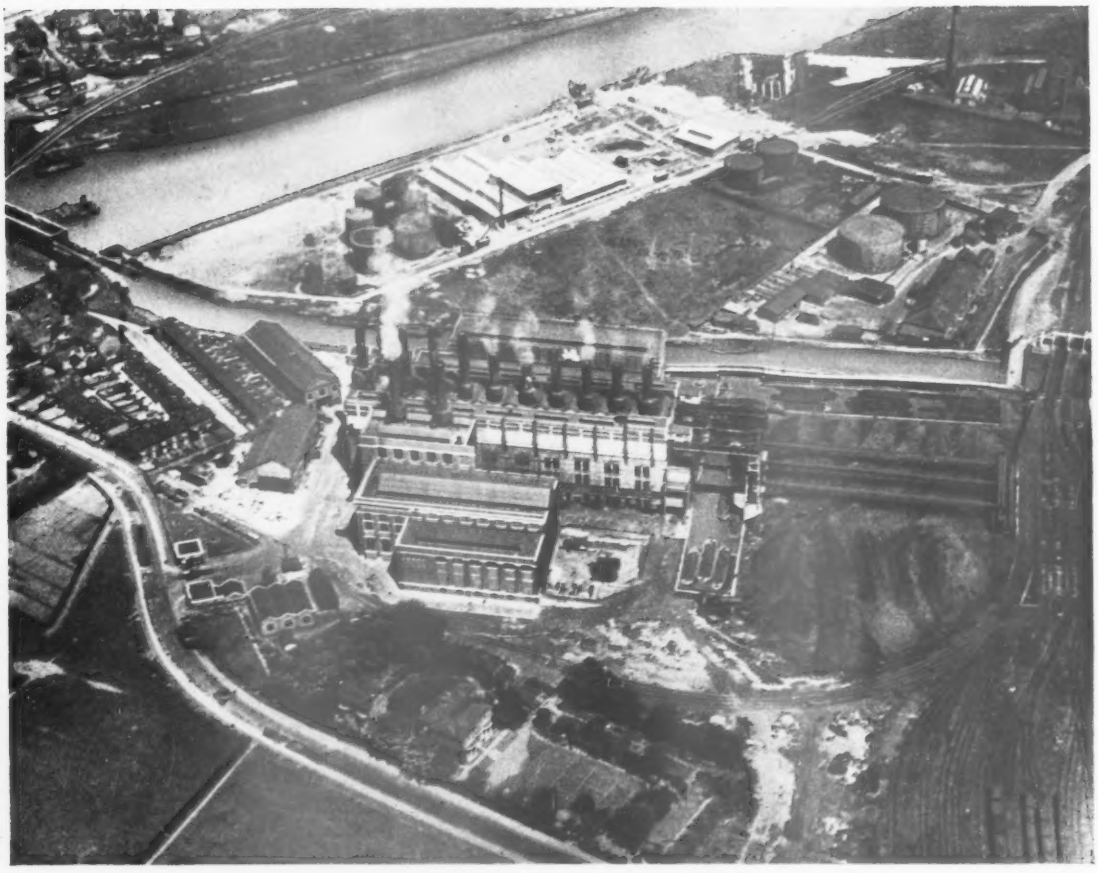
TRAFFORD PARK

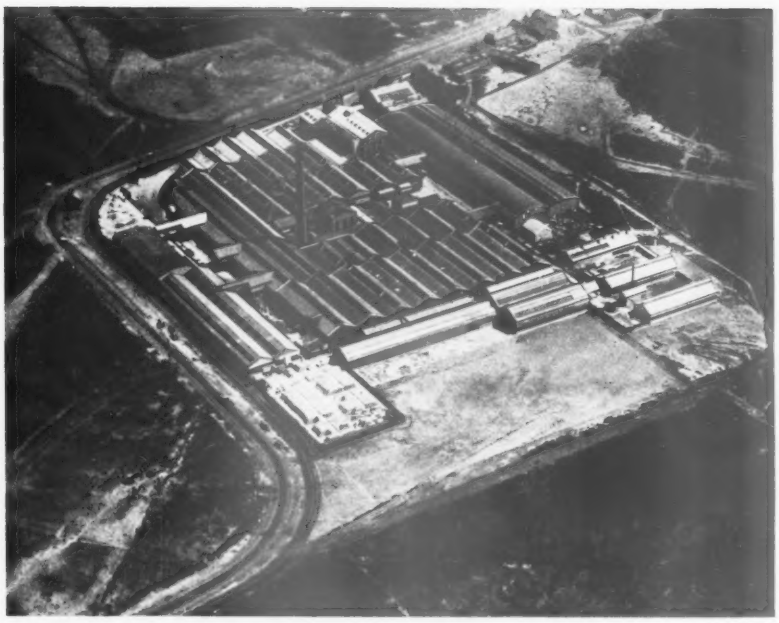
The two photographs at the top of this and the facing page are continuous, giving an aerial view of the whole of the estate. Right: The Manchester Ship Canal adjoining the estate.

The Trafford Park Estate was formed in 1897 by the Trafford Park Estates, Ltd., and consists of about 1,200 acres adjoining the Manchester Ship Canal and opposite to the docks forming the Manchester terminal. Railway, road and canal transport is available on the estate, as is the power station of the Manchester Corporation. Coal, oil and gas are obtainable at economical prices, and 40,000 workers are already employed in the 200 factories on the estate, a large pool of skilled labour being present in the Manchester district.

There is no consultant architect, lay-out being governed by the particular needs of each factory and by the radius of railway curves and existing sidings. Each tenant employs his own architect, engineer and builder.

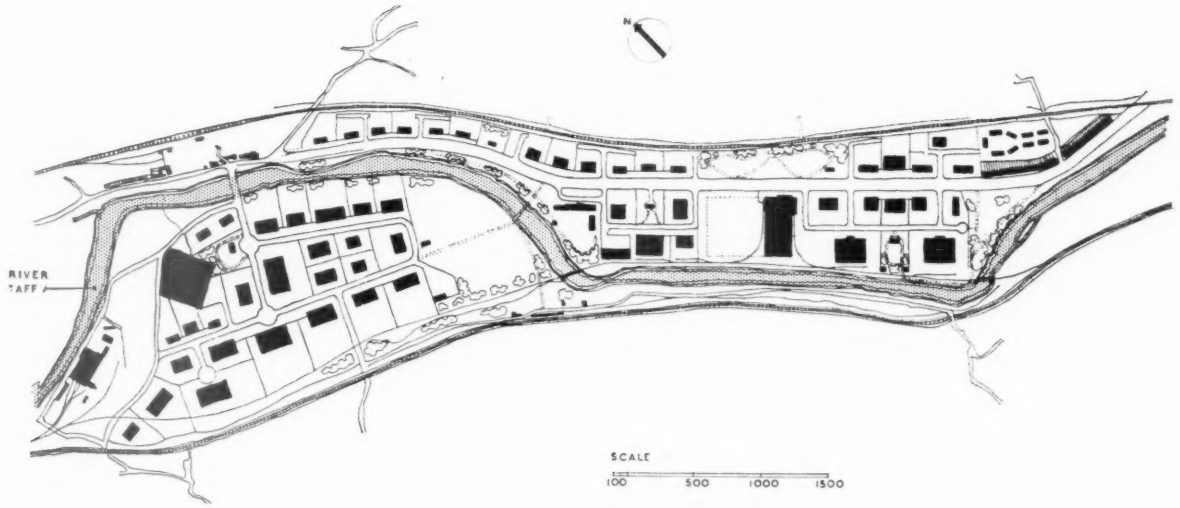
K TRAFFORD PARK





Two aerial photographs showing development on the estate. Above is the power station of the Manchester Corporation, and left, one of the largest factory units, manufacturing asbestos-cement products.

T R A F F O R D P A R K



The general lay-out plan of proposed factories on the estate. Below : the site before development began.

The Treforest Trading Estate is in the valley of the River Taff in South Wales. It is on the main road from Cardiff to Merthyr, about seven miles from Cardiff and three from Pontypridd.

The company is the South Wales and Monmouthshire Trading Estates, Limited, which was formed by the Commissioner for the Special Areas for the purpose of acquiring sites in the Special Area of South Wales and developing them for the establishment of new industries.

The company was registered as a private company not having a share capital on June 27, 1936. It is controlled by a board of directors appointed in the first instance by the Commissioner.

While the immediate surroundings of the estate are rural, there is a "doorstep" market of nearly 400,000 people, excluding Cardiff and the neighbouring towns of Newport, Monmouth, Port Talbot, Barry and Swansea.

The main road north-west from Cardiff which runs through the estate is being widened into a double carriageway. The G.W.R. has a four-track line bounding the estate, into which sidings are being run. Road, rail and canal transport is available.

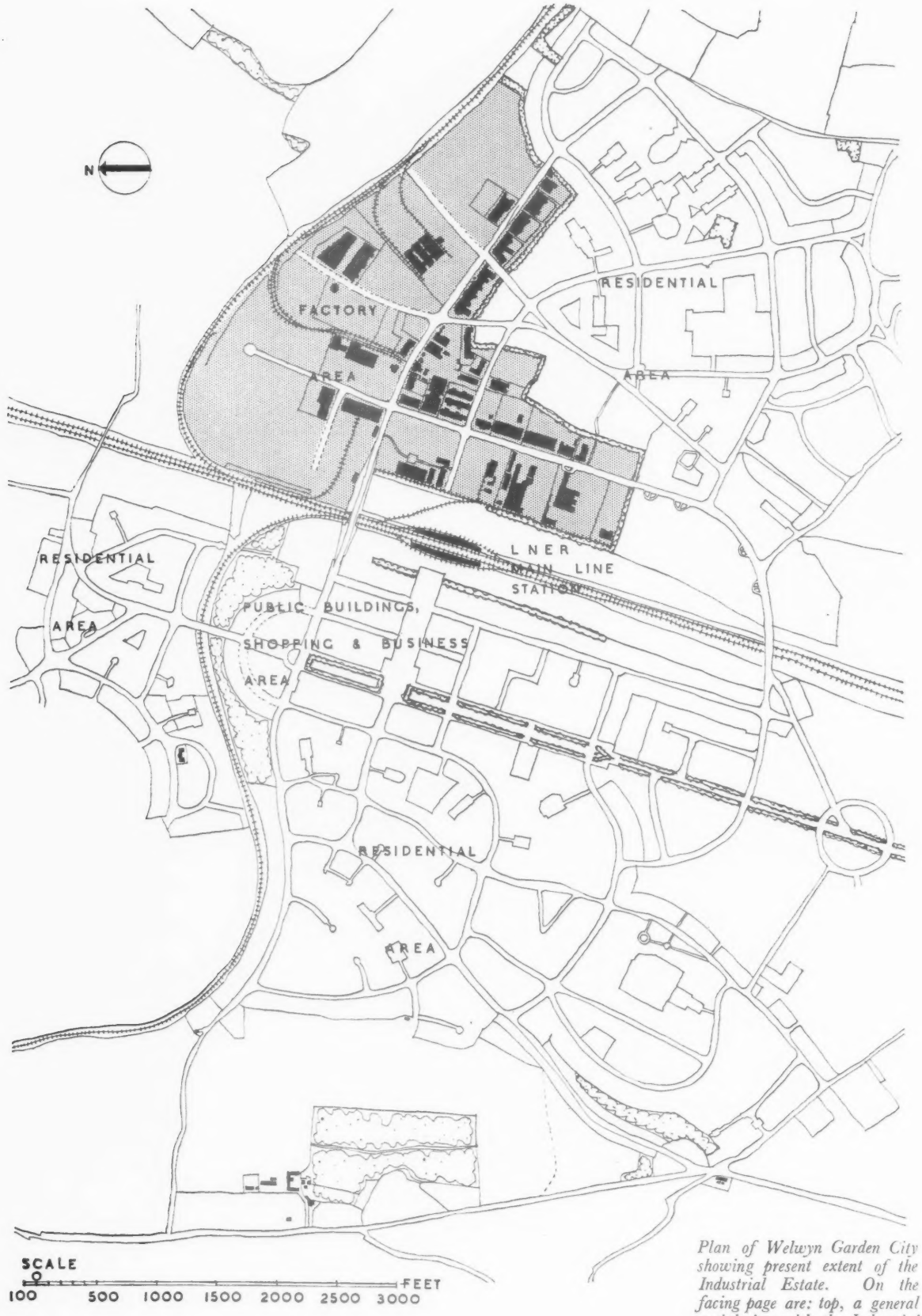
Electric power is obtained from the adjoining station of the South Wales Power Company, which is extending its plant. Gas is available at urban prices, and there is an abundant local supply of water for all purposes.

There are seventy different trades represented on the unemployed register at the local Labour Exchanges, and the percentage of young men and women is still very high. The Ministry of Labour is going to establish a training centre on the estate from which manufacturers can draw young men as they want them. All the labour is ready housed.

The consulting engineers are Sir Alexander Gibb and Partners, who selected the site, and the consulting architect Mr. Percy Thomas, P.R.I.B.A. Development has been planned so as to avoid crowding of buildings and to leave plenty of space for recreation grounds.

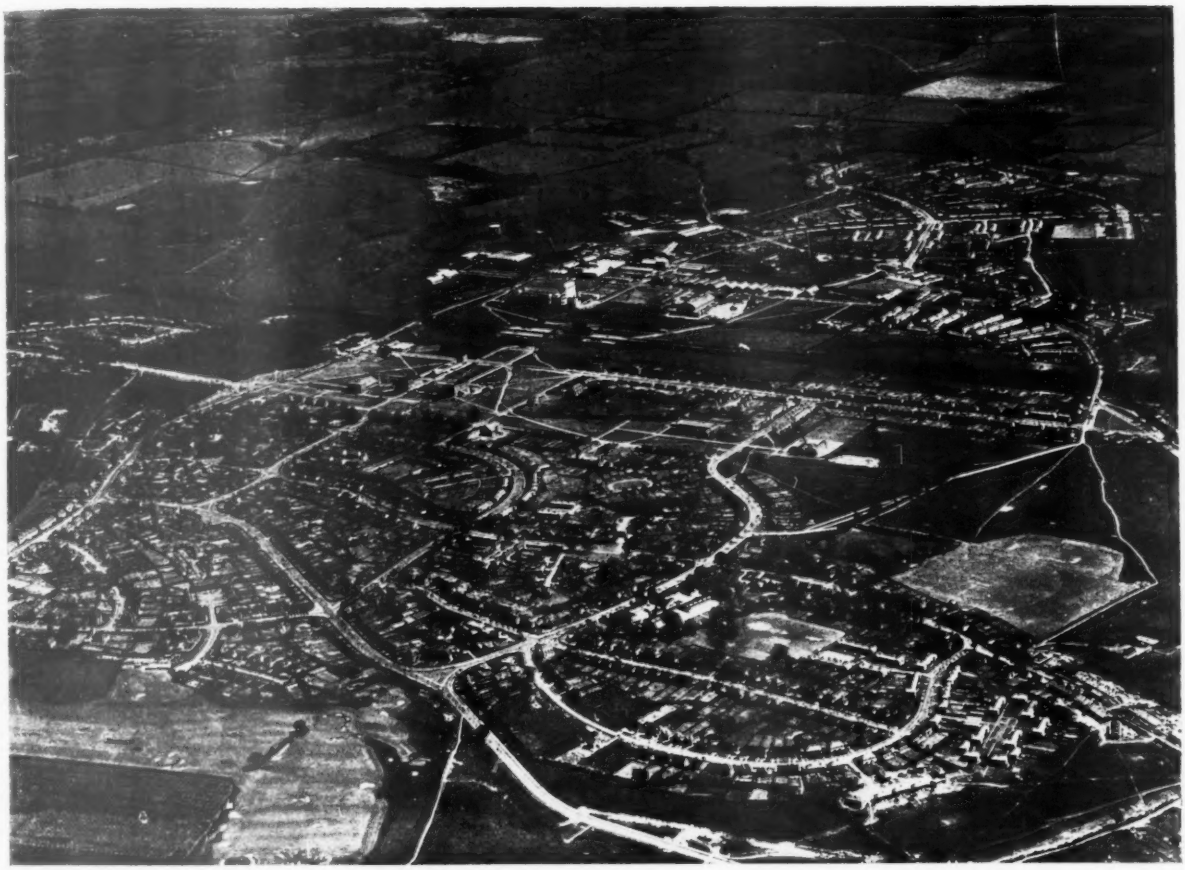
The Trading Estate Company is erecting some buildings to the specifications of the tenants, who will rent the buildings. Others are of a standard pattern. A factory as small as 1,500 sq. ft. can be obtained, the rent in this case being £1 a week.

T R E F O R E S T



Plan of Welwyn Garden City showing present extent of the Industrial Estate. On the facing page are: top, a general aerial view with the Industrial Estate in the distance; below, working-class housing which is being developed 'pari passu' with the factories.

W E L W Y N



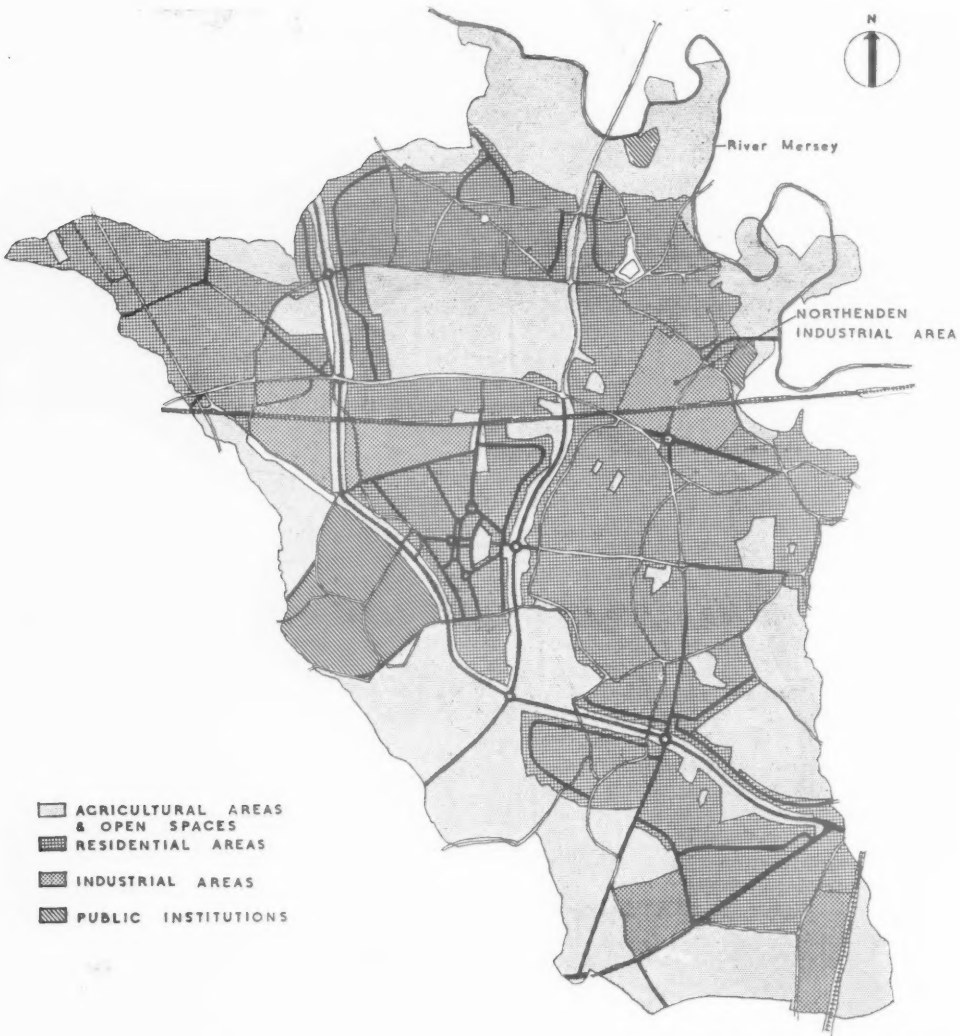
The Welwyn Industrial Estate forms a part of Welwyn Garden City, a new town planned and built during the post-war period and now containing a population of 12,500 and 64 industries.

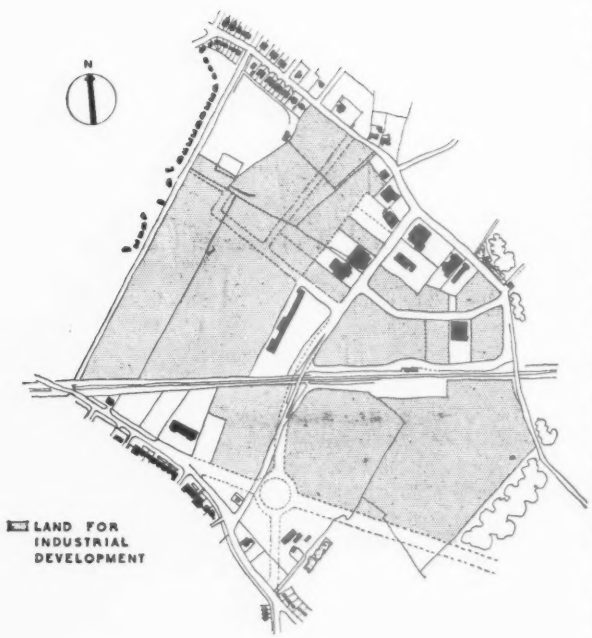
The original area purchased by Welwyn Garden City, Limited, was 2,273 acres, and is now 3,186 acres controlled by the Welwyn Garden City U.D.C.

The development has been in accordance with plans prepared by Mr. Louis de Soissons with the object of forming a self-contained town in which people could live and work under the healthiest conditions. It is twenty-one miles from Charing Cross, and served by the Great North Road and the L.N.E.R. main line.

Industrial growth in the area planned for factories has been steady, and, starting in 1920, 64 factories are now working on 70 acres, with factories building on a further 22 acres. 3,000 people are now employed on the Industrial Estate. The Welwyn U.D.C. has so far built 892 weekly-rented houses, and has further schemes in preparation. Sectional factories which can be enlarged as the business expands have been built in considerable numbers, and have proved very successful.

W E L W Y N





Above: General development plan of Wythenshawe, new roads being shown in black. Left, the Northenden industrial estate now being developed.

The Wythenshawe Estate lies south of the centre of the City of Manchester, of which it forms part. In the north-east and north-west of the estate are zoned two Industrial Areas, the one at present undergoing development being the easterly one, which is owned in fee simple by the Manchester Corporation, and is under the jurisdiction of the City Surveyor.

In the centre of the Industrial Area is the Northenden Station with railway sidings sufficient for any amount of traffic. The Cheshire Lines Railway is connected with the L. M. & S. Railway running into the centre of the city. An excellent bus service also passes the Area. Although enjoying at the present time a preferential rate, the estate will, in the very near future, revert to the rates that are in force within the rest of the city—which at present are 15s. 6d. in the £.

All services are available, and the Corporation is in a position to meet any demand for electricity or gas for heating or power.

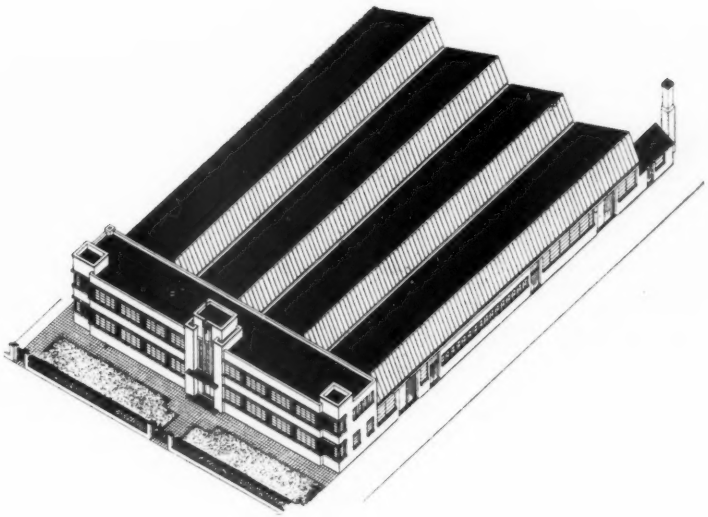
Wythenshawe has an approximate population at the present time of 40,000 people, from which labour can be recruited. Light industries only are encouraged.

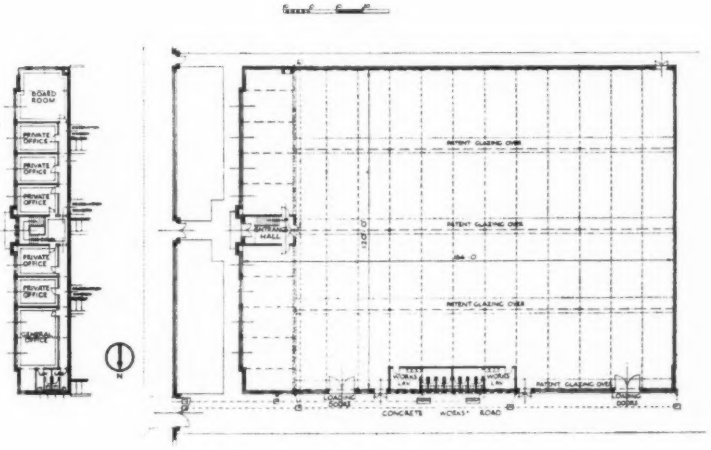
The Corporation's consultant architect is Mr. Barry Parker. Layouts are designed by the City Surveyor in conjunction with Mr. Parker. Each firm designs and erects its own buildings, subject to the approval of Mr. Barry Parker and the City Architect.

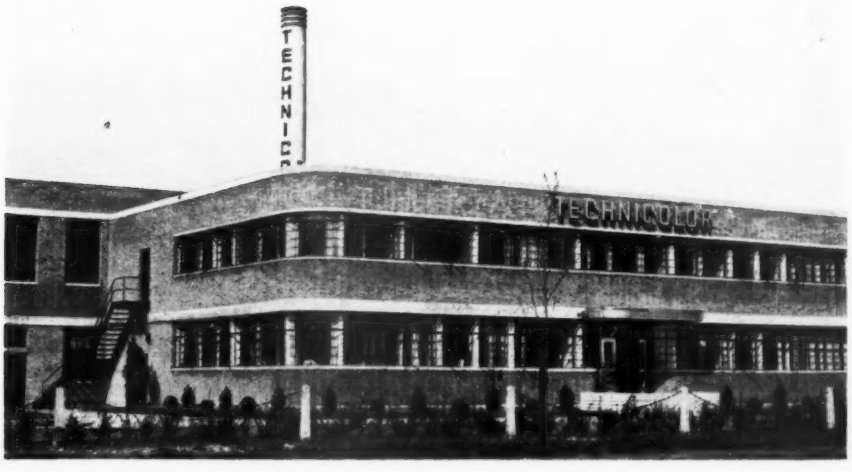
W Y T H E N S H A W E

THE NEW FACTORY

THE new kind of factory building which is now appearing in very large numbers all over the country, but particularly in the south, is becoming almost as standardized in plan as some housing types. It is essentially a building for light and clean industries, and consists of well-lit space, lavatory accommodation and offices—the latter usually being placed along the main frontage for the purpose of effect. The factory illustrated is a standard one by Bilston Properties, Ltd., and may be compared with the factory on the Team Valley Estate shown on page 871. On the following pages are some recent examples of industrial buildings, all of them variations on the same theme, and constituting in the mass a very considerable problem in design.



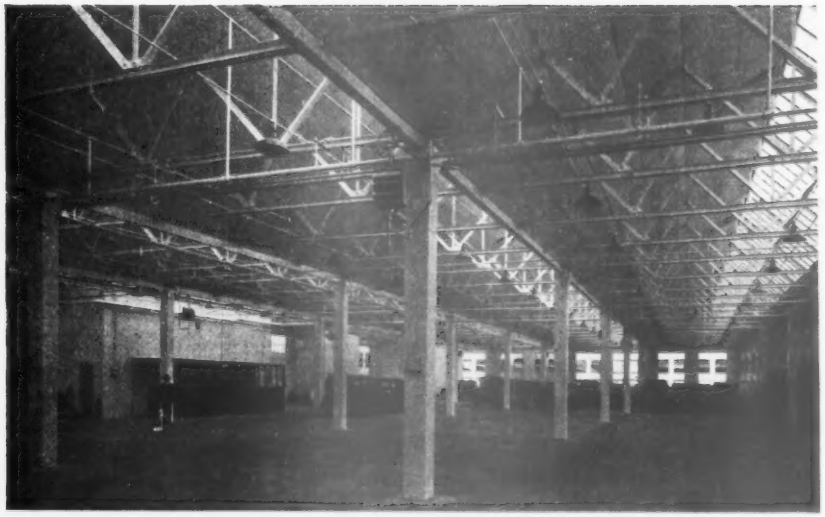




Messrs. Technicolor's new laboratories at Colnbrook. A simple and effective example from the numbers of industrial buildings now increasing around Greater London.

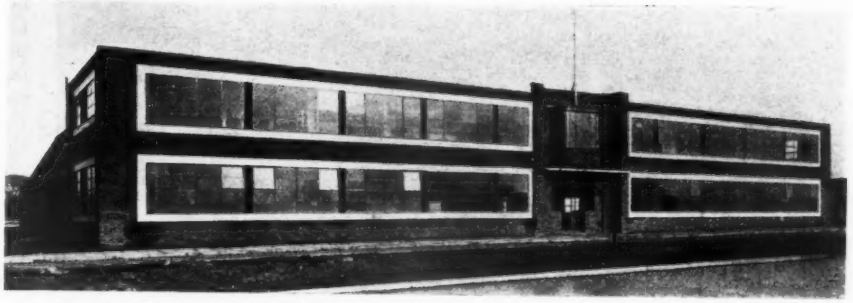
One of the blocks of sectional or unit factories at Welwyn. As a factory expands it can take over additional units and the standardized form brings economy in building costs. This type of unit is being used on new estates, and has great architectural, as well as commercial, possibilities.

An interior view of one of the Welwyn sectional factories.

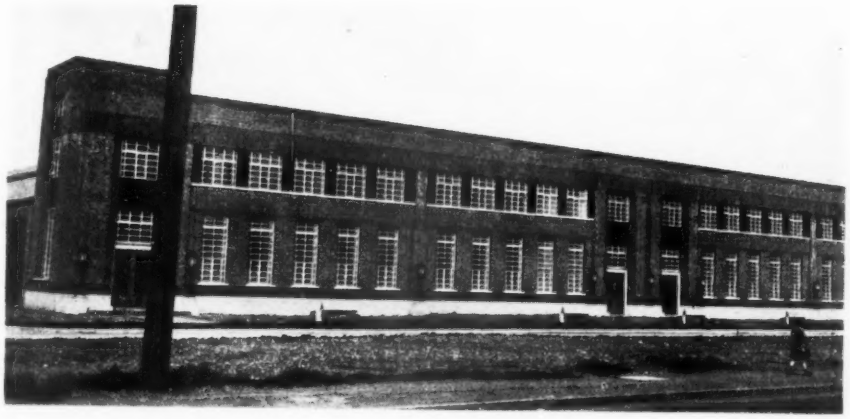


Interior view of the Rolls Royce repair shops at Cricklewood, showing the need for unobstructed well lighted space supplied on a bigger scale.

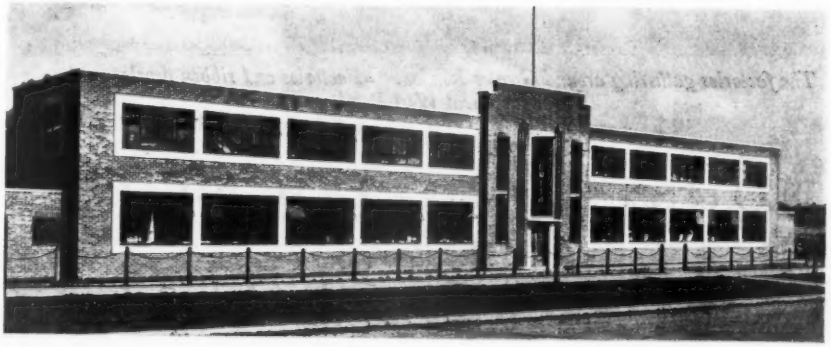
F A C T O R I E S



The four photographs on this page show various ways of treating the principal façade of a factory, all using the administrative accommodation needed as a screen, or show window to the workshops behind. The Armstrong Cork factory at Queensbury.



A new factory at Slough.



The Zenith Carburettor factory.

A factory on the Great West Road.

F A C T O R I E S

The factories gathering around Greater London. Factories and ribbon development near the Great West Road.

INDUSTRIAL LOCATION AND REGIONAL POLICY

[*BY A. G. H. DENT*]

DURING the last few years the attitude of the general public to the development of industry and its location and growth has changed more rapidly than in any other phase of the industrial era.

The power-machine system has forced general attention upon the weaknesses and the dangers of *laissez-faire* in industrial growth; the public has demanded more thorough information about industries; about the factors influencing siting; the causes of depression in key industries requesting subsidies; the reasons for tariffs and import restrictions upon certain products and their effect upon local prosperity.

Factors Locating Industry

The factors influencing industrial location are many and they have different effects. One may attempt a broad outline here :—

Main Factors

1. Traditional grouping.
2. Geographic — such as humidity or presence of water.
3. Raw materials on site.
4. Access to immediate market, or to ports for the Continent.
5. Labour pool.
6. Public utility services, power, transport and water supply.
7. Low costs of land, rents or rates.
8. Trading estate or planned industrial site.
9. Presence of other factories in same, auxiliary or different industries.
10. Local amenities.
11. Miscellaneous (mainly personal).

The industries with restricted sites are comparatively few and the bulk of the new industries have no definite location. For most new factories the provision of facilities such as cheap power, transport, labour and public services is the important matter although the consumers' goods industries tend to gather close to the big consuming market. Under present conditions many new *entrepreneurs* wish to avoid heavy capital investment so that, in addition, the availability of factory buildings for occupation—a distinguishing feature of the factory estate—is becoming a strong influence on siting. In theory the industrialist makes a long-term plan for his business and examines scientifically the factors determining the most advantageous spot from the viewpoint of profitable operations. In practice he may be affected by other considerations, and analyses of the reasons for location of different industries show a wide variety of causes; two investigations on this question may be quoted. The Board of Trade Survey for 1935—the latest available—attempted to classify reasons for location of 354 factories. The analysis showed :—

Main reason for location	No. of Cases
(1) Convenience of premises ..	198
(2) Accessibility of raw materials	38
(3) Suitability of labour ..	37
(4) Proximity to other factories in the same industry ..	28
(5) Proximity to markets ..	27
(6) Cheap land, low rent or low rates	19
(7) Proximity to employer's residence	7
	354

Unfortunately, the first group, which includes 56 per cent. of the total number examined, is a broad classification which may include many causes, such as transport of power and any of the other items. In particular, "Convenience of premises" would include the facilities of the trading estate with its provision of factory premises for hire, its availability of services, and the presence of all types of factories, which are often able to serve each other. The broad group may also include the presence of amenities.

A field survey carried out by Dr. A. C. Smith in "The Industries of Greater London" among the new industries situated in the North-West to North-East London belt, showed a diversity of causes for location, many producers of consumers' goods wanting to be near the great London market, and many owners or members of boards being anxious to live near London on account of its amenities and facilities.

New Industrial Growth

The latest evidence of direction of flow of new industries is in the Board of Trade Survey for 1935. This shows

that 510 new factories were set up in that year employing 49,750 people. At the same time, 486 factories were closed and 192 were extended. The regional distribution of these factories is as follows :—

1	2	3	4	5	6
Regions	New Factories	Employment provided by new factories	Factory extensions	Factories closed	Net Unit Factory Gain (Cols. 2 + 4 − 5)
1. Greater London ..	213	19,000	51	184	80
2. N.W. England ..	121	11,350	62	139	44
3. The Midlands ..	69	7,900	27	71	25
4. N.E. England ..	45	6,650	22	55	12
5. The Eastern Counties	26	1,800	4	11	19
6. Scotland	22	1,650	10	15	17
7. S. and S.W. England	10	1,100	11	6	15
8. Wales and Monmouth	4	300	5	5	4
TOTALS	510	49,750	192	486	216

Most of the new factories employ between 25 and 100 workpeople; of the 510 total, 138 employ more than 100 each.

While there is no evidence in the main survey of a move of industry to the south from other regions, and there is evidence of some dispersion, it is apparent that London has absorbed 42 per cent. of the new industries compared with the next highest regional share, 24 per cent. in North-West England.

Is the result of the mixed factors determining industry location to disperse or decentralize industry in a satisfactory manner? And if the forces creating dispersion are gaining strength, what is the character of this dispersion? Is it to be entirely haphazard or with some guidance? Is it to be in isolated factory units or in grouped fashion in trading estates? This raises the query, what proportion of the new factories are located on the outskirts of the largest manufacturing towns? Further, is the trading estate itself to be situated in the form of an industrial bulge on the periphery of London, Manchester, Liverpool, Birmingham, etc., or can it not be used as the essential productive nucleus of new and planned towns? And finally, can one regard the present unbalanced industrial conditions as due to economic depression alone and needing only temporary remedies? If not, how much restriction on siting of industries is acceptable to the community?

Evidence suggests that the dispersion of industry is not adequate—much of it is not true decentralization, but "peripheral congestion"—and the London zone is gaining too much new growth. There is a great deal of transference from within London to its outer belt and an unhealthy amount of new factory growth recorded inside London in such districts as Shoreditch and Finsbury. Much of this comes into the "workshop" classification.

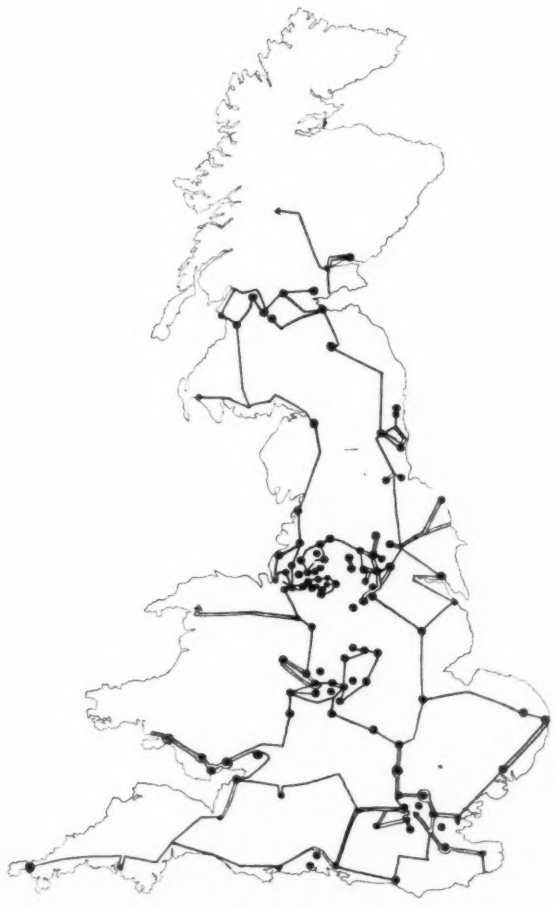
It is apparent that much of the peripheral growth of the largest towns could have taken place elsewhere with equal advantage to the producer, the tendency for trading estates to crowd into the Greater London region being marked.

One asks what prospects there are for improvements in these conditions?

Industrial Siting and the New Town

The new trading estates have been developed by private enterprise to provide a service for which the conditions of industry today create a demand. However, on broader issues, an industrial grouping represents a nucleus for an urban development ; it attracts population and shops ; it creates values ; it has all the potentialities of a town. So that the regional planner sees in trading estates which are adhering to the circumference—congestion of London and lost opportunities for creating new towns based on solid industrial grouping. The industrialist may, however, complain that the tendency has been, on many regional plans, to put industry into a corner as an "also ran" after residential, commercial and agricultural reservations. But it is now evident that one has to start with industry as the basis of planning. Therefore if the trading estate movement is to be reckoned as a fairly stable development for the future, what are the possibilities of decentralization of industry and population through constructing new satellite towns based on these trading estates?

Cheap power has been decentralized throughout the country ; efficient transport is widely available ; healthy conditions exist for working efficiency. But how is the new industrially-centred



The principal transmission lines of the grid.

EMPLOYMENT, GROSS AND NET OUTPUT FOR VARIOUS INDUSTRIES

1930–1935 CENSUS

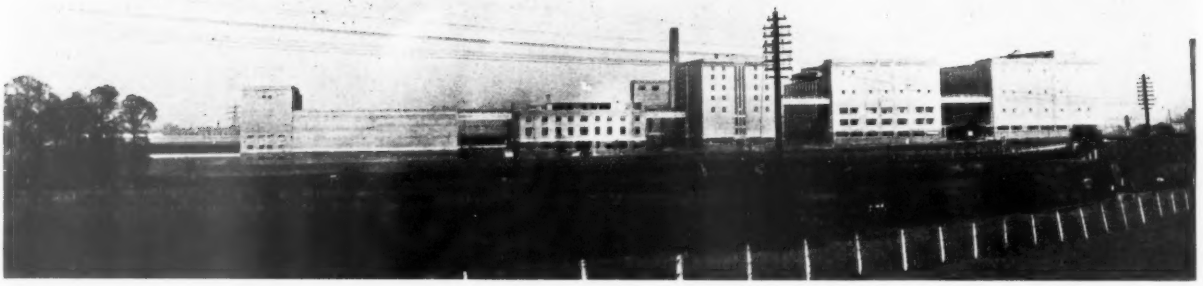
Trade	Employment		Gross Output (£'000)		Net Output (£'000)	
	1930	1935	1930	1935	1930	1935
Textiles						
Cotton Spinning	188,566	182,153	77,794	74,073	19,621	20,147
Cotton Weaving	190,668	165,791	76,816	68,809	22,589	20,334
Jute	28,641	24,190	9,605	8,079	2,666	2,906
Linen and Hemp	15,759	13,515	4,798	4,803	1,727	1,638
Silk and Artificial Silk	59,540	81,690	22,779	36,056	9,235	14,052
Hosiery	96,619	114,814	36,007	39,385	15,000	17,206
Rope, Twine and Net	13,999	14,966	5,954	5,466	1,888	2,146
Canvas and Sacking	7,088	8,728	4,428	5,381	1,186	1,444
Asbestos and Boiler Packing	7,140	9,444	3,787	4,928	1,869	2,963
Elastic Webbing	5,510	6,527	1,659	1,975	842	954
Fibre, Horse Hair and Feather	3,520	4,015	1,643	1,934	655	742
Roofing Felts	964	1,578	882	1,294	362	586
Woollen and Worsted	222,963	238,829	111,572	110,687	36,473	41,325
Textile Finishing	98,239	99,941	28,633	30,382	18,133	18,285
Lace (*c*)	14,123	14,053	6,932	5,374	2,514	2,385
Flock and Rag	5,407	5,221	3,782	4,475	825	1,014
Packing	5,113	4,931	1,458	1,169	819	739
Totals	963,859	990,386	398,529	404,270	136,404	148,866
Iron and Steel						
Blast Furnaces	19,036	15,815	23,542	21,047	3,882	4,083
Smelting and Rolling	132,816	135,011	82,114	101,542	24,800	33,356
Foundries	84,819	107,456	27,524	37,771	15,938	22,022
Tinplate	24,837	21,959	15,195	13,902	4,909	4,897
Wrought Iron and Steel Trade	24,222	28,170	12,589	16,518	5,347	6,875
Small Arms (Private Firms)	1,349	1,285	450	406	295	276
Hardware, Hollowware, etc.	78,978	96,097	27,371	35,389	14,039	17,742
Chain, Nail, Screw, etc.	44,082	56,537	15,249	21,281	7,421	10,598
Wire	20,404	23,072	12,881	15,602	4,082	5,706
Tool and Implement	20,346	24,994	5,694	7,828	3,311	4,862
Cutlery	9,021	10,699	2,742	3,583	1,569	2,357
Needle, Pin and Smallwares	10,512	12,443	2,818	3,198	1,740	2,062
Totals	470,422	533,538	228,169	278,067	87,333	114,836
Mechanical Engineering						
Prime Movers and Boilers	59,173	49,329	19,518	19,679	11,125	10,613
Marine Machinery	57,937	31,624	23,495	12,360	11,031	5,528
Textile Machinery	48,502	39,420	11,925	12,038	7,342	7,352
Machine Tools	18,437	21,048	6,155	8,193	4,155	5,537
Printing & Bookbinding Machinery	11,256	9,648	4,016	3,357	3,134	2,553
Agricultural Machinery	11,186	9,158	3,259	3,102	2,042	1,761
Other Mechanical Engineering	194,502	207,454	71,970	83,216	42,221	50,033
Constructional Engineering	33,956	34,938	18,358	19,397	7,864	8,734
Repair Work, etc.	9,581	13,252	2,950	3,714	1,886	2,627
Totals	444,530	415,871	161,646	165,056	90,800	94,738
Food						
Grain Milling	24,781	29,897	65,198	64,763	9,113	11,681
Biscuit	27,432	40,850	10,813	15,540	6,667	8,558
Preserved Foods	41,544	49,340	32,435	36,324	13,472	15,623
Butter, Cheese, etc.	11,569	14,871	27,369	28,392	5,668	6,780
Animal Foods	5,041	8,854	5,565	10,260	1,762	3,518
Bread, Cakes, etc.	87,098	106,093	60,086	61,603	22,730	27,057
Cocoa and Sugar Confectionery	72,733	72,941	36,486	36,322	16,268	17,374
Bacon Curing and Sausage	14,449	19,089	26,733	33,879	4,415	6,321
Sugar and Glucose	16,910	16,480	44,116†	42,485	7,343	5,324
Fish Curing	7,443	5,134	5,913	3,987	1,256	918
Ice	1,933	1,861	1,123	962	856	745
Totals	310,933	365,410	315,837	334,517	89,550	103,899
Total (Four Groups)	2,189,744	2,305,205	—	—	404,087	462,339

town to be created? Is it to be by private enterprise, by local authority, or will it become the concern of a larger regional body—even a national interest?

In this matter there is much to learn from the pioneering achievements of Letchworth and Welwyn; two brave, sociological workshops which have passed through the difficult experimental stage and reached stability. These two towns are the creation of private enterprise. In addition, one has the municipal development of Wythenshawe to examine, although the future of the local authority in the trading estate business is conjectural.

In connection with these problems, the paper of F. J. Osborn of the New Fabian Research Bureau made a number of recommendations for the "Territorial Planning of Industry." It is proposed to establish an "Industrial Siting Board," a permanent body, "charged with the duty of guiding the location of new manufacturing businesses and industrial and commercial developments throughout the country." It would derive major policy from a "Ministry of Planning" or the head of the Government department to which it is attached—and from the Cabinet. The board would, it is proposed, make surveys of industrial distribution and co-operate with local authorities, trade associations, regional planning committees, national boards of public utility type, etc., to effect a synthesis of information on which to base industrial siting proposals. It would not appear as "an autonomous body with dictatorial powers," but it would be "empowered to decide in what districts industrial and commercial development should be promoted or checked." It would not have any constructional functions; it is suggested that certain municipalities — classified in a future siting board survey as "localities in which industry should be encouraged"—should be empowered to lay out modern factory zones, properly equipped with roads, railway sidings, power and public services, and plant for handling goods. Such municipalities would link these activities in with their housing and town planning schemes. The board would also have to indicate where new satellite towns should be located away from the overgrown centres. However, it is appreciated that a local council is not necessarily fitted to design new towns, and while they might decide upon the broad policy, the actual work would best be done by a public utility type of company with fully qualified personnel.

Meanwhile, there is an immediate problem of this character facing the great city of Glasgow, which represents an opportunity for an advance in practical town planning on an industrial base. Miss Jean Mann pointed out



Factories near London: The Guinness factory at Park Royal.

the following facts to the Glasgow architects :—

> The city needs 65,000 more houses during the next ten years ; its overcrowding percentage is 31 ; densities prevent rehousing on site ; high tenement blocks of flats are impracticable. She showed the economy achieved by Manchester Corporation in building Wythenshawe, as against building an equivalent quantity of tenement blocks on costly land inside the city, and concluded in a detailed study of the position that the building of a satellite town, zoned for residence, industry and commerce, and surrounded by an agricultural belt, was economically and socially justifiable.

Temporary or Permanent Change ?

One turns now to the chief problem of which the foregoing are symptoms. For if the problem of economic unbalance (of which the Special Areas form part) is one of cyclic economic depression, accentuated by world political disturbance, then temporary remedies are adequate. But if this problem is the result of the effects of the impact of the new power-machine system on an old industrial structure, and of the excessive development of London, complicated by political actions, some broad, long-term policy seems necessary, which may include a regional trend and with confidence may ask the public to accept a new and dynamic regional planning which calls for control of industrial siting.

The Special Areas and the State

It seems evident that the State is faced with problems that are new in size and character. Its policies may affect vitally the prosperity or depression of a region ; for example, the East Anglian farming community has been aided by subsidies to maintain agricultural production and for import restrictions ; the growers of hops, mainly in Kent and Worcestershire, have received the assistance of a marketing scheme. On the other hand, until recently, the zones in the North-east coast and South Wales faced abnormal depression conditions unaided, so that positive State action is a big factor to consider. Further, it is recognized that since the State provides free education, services such as communications and main roads, clearance of slum areas (usually created by industries), subsidies, export quotas and tariffs, the State has some claim to exert its influence on industrial location.

So far, policy has been centred on the special areas. A new body, the Special Areas Commissioners, has been set up, representing a new type of governmental regional body, to deal with the new problems which are seen to be regional in character, as distinct from purely local authority control.

The Special Commissioners have entered into commitments for the spending of £13 million ; thirty-one new factories have been planned, and the trading estates of Team Valley and Treforest are expanding. Particular inducements are being offered to firms to set up works on these trading estates, and their advantages are being fully advertised. A representative advertisement of Team Valley offers to the industrialist :—

> " 1 : Workers in abundance, skilled or unskilled, reliable and adaptable.
>
> 2 : Modern factories for rent alone (or buildings can be erected promptly to your exact requirements without capital outlay).
>
> 3 : The most up-to-date Estate amenities in this country."

These developments follow the lines of the final report of Sir P. Malcolm Stewart as Commissioner for the Special Areas, in which he agreed that persuasion had failed to establish new industries in the Special Areas and advocated the creation of more favourable conditions in these areas to attract industrialists.

His additional proposal to make the Greater London zone " out of bounds for further factory construction " is equally significant and the generally favourable reception to this proposal is interesting. Had this same proposal come from an eminent Town Planner from technical considerations of regional planning, would there have been the same response ?

However, Sir Malcolm Stewart's attitude is that the Government would be justified in telling industries where they should not go — i.e. London Region—but would not be justified in telling them where they must go.

He sees in the uncontrolled expansion of London one of the chief factors creating the present economic unbalance of the country. He sees that this expansion has had the effect of taking earning power away from other parts of the country which need it more urgently. He comments " Much of the growth of Greater London is not based on strictly economic factors ; psychology plays an important part in the matter . . . through the control of London which has become a national menace, a better distribution of industrial activity can be secured." This suggests that here is a factor threatening to be permanent in developing regional unbalance. What are the facts about London ?

London Region

Greater London has about 60 per cent. of the population of South-East England, and its outer belt increased in population by 27 per cent. during the 1921–31 Census period to 8·8 million. The 1931 Census showed that over 600,000 people migrated from the North, the Midlands and the West into South-East England, much of this inflow going to London's outer belt. The congestion of the outer belt is not the worst feature of an unhealthy situation, for the result is increased pressure on the centre for " bigger and better " business buildings, and this means increased transport loads, more rush-hour discomforts, less open spaces, more time and money spent on travelling—but these are familiar details of the country's greatest regional planning problem.

London has all the attractive power of the greatest concentrated market, its unrivalled amenities, its position as a port and its closeness to the Continent, and its commercial wealth and financial

power. These factors influence the location of industries making consumers' goods and luxury goods near London. It is evident that, without following Sir Malcolm Stewart's proposal, the congestion in its unplanned North-West cannot be adequately relieved by the planned satellite towns of Welwyn and Letchworth, and by the uneven growth of a ring of old "satellites" as production centres — Luton, Watford, St. Albans, Chelmsford and Braintree.

Apart from these brief facts, there is a psychological aspect of the London problem having a bearing on the broad Regional problem. This aspect is shrewdly commented on in the P.E.P. (Political and Economic Planning) Broadsheet No. 87 (December 1, 1936) —"If the Houses of Parliament stood on the banks of the lower Severn instead of the lower Thames, how long would we have to wait for a Severn Bridge? The same arguments hold for the Forth, the Tay, the Humber, the Tyne and elsewhere. National money is freely spent upon London Bridges and other London communications, London Royal parks and other London amenities, such as museums, libraries, lifeguardsmen, and exhibitions and ceremonies of all sorts which attract visitors and residents with comfortable spending power to make London more prosperous, politically more dominant, and better able to afford to lose touch with and to neglect the interests of the rest of England, Wales and Scotland."

Regionalism

These data suggest that one of the root causes of the present conditions is excessive centralization of national life in London. Certainly to social observers one very strong factor is operating to attract industries and people — the concentration of administrative power in a capital city which brings in its train the finest cultural and other amenities. One must therefore ask, is not the way to offset this, to study the broad policy of Regionalism and plan for a gradually increasing devolution of State administration to the big regional centres, the strengthening in those centres of regional culture, and the construction of the finest amenities? This is too big an issue to discuss at length here, but it arises directly from the problems of industry location. For London is not Britain, and the great centres of Bristol (South West Region), Cardiff (Wales), Birmingham (Central), Liverpool (North West), Edinburgh (Scotland), Newcastle (North East), Leeds (Mid-East) and Norwich (East Anglia) are the natural regional capitals from which cultural and economic activities can be guided.

Regional Patterns

We have referred already to the creation of a new body, the Special Areas Commissioners, to organize regional matters that cannot be effectively handled by Government Department or local authorities because of the many functions involved, the local character of their problems and the scale of these problems.

Again, regional organizations exist among the semi-public, national bodies, co-ordinating electricity generation and transmission and controlling broadcasting. According to the Press it is proposed in the application of the McGowan Report, to create by amalgamation new bodies of regional character to operate the distribution side of electricity supply. The General Post Office has already developed a regional system of organization.

In connection with this decentralization move, Mr. T. H. Boyd, Director of Establishment and Personnel of the G.P.O., has stated: "The Bridgeman Committee found that the position of the secretariat, i.e. of headquarters, contravened one of the fundamental principles of organization, viz. the distinction between policy and practice, between the administrative and the executive functions. They considered that headquarters tended excessively to combine the two functions, so depriving the real executive officers, the men "in the field" so to speak, of real responsibility and authority and leading to an undue rigidity where, in contact with the public, flexibility is required.

Such a development and its inevitable results are not peculiar to the Post Office. They can be observed in other large undertakings whose activities also cover the whole country, and the remedies proposed by the committee deserve close consideration. The principles they laid down were, very briefly:—

1. That the main function of headquarters should be to determine policy and secure its observance; and of the district organization to execute the general policy prescribed by headquarters.

2. To fulfil these functions efficiently all the activities—administrative, financial, technical—must be co-ordinated at each appropriate stage, both in regard to policy and to execution, and not left to work in parallel.

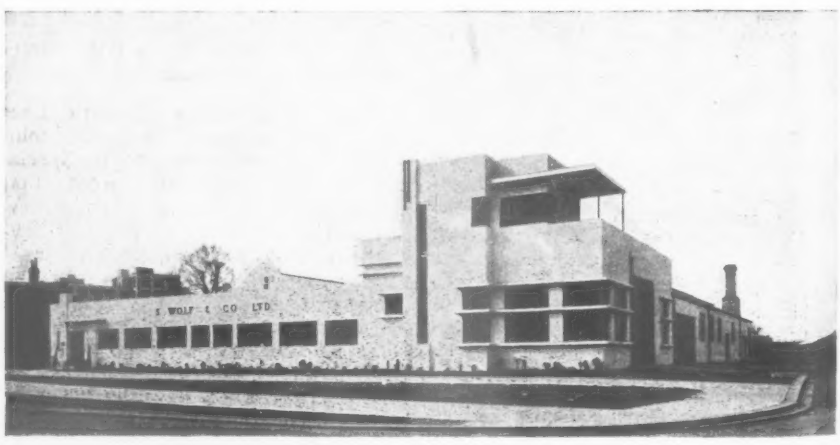
3. The use of instruments of financial measurement must be decentralized and form an integral part of local administration, so that the local administrator may have the data necessary to measure his own performance, to compare it with that of his colleagues and to be judged by it.

The reorganization of the Post Office which is now proceeding, is being directed towards carrying these recommendations into effect.

One notes further that the majority report of the Tyneside Commission has advocated an amalgamation of most of the local authorities in that zone into a kind of super county borough of Newcastle — virtually a new regional body.

These instances are sufficiently weighty and numerous to suggest a study of national and local administration of services to determine: (1) those services the national administration could with improved efficiency take over from local authorities, and (2) those services that could with improved efficiency—and in the interests of regional betterment—devolve upon regional authorities to be created. The difficulties of co-ordinating such bodies have to be faced and the attitude of local authorities to be gauged, but the trend seems too definite to be ignored.

Concluding this brief survey of the position, it appears that industry is not being adequately decentralized; it congests in undesirable places where its potentialities for the building of new towns is wasted. The trading estate movement could be the nucleus of such towns. The London problem is becoming more difficult. And it seems that the causes of industrial unbalance from region to region and the resulting disparity in wealth, in amenities, and, above all, in employment and health, lie deep-rooted in the forces that create structural changes in national life. In this condition it is not the town planner, the economist or the politician to whom we must turn, but the sociologist.



A factory in the modern style.

Factory building near the Barnet by-pass.

THE ARCHITECT'S OPPORTUNITY

[*BY E. A. A. ROWSE*]

Director of the A.A. School of Planning for Research and National Development

DURING the last century and a-half, there have occurred in Great Britain two great migrations of industry. These have followed on changes in the form of motive force used to drive machinery. In each case, a greater independence of the source of power, and, therefore, in flexibility of location, have resulted in building activity of immense proportions.

The latter part of the eighteenth century saw the end of water power. Industries—textile and iron working, hitherto using water-driven wheels—found themselves free to move away from the river valleys. With the coming of steam power, centralization on the main coalfields rapidly took place. Those situated at such distances from supplies as to make transport charges prohibitive, moved or went under. In other cases, where the proximity of deposits to existing industrial activity made a move unnecessary, an adjustment was made on existing conditions. Since it was hastily carried out, and guided only by the exigencies of the moment, the change brought to industry a capacity for dirtiness which repelled a large and influential section of the community, the landowners. They refused to recognize it, and withdrew from all participation. But equally powerful and more hard-headed, the middle classes of the Midlands and the North, avoided a misinterpretation of values. They saw industry as a source of wealth, power and prestige. An antagonism, which is only today disappearing, grew up between the two groups.

Unfortunately, the eighteenth-century system of patronage, to which architects of the period willingly conformed, resulted in the majority taking sides with and reflecting the views of their employers. By following such a lead, the loss incurred by the architects themselves was serious enough. But far more important, their withdrawal deprived the country of their knowledge and taste, and so indirectly contributed to that untidy ugliness which has become the accepted characteristic of the industrial areas.

Worse still, the attitude of the objectors naturally incurred the scorn of the more matter-of-fact manufacturing classes. Ignorant, by deprivation of guidance, of the true value of order and beauty, they stigmatized such things as a frivolling nicety, and associated it with a refusal to face the grim and grimy facts of life. The architect was, therefore, in their estimation, one who could only be expected to add the frills to an otherwise completed building. When none were required, he was of no use. As a result, almost the whole of the industrial building of the country was carried out over the heads of the architectural profession. Even more calamitous was it that since a tradition of large scale agricultural planning had already been developed on many of the great estates, with the advice of the architect, he, with the engineer, was not given the opportunity of planning the new industrial areas.

Such a possibility presupposes the existence of the goodwill on both sides necessary to successful co-operation. This did not exist. The architect drifted away from the main building activity of the country; until today only 5 to 10 per cent. of the total work done is carried out under professional control. Had the opportunity been grasped, the replanning of our great cities would not today present apparently insuperable difficulties in traffic, nutrition and sociology.

Even now the second great migration of industry is in full flood. It arises out of the change from a coal-produced steam power to electricity, which requires no transportation, bears only transmission costs, and is available in almost every corner of the country. By its agency, new industrial areas are rapidly coming into being. There is a very definite danger that once again a great opportunity will be lost. This time the architect must overcome the results of the unsympathetic attitude of his predecessors. All those who hear the expressed opinions of far too many industrialists know how difficult this task can be.

There is, however, another side to the

picture. Clear-headed though they may be in their own particular field, business men are not equipped by their training to carry through unaided the programme for the re-siting, design and erection of an industrial group. Not only in the creation of a single building, but in deciding questions of location which fall to the industrialist to solve, the assistance of the production and structural engineer is often sought. A combination of the engineer and architect would be far more efficient. The problems to be faced resolve themselves broadly under six main headings : connection with the source from which raw materials are obtained, and the ensuring of their regular delivery ; the forms of transportation available and necessary, and their satisfactory conjunction ; the proximity of an ample and steady market ; the value of land ; the possibility of certain ancillary trades being already located in the area ; the obtaining of adequate supplies of labour, skilled or otherwise, both at the commencement of the enterprise and for replacement purposes. These are the chief factors ; certain incidentals, often of a very unexpected nature, may exist, but the essentials remain constant.

On each of these counts many architects are today well equipped to advise the industrialist. During the last twenty years they have been trained to carry out and present clearly exhaustive surveys of a regional nature, in which all the facts of supplies, transport, land utilization and values, housing and other relevant material are set out. Such statements can be added to the market research already prepared by the production engineer, constituting a most valuable guidance on which the industrialist can base his decisions. But an added advantage may be derived from the early presence of the architect in these preliminary deliberations.

Too often a site is chosen and purchased long before an architect is called in. The inappropriateness of local conditions is discovered only after detailed sketch plans are developed. What can be more reasonable than to examine a series of possible sites by having industrial surveys and trial plans prepared before a final selection is made?

In the direction of detailed planning, the architect's training has of recent years undergone a radical change. The principles of processing, and flow planning which must govern the industrial unit or zone, are now applied to most forms of building. The more compact, cleaner plans of today bear witness to this greater discipline. By a training in orderly logical thought ; by insistence on the utmost economy of means and materials ; by the closest study of the ways of life of those who will occupy the buildings he creates, the architect has been weaned from his flamboyancy, and can show the industrialist how to save on a building, and yet get better results. The industrial psychologist has warned him of the losses in time, health or accidents which result from bad flow planning of process lines, faulty study of action sequences at the bench, inadequate ventilation or temperatures. In the essentials of his approach, the younger architects have learned to think first of the human being, and not so much of some long-dead style or present fashion. It should be made clear to the industrialist that the architect has recognized the weakness of his position, has reorganized his approach. A " rapprochement " should now take place.

Map showing the principal ports in England and Wales.

But this is not only a domestic problem. The migrations of industry are of paramount importance to every individual in the country. The coalescences of the towns of the nineteenth century have produced the unwieldy and unhealthy conurbanizations of today. But these conditions have arisen from the expansion of industry, and its proportionate power to attract labour, which must be housed reasonably near its place of work. Every new factory is a potential creator of a town around or near it. Are such towns to be in the right place ? Will they be of such an ugliness as to destroy all beauty and every amenity in their vicinity ? What should be their limit of expansion ? How many associated, as well as individual factories, should be encouraged to form an industrial zone or trading estate in order to lay the foundations of a vigorous and self-reliant town ? What is the efficient minimum area in which they can be planned to prevent uneconomic sprawling, and the occurrence of waste spaces?

These are questions on which very little information exists at the moment in any country. Many architects may well employ their energies in research on such problems, that answers may be forthcoming when needed.

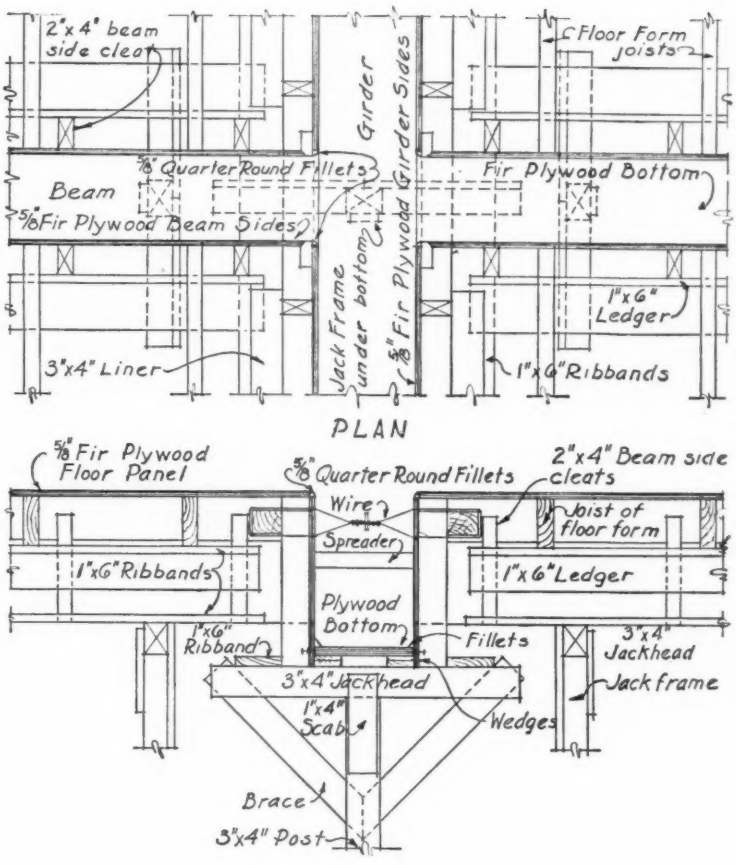
The Royal Commission on the Location of Industry, shortly to be set up, must give point to the work of all planners and architects who devote their energies to industrial problems. It is only right that the Royal Institute of British Architects, and the Town Planning Institute should request opportunity for their representatives to give evidence before the Commission.

The trading estate, as a planned industrial zone, has been in existence on the Continent for some years. In

this country, unfortunately, industry has moved so rapidly and in such volume, that town planning has limped painfully behind, contenting itself with housing and traffic problems. It is time that the most exact technique should be applied first to the location of the trading estate and its associated urban unit or units, and next to the detailed planning of the zone itself, and the factories within it. If the assertion that the architect is best equipped to do this is correct, now is the great opportunity to retrieve the mistakes of the nineteenth century. If this second occasion is lost, the whole community will never forgive the omission. They will find others to do the work. The architect will again be relegated to the performing of relatively unimportant tasks on a limited range of buildings.

In such work lies the opening, not to rescue an odd village, a cottage or a watermill—industrial in its time—but to remodel and preserve the beauty of the whole face of England. Not to close our eyes to the Potteries, the Ridings, to Lancashire and the smoky waist of Scotland, looking only at the Cotswolds and similar areas. But to work patiently for the seemly and businesslike ordering of all that industrial endeavour which is the life blood of England. This does not mean the designing of a few factories on the Western Avenue, though this may be a step in the right direction. It means the prevention of the confusion of factories and housing such as has taken place round Greenford and Hayes. This, in years to come, will be as great a disgrace to us as the concentric rings of mixed industrial and residential development in nineteenth-century Birmingham.

It may be well to bear in mind a very recent and very English remark of Mr. Baldwin's : " I am old-fashioned enough to believe that to be an employer of labour is the finest career to which a man can aspire." Only one other nation can refer to commerce with such reverence, the Chinese. It is a sturdy belief. It may be liable to abuse, but much good may come of it. That, if misdirected, more evil may result, has been the lesson of the last century and a half. Is it not possible that each accepting his share of the blame for the past, the industrialist and the architect might now join forces to give to the Prime Minister's confession of faith a true expression in a soundly planned and housed industry? In the hard competitive years to come, when England has long ceased to be the only workshop of the world, such work will, nevertheless, enable a healthier, happier nation dwelling in seemly surroundings to hold its own with allcomers.



TRADE NOTES

[*EDITED BY PHILIP SCHOLBERG*]

Formwork and Shuttering

CONCRETE, as a material, has plenty of virtues, but many architects are shy of it because they are not quite sure how to finish it. Judging by the number of queries the Building Research Station get, the straightforward cement rendering is only too liable to suffer from crazing, and the various concrete paints naturally need a certain amount spent on upkeep. Left bare, concrete is liable to look rather unprepossessing, not only because of its colour, but because shuttering board marks nearly always show unless a lot of time and labour is spent on rubbing down, and projecting fins are often left where the concrete has filled up the inevitable small gap between adjacent boards.

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All sorts of tricks have been evolved to get over these difficulties—triangular fillets tacked over the board joints (in America the temptation to make these fillets form a stone joint pattern is all too seldom resisted)—shallow recesses every four feet or so to mark the end of each lift—but none of these can give a really smooth finish. Compressed fibre board inside the shuttering is an improvement, but has disadvantages from the point of view of cost. America uses a laminated board of Douglas Fir which is now being marketed in this country by Veneercraft, Ltd., under the name of Multicrete. So far it is available in two thicknesses, $\frac{5}{8}$ in. and $\frac{1}{4}$ in. The latter being intended for use as a lining with supports placed from two to four inches apart, the thicker size being capable of acting as combined shuttering and lining with studding supports up to 24 ins. apart. Prices are 49s. 8d. and 23s. per 100 sq. ft., for the two thicknesses in quantities of 5,000 sq. ft. and standard sizes are from 8 ft. by 4 ft. downwards in units of one foot.

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A saving of anything from 40 to 75 per cent. in carpentry costs is claimed, stripping is naturally easier, and the same boards can be used about ten times, being coated with

soft soap or grease before use. The ¼-in. lining board can also be used for curved work down to a radius of 15 ins. or down to 8 ins. if steamed.

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Saving in shuttering costs and a negligible amount of subsequent rubbing down costs would seem to make this material well worth a trial. At the head of these notes is a typical American detail showing how it is used for beams.

Diffusing Glazing

Thermolux glass has been on the market long enough for its diffusing and heat insulating properties to be reasonably well understood by the average architect (if such a person exists), but there is sometimes a certain amount of ignorance over the reasons for its behaviour and of the quantitative difference it makes to daylight factors and heat losses. A list of Thermolux properties has just been issued by the manufacturers and it shows quite clearly just how much difference Thermolux makes when compared with clear glass, many of the figures being given for the several different weights of spun glass which form the centre section of the sandwich.

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The booklet contains 11 pages of condensed and tabulated data, presented so that all the information is readily accessible and all of it useful. The direction in which the threads of spun glass should run in different circumstances is clearly explained, and there are, too, some interesting notes on the lighting given by standard factory bays. In the letter accompanying their leaflet the manufacturers are almost apologetic about the virtues of their product, but I cannot see any reason why they should be so modest. Thermolux is put forward as something better than ordinary glass for certain clearly defined purposes—tests by the National Physical Laboratory and sundry other reputable authorities show quite clearly that these claims are justified—and so far as I can see the manufacturers are perfectly right to quote such results, particularly when they do it in such a sane way. There are plenty of firms who would have circulated a single page leaflet saying CLEAR GLASS SUPERSEDED ! ! ! and left the reader to write and enquire what it all meant.

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And, as a sideline, but of course as a necessary part of their own investigations, Messrs. Thermolux have produced a good deal of information about *clear* glass which most people have probably never bothered to think about before.

Daylight for Clerical Work

The Department of Scientific and Industrial Research have just issued a report* on the daylight illumination necessary for clerical work, the main conclusion reached being that typists used a daylight illumination of at least 5-ft. candles. The report describes how the investigation was carried out by the National Physical Laboratory, a mechanical method being used to find the value of daylight illumination below which the average worker would turn on artificial light.

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The results were obtained in a very ingenious way. The experiment was made in a room in a Government Office containing 18 typists, each of whom had a separate desk lamp. When any typist switched on her lamp the current through it automatically actuated a cinematograph camera (arranged to take single exposures) which took photographs of the scale of a micro-ammeter connected to a photo-electric cell placed against a window. The external daylight value was thus recorded and subsidiary apparatus also showed which typist had switched on her light, the time of day, and the date, and from these data it was possible to calculate the daylight illumination on each desk at the time when the light was switched on. Average values were obtained, to eliminate, as far as possible, the variations due to factors such as differences in the eyesight of the subjects and the type of work being copied.

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One question which has not been definitely settled by the experiments is whether, for clerical work, the absolute illumination is more important than the ratio of the illumination on the desk to that outside the room, i.e. whether a worker closer to a window than another would be content with the same minimum illumination, or would expect a higher minimum, in proportion to the better light ordinarily enjoyed. In general, however, the results seem to show that the *absolute* illumination is the more important figure, for the average workers did not switch on their lights at practically the same moment, as they would have done if the ratio of inside to outside illumination had been more important.

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The report shows how the results can be used to find the average time, throughout the year, at which the average worker might be expected to need artificial light. The results are expressed in curves, based on several years' recording of daylight at Teddington, giving the daily variation of daylight illumination for each month of the year, and also giving the time for which daylight should, on the average, be enough for different positions in the room. Corrections to these curves may be applied according to the aspect of the room under consideration.

Addresses

Veneercraft, Ltd., 18 Bedford Square, London, W.C.1.

The Thermolux Glass Co., Ltd., 1 Albemarle Street, London, W.1.

* *Daylight Illumination Necessary for Clerical Work*. Illumination Research Technical Paper No. 19. (London: His Majesty's Stationery Office. Price 6d.).

THE WEEK'S BUILDING NEWS

LONDON & DISTRICT (15 MILES RADIUS)

BETHNAL GREEN. *Re-housing*. The L.C.C. is to clear the Emma Street and Vyner Street areas of Bethnal Green and provide re-housing at a cost of £127,500.

BETHNAL GREEN. *Extensions, etc.* The Bethnal Green B.C. is to alter and enlarge the town hall premises at a cost of £109,847.

ENFIELD. *Houses*. Plans passed by the Enfield U.D.C.: 15 houses, Uplands Way, for New Ideal Homesteads; 8 houses, Bincote Road, for Messrs. G. Wimpey & Co., Ltd.; six houses, Orchard Crescent, for Mr. F. J. Gates; 207 houses, Hillview estate, Enfield Lock, for Messrs. Hamilton, Son and Campion; 159 houses, Nursery Road, for Mr. W. M. Edwards; further houses, South Lodge estate, for Messrs. J. Laing and Son.

ILFORD. *Garages, etc.* The Ilford Corporation has approved plans by the borough engineer for the provision of new garages, stores and offices for the Refuse Collection Department, at a cost of £12,880.

ILFORD. *School*. The Ilford Education Committee has purchased a site at The Glade, Clayhall, for the erection of an elementary school.

POPLAR. *Re-housing*. The L.C.C. is to clear areas in Cottage Place and Hinks Place, Poplar, and provide re-housing, at a cost of £13,000.

SOUTHWARK. *Tenements*. The L.C.C. is to erect 477 tenements and 12 shops on the Rockington estate, Southwark, at a cost of £271,300.

WANDSWORTH. *Tenements*. The Wandsworth B.C. is to erect 181 tenements and six shops on the White Square area, at a cost of £139,752, and 272 tenements on the Garratt Lane estate, at a cost of £229,265.

WOOLWICH. *Pavilion*. The Woolwich B.C. is to erect a pavilion at Harrow recreation ground, Eltham, at a cost of £5,000.

NORTHERN COUNTIES

BOLTON. *Houses, etc.* Plans passed by the Bolton Corporation: eight houses, Chilham Street, Mr. H. Critchley; 16 houses, Turner Bridge Road, Messrs. Leigh Bros., Ltd.; six houses, Withins Lane, and eight houses, off Withins Lane, Messrs. J. H. Pearse and Son; 264 houses, Long Lane estate, Housing Committee; 46 houses, Rossall Road, Mr. J. Brownlow; 50 houses, off Long Lane, Messrs. Park & Co.

BRADFORD. *Science Room*. The Bradford Education Committee has instructed the city architect to prepare plans for the erection of a science room at the Priestman Central School.

LANCASHIRE. *Libraries*. The Lancashire C.C. is to erect a branch library at Little Lever, at a cost of £2,000, and another at Audenshaw, at a cost of £3,100.

LANCASHIRE. *Extensions*. The Lancashire C.C. is to enlarge the nurses' home at the Chorley institution, at a cost of £5,110.

LANCASHIRE. *Tuberculosis Dispensary*. The Lancashire C.C. has acquired premises in Blue Bell Lane, Huyton, for conversion into a tuberculosis dispensary.

LANCASHIRE. *Extensions*. The Lancashire C.C. has acquired premises in Bury New Road, Prestwich, for the extension of the police divisional quarters.

LANCASHIRE. *Grammar School*. The Lancashire Education Committee has approved revised plans for the erection of a grammar school at Colne, at a cost of £56,536.

LANCASHIRE. *Hospital*. The Lancashire C.C. is to prepare plans for the erection of a hospital at Ulverston at an estimated cost of £75,000.

LANCASHIRE. *Extensions*. The Lancashire C.C. is to enlarge the High Carley sanatorium, at a cost of £18,633.

LANCASHIRE. *Technical College*. The Lancashire Education Committee is to extend the technical college at Leigh, at a cost of £27,368.

LEEDS. *Cinema*. The Leeds Corporation Town Planning Committee has now given permission to Messrs. C. H. and F. Lax, to erect a cinema at the junction of Easterly Road and Roundhay Road, subject to the commencement of the erection of the cinema within six months and that the proposed car park is completed prior to the opening of the cinema.