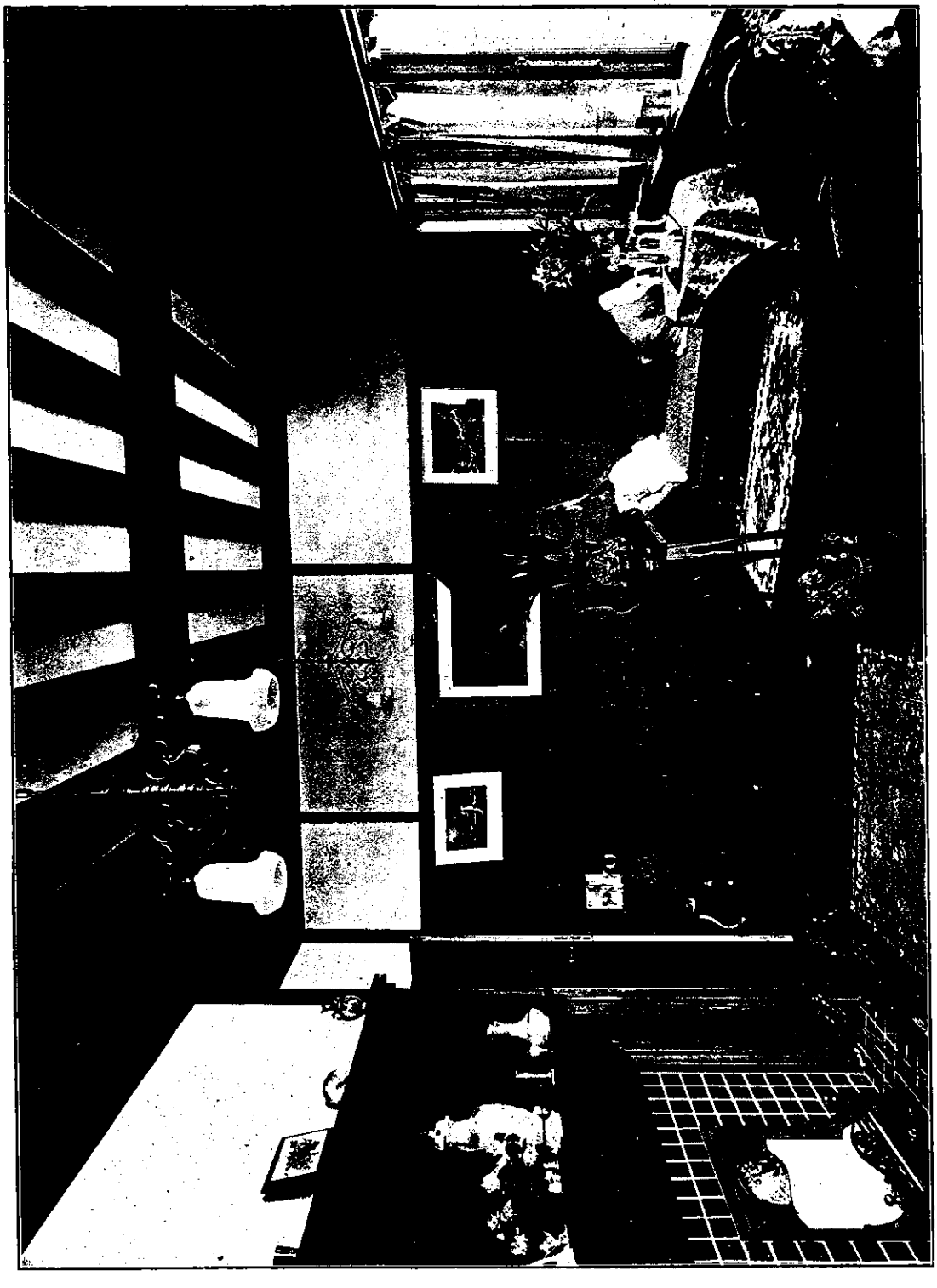

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N.Z. BUILDING PROGRESS.

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To Our Advertisers—All copy for advertising matter must be in our hands by the 1st of the month preceding publication, otherwise no responsibility with regard to insertion will be undertaken.

The Editor will at all times be glad to receive Illustrated Articles on subjects of interest for consideration, provided the articles are short and to the point, and the facts authentic.

Should subscribers continue to receive copies of this journal after expiry of current year, it will be accepted as an intimation that they are desirous of subscribing for a further period of twelve months.

In case of change of address, or irregularity of this paper's delivery, subscribers should send immediate notice.

Publisher's Announcements.

Our 52nd Competition

We offer a prize of £1 1s. 0d. and a second prize of 10/6 to the two best designs submitted for

Banking Premises

(A problem to illustrate the value of Axial Planning), in accordance with the following conditions:—

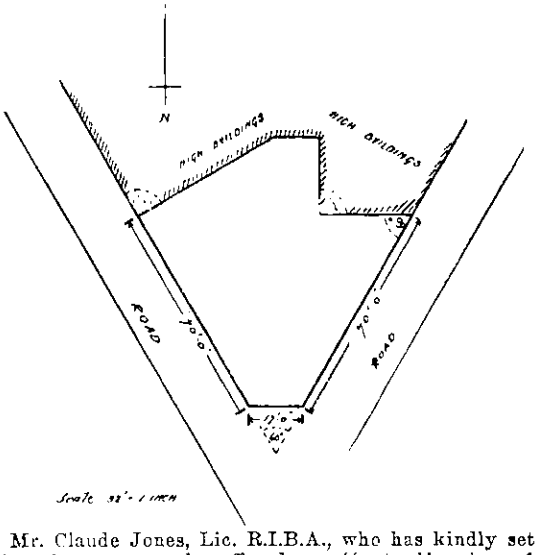
One of the leading Banks propose erecting a new branch building in the foremost city of the Dominion: the site chosen is situated at the juncture of two principal streets.

It is desired that the banking chamber shall extend as nearly as possible the full width of the site, and also that the same shall be symmetrical. In this instance a corner entrance must be arranged for, and no columns or piers are to occupy the floor space of the chamber.

The accommodation required must include in addition to the banking chamber, manager's room with fireplace, staff toilets and cloak rooms for both sexes, stationery room, staff luncheon room with small kitchen, living room and bedroom for janitor. The first floor to be so arranged with offices that it will be suitable for rental purposes, proper accommodation must be provided for both sexes in the way of lavatories etc., and a separate tenant's entrance given from the street.

There is further accommodation that should be provided for in modern banking premises, and the student is invited to include in his design any other features he may consider desirable. In planning, economy of space must be constantly borne in mind, and as the banking chamber should be well proportioned in height to the floor area, the student is asked to consider, carefully, some means whereby the other rooms, etc., may be also proportional in height to their floor area. Good lighting is of the utmost importance and it is necessary that the plan should show the positions of the counters etc. allowing generous space for the "Public."

The elevations must express the purpose of the building and although cost is of no object, anything in the nature of vulgar and meretricious ornament must be avoided. It is suggested that the facades be treated in the style of the French or the Italian Renaissance. Drawings required are:—Plan of each floor; longitudinal section to 1/16 in. scale; elevation of one side and also of corner to ⅛ in. scale; one detail of a portion of the banking chamber for the full height, and showing a section of the portion so taken (not to include any counters or fittings) to ¼ in. scale. Drawings to be in ink, but elevations must have shadows cast at angle of 45 deg. and window openings may have graded washes. No perspective.



Mr. Claude Jones, Lic. R.I.B.A., who has kindly set this subject has generously offered an "extra" prize of one guinea to the best design sent in. He explains in a letter to the editor that the problem requires "thought" on the part of the student, and is a subject that should be of great benefit to the student.

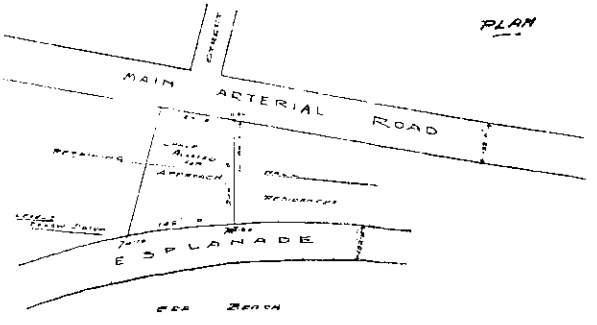
Designs must be sent in, in black and white under a nom-de-plume, addressed to **Progress**, 8 Farish Street, Wellington, and marked clearly "Fifty-second Prize Competition" on outside with a covering letter giving competitor's name, and address of employer. Designs to be sent in by March 21st, 1917.

Our 53rd Competition

We offer a prize of £1 1s. 0d. for the design adjudged the best for an

Improvement Scheme for a Seaside Town

in accordance with the following conditions:—



The levels of the Main arterial road and the esplanade are shewn on the plan: It is suggested that the space allotted to the approach be laid out as a public reserve with easy approach to esplanade. It is left entirely to the competitor whether the approach is by means of steps or an incline, or a combination of the foregoing; it is not suggested that the approach be for vehicular traffic.

[*Continued on page 881*

Vol. XII. No. 6. Monthly

REGISTERED AS A NEWSPAPER

N.Z. BUILDING

PROGRESS

(With which is incorporated "The Scientific New Zealander")

A Journal for Progressive men interested in the development of New Zealand's Architecture, Building, Engineering and Industries

Editor: Chas. E. Wheeler.

Incorporating the Journal of the New Zealand Institute of Architects.

PRICE 6d. per Copy; 7s. 6d. per annum post free. (Note: 1s. Discount allowed if paid in advance).

WELLINGTON, AUCKLAND, CHRISTCHURCH, AND DUNEDIN, NEW ZEALAND, FEBRUARY, 1917.

Contents for February

Editorial Comment

Business and Pleasure

The new year is commencing well in the building trade, though it would be hard to predict what will develop later, with the prospect of more and more men being taken for what, after all, is the only work to be considered at this time, the winning of the war. And that seems definitely reaching finality. The economic struggle, though a long one, requiring more patience than dash, is clearly telling in favour of the entente. The British Navy's strangle-hold on the central powers is surely throttling them, and the leading authorities on the war now say that this year should see the end. New Zealand presents a remarkable spectacle for a nation at war. Never were its money accumulations so large, never has the general population spent so much on luxuries. The building trade itself would not be so flourishing, in spite of many difficulties, but for the fact that freezing works, hotels and picture theatres have supplied architects and contractors with ample work. Some professional men and builders have unfortunately not been able to share in the good things, as they had specialised mainly in dwellings, which have not been built in such numbers as before the war, when materials were cheap and money readily obtained. We hear much criticism of the expenditure on theatres during war-time, but cannot sympathise with those kill-joys who would materially lower the cheerfulness of the community, and its consequent resistance to the trials of the period, by putting the nation into sack-cloth and ashes. Money is pouring into New Zealand and it is a sign that it is being well distributed when the picture theatre has to cope with more patrons. Motor cars for the wealthier classes, and picture theatres for the masses, are in the same category. Nobody can throw stones at luxuries in New Zealand nowadays and none of the pained critics can even hint that we have failed to do what we ought in regard to helping the Mother Country in the crisis. We shall go on building theatres, as well as freezing works.

Scientific Research for £250

The New Zealand Institute has taken quite seriously that modest little grant of £250 for scientific research wrung from a diffident Parliament by the Minister of Internal Affairs, and some useful suggestions have been put forward, having that strict regard for the immediately practical which we have advocated as being good policy in this utilitarian community. Researches are to be made into the phosphate rock of Canterbury, the cold storage of fruit, and the electrical prevention of frost in orchids. Following proposals made by Mr. L. J. Wild, the Institute has asked the Government to assist a project for agricultural research, and a soil survey of New Zealand. Professor Benham, President of the New Zealand Institute speaking at its recent annual meeting, mentioned that the Minister for Internal Affairs had expressed his intention of calling a conference which it was hoped would result in some practical steps being taken to bring the results of scientific research and methods into closer relation with some of the industries. It seemed to Professor Benham that the institute should take a much more active part in urging the importance of a better training in science or rather in scientific methods in the secondary schools, and in urging on the industrial community the need for scientific organisation and co-operation. The movement has been well launched, it will be seen, and further impetus will be gained when the proposed new State organisation to be known as the Industrial Efficiency Board gets to work. Its scope will not be limited to settling soldiers on the land, or in other ways re-absorbing them into industrial activity. It will have to do with the whole organisation of industry on efficient lines, and will no doubt enable New Zealand to effectively co-operate with the Imperial authorities in the great scheme of industrial reorganisation which we understand is already under weigh. The Empire is getting ready for peace, and we are going to profit permanently by the tragic lessons which began in August, 1914.

Fair Rents Legislation

When Parliament passed the Fair Rents Act last session we pointed out that it had a serious deficiency, but this did not matter, for the reason that the Act became practically a dead letter. It has, however, been used by a Wellington tenant to protect himself from a rise in rent which he considered unjustifiable.

A man named Ladd occupied a house in Lindum terrace, for which he paid 25s. a week to Winder, Mills, and Pearson, as trustees. Ladd received notice that his rent would be raised to 32s. 6d., but was later advised that in consideration of the fact that he was a good tenant, the rent would be reduced to 30s. Ladd protested against the 5s. increase, and appealed to the Court to fix the rent on the capital value. Evidence was given that the Government valuation in 1913 was £500, while the plaintiff produced a witness who valued the property at between £600 and £700. The defendants claimed that the property was worth over £1000. Owing to the difference in values, the Magistrate appointed an independent valuer, who valued the house and land at £700. Meantime defendants decided not to proceed further and the case was discontinued on the understanding that the rent was to remain at 25s. per week. The Magistrate (Mr. W. G. Riddell S.M.) allowed costs (£3 7s. 6d.) against the defendants. Everything turned in this case upon the Government valuation, which is often not in accordance with the current value of the property. But the most serious deficiency of this legislation is that the valuation, covering as it does the land as well as the improvements, is absolutely unreliable as an indication of the value of a dwelling to the tenant, as distinct from its value to the owner, who may be allowing the dwelling to remain on valuable land, hoping in the future to put up a building to return something more in accordance with the value of the section. If the Wellington tenant in question had been living in a tumble-down shack in a charming and popular suburb, he would scarcely have been able to succeed in his action, for the reason that the capital value of the section would have been so large that a rent quite exhorbitant for the dwelling could have been exacted, and yet not exceed the amount of interest which, under the law, a landlord is entitled to obtain. In regulating the dealings of private individuals the State is treading a difficult path, but Ministers, we suppose, are like ordinary mortals—they live and learn—so that in view of Parliament's known partiality for experimental legislation in the patchwork style, we may expect further amendments of what, at present is a faulty almost unworkable Act.

Standardisation

We occasionally hear of people who hold very pessimistic views regarding distraction of industry after the war. "What is going to happen to the new munition workshops?" they ask in a pessimistic tone indicating that they firmly believe the shutters will go up. But the machinery needed in turning out shell cases and guns can, in most instances, be adopted to the output of machine parts. The renovating and "scrapping" which has gone on in Britain's engineering workshops under the impelling necessities of war will be of tremendous benefit when peace arrives. Plans are being formed to keep all the factories going when they finish turning out munitions. Russia, its vast Eastern spaces hardly touched, is a veritable "land of promise" for the English maker of agricultural machinery, and at last he will compete in that field on fairer terms than before the war. Standardisation, and the organisation of huge outputs has been definitely adopted as the main line of policy in motor cars and steamships. In the latter case, large yards are already being laid down, to quickly counteract the losses due to Hun sea "frightfulness." A considerable amount of information is available as to American methods of specialisation and big outputs. Almost incredible are the results of this Policy. We have it on the authority of the sales director of an influential American motor car concern that, buying in 15,000 lots, his concern obtained complete sets of electric headlights and tail lamps for 12s. the set; and tires sold to the customer at £6 to £7 can be bought by the motor manufacturer in 15,000 lots at £3 to £3 5s. British trading methods are under revision, and we hope to see the era of peace accompanied by prosperity as a result, not only of manufacturing improvements, but better and cheaper banking facilities than have prevailed under past conditions of conservative monopolism.

The Painter in Relation to Public Health

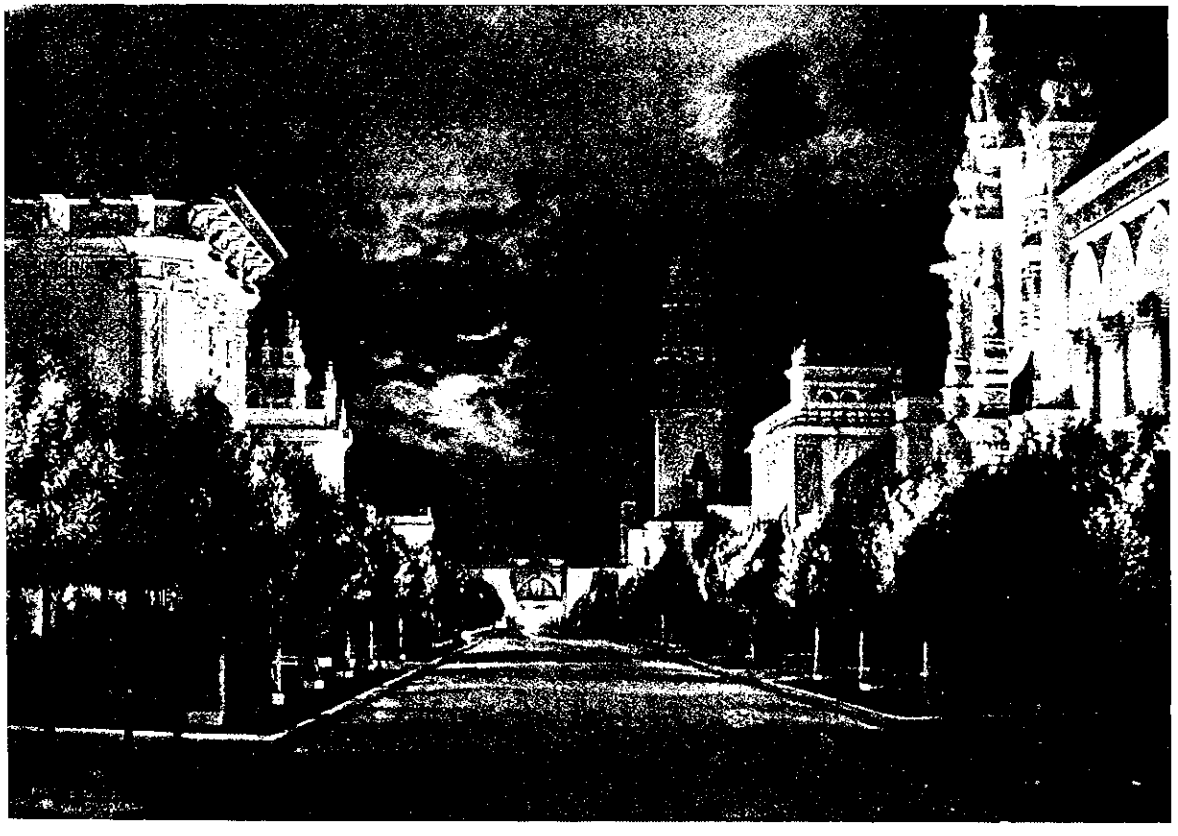
By E. J. BELL.

This subject which was dealt with at the last Painters' Conference held in Christchurch, is of such importance that we have no hesitation in recommending it to our readers. Mr. Bell takes a stand as a member of the Community which is refreshing to find these days. If all Painters acted on Mr. Bell's advice a decided move in the interest of the public weal will have been made.

In introducing this subject I desire to show, briefly, some of the evils which exist in all localities to a more or less degree, and particularly in large towns.

To point out something the painter can do to improve and eradicate these evils, and to suggest means to control and regulate so as to obtain the best results and prevent their recurrence.

Now, of all the places you know, How many receive reasonable treatment in the way of cleaning and disinfecting? How many have ever been painted, papered, or decorated with due consideration for future sanitary care? I venture to say that 10% would be a liberal allowance.



Night View of the Avenue of All Nations at the Panama-California Exposition held at San Diego 1916. These buildings are offered as houses for Educational and Industrial exhibits gathered from different parts of the World for display during this year.

You all know something of public buildings such as theatres, halls, hotels, boarding houses, schools, churches, etc., where all sorts of people congregate and rub shoulders with each other, where individuals suffering from all sorts of complaints and diseases from colds and influenza to cancer and consumption, spend some portion of their time and come in contact with seats, furniture and walls, and, in all probability, leave some of their objectionable germs where some other unfortunate individual comes in contact with them, thus helping to spread sickness and disease.

Factories, stores and offices also require some consideration. Do they receive it? The factories, dairies, and provision stores certainly do. But how much? The various inspectors who have the oversight of these places on their schedule of duties have also such a variety of other work that the question of renovations gets very little thought, and the usual treatment is to put another coat of whitewash over the last, irrespective of the fact that it (the last coat) is already scaling off. Generally speaking, the

inspector knows something of labour laws and nothing of sanitary science. I ask you, should these things be? Should our men, and women, boys and girls be shut in office, factory or workshop from 40 to 50 hours per week under conditions which must prejudice their health? As practical tradesmen: How often are you called in to renovate this class of building before it has reached the last stage of disrepair? And how often are you asked for an opinion as to the best method of treatment? A much more frequent question is, how cheap can you cover it up?

The average dwelling house is not always what it should be. Numbers of homes where human beings have to live are in a shocking state, ceilings and walls whitewashed, re-distempered and perhaps papered without being washed off. Walls papered and re-papered and filth of all sorts covered up, woodwork dirty, greasy and altogether vile.

to the men we employ. If we fail to educate the public on these matters who will take up the work? For it has to be done sooner or later, and we certainly are in a position to know more about the subject than most people.

We should first of all take it upon ourselves to point out to our clients on every possible occasion what we consider should be done when called upon to renovate old premises. We should also educate our apprentices so that they will not regard the sanitary side of the business so lightly as has been done in the past, the next generation of painters will then have a much better status than exists at present. I want also to advocate a proper system of inspection. We have at present a fairly efficient system of inspection of our back yards. If a poultry run is too close to a dwelling it has to be removed, if the rubbish is accumulating it must be carted away. These things we recognize as being necessary in

BEFORE AND AFTER!

A Residence in York Place, Dunedin, gutted by fire and reconstructed under the direction of Mr. Leslie Coombs, A.R.I.B.A., of Dunedin. Builder, Mr. Geo. Gibbs.

I have attempted to draw your attention to some of the more flagrant of the evils and to show that no organized attempt is being made to combat them. Have I overdrawn these little pictures? Have I stated anything but what you know to be true? Has not your experience as painters brought you in frequent contact with evils like these and sometimes worse? I think you will agree with me that this state of affairs is a constant menace to public health. How far it is responsible for the various epidemics which descend on us and take toll of health and life I do not know, but it is up to us to get busy and improve matters. It is time for us in the painting industry to rouse ourselves from our lethargy and publish the true state of the buildings we are called upon to patch up. I know some of us will lose a certain amount of business, but what of that? Surely we owe something to the community of which we form a part, as well as to ourselves and

order that the population (particularly of the congested areas) may be protected from infection and disease. We have medical inspection of children in the schools and dentists to see to the children's teeth. But apparently it is no one's duty to inspect the home, factory, or places of amusement, etc.

I would like to see the whole business brought under the control of the Public Health Department. Periodical inspection of all buildings should be made, and renovations in accordance with a specification set by the department when necessary in the interests of public health. All painters should have to pass an examination, be registered, and be liable to be struck off the register if found doing work in other than a proper manner. This is quite feasable, and at the present time certain other industries are working under a similar system. I refer to plumbers, pipe layers and electricians, and there may be others.

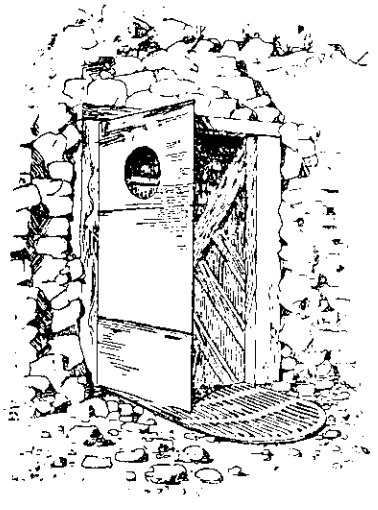
Architecture and Building

[Note—The Articles appearing on pages 869 to 876 are published by arrangement with the New Zealand Institute of Architects.]

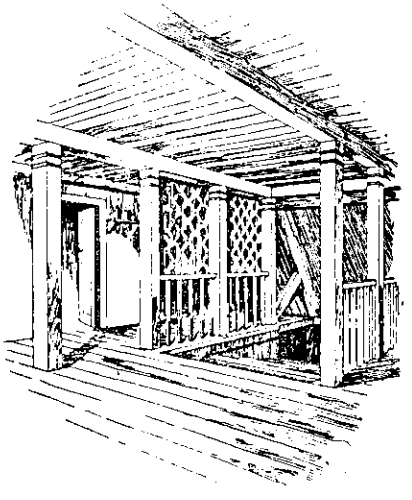
German Trench Architecture

From the English "Architectural Review."

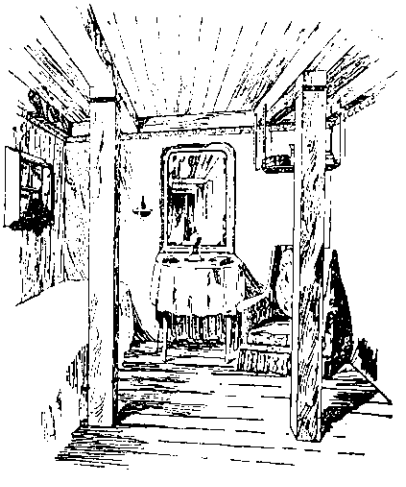
During the past month the Press Bureau has put at the disposal of the Press a most interesting article on German trench architecture, written after the "Great Advance" had revealed the remarkable underground constructions of the enemy. There is no indication as to who was the author, but from the manner of his description we may assume him to be an architect-officer with the Army in France. The article has already appeared in some of the newspapers, but it merits the widest possible publicity, and we therefore take occasion to republish it, with accompanying illustrations, not only as a matter of present interest, but also as a documentary record for future reference.



Standardised Steel Door and Scraper.



Timber Staircase.



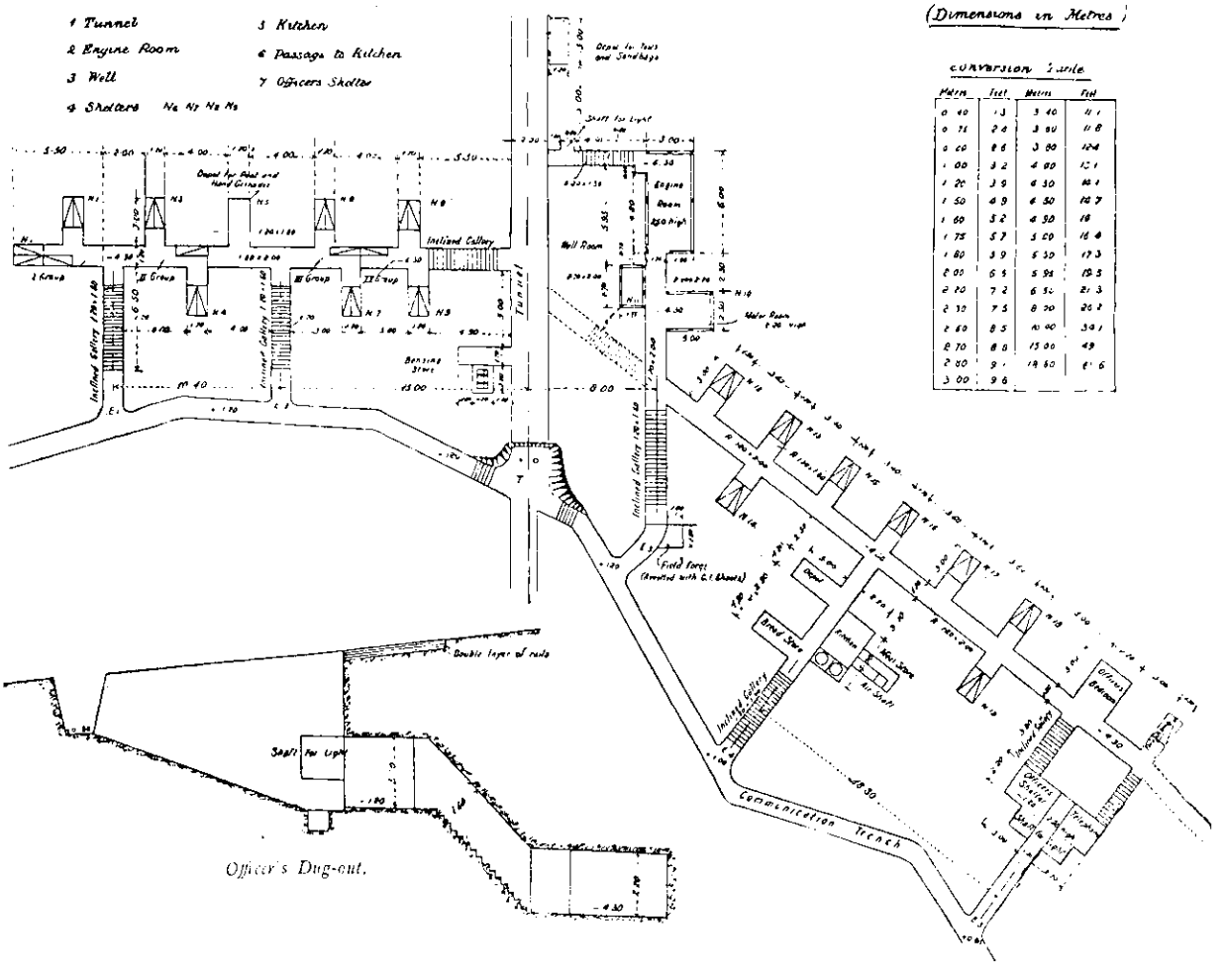
Officers' Dug-out.

Along many miles of the Western front, as it was till the end of June, you can now do what seems to trench-dwellers almost the utmost reach of impossibility—that is to say, you can stand at your ease in the middle of No man's Land and look at a German front trench on your right and a French or British front trench on your left. As soon as you do so you feel that the outward face of each wears a quite different expression. It is not merely the accident that the Allies' wire is only cut across by neat lanes or gangways at convenient intervals while the German wire lies in a trampled mess on the ground. The difference goes much further. For one thing, the Allies support their barbed wire mainly with wooden stakes; the Germans do it with iron. For another, the Allies' parapet owes much more of its strength to visible sandbags. The Germans build with sand-bags too, but not so much nor so openly. Their parapet makes more show of rough clay or chalk, even where a light layer of this covers two or more feet of reinforced concrete placed like a shrapnel helmet on the head of a dug-out or a gun emplacement. And if you now leave your first standpoint and explore the two trenches in turn, and also the support and communication trenches behind each of them, you find that the difference goes, in more than one sense, deeper still. The Allied trench looks, in every way, like the work of men who hoped and meant to move on before long; the German trench looks like the work of men who hoped, or feared, that they would be in it for years. Our trench housing has been much more of a makeshift, a sort of camping out, with some ingenious provisions for shelter and comfort, but not more than the least that would serve. Most of our dug-outs are just roughly delved holes in the earth with only enough props and rafters to hold the roofs up; their floors are bare ground with a little straw on it; their doors, if they have any, are a few odd pieces of plank with a couple of other pieces nailed across; often the floor is on the trench level, to save burrowing. Lighting is done with candles, mostly bought at the canteen, and if anyone owns an armchair or a two-foot-high mirror, it is the jest of the platoon.

The whole German idea of trench life is different. The German front in the West is like one huge straggling village built of wood and strung out along a road 300 miles long. Of course, the houses are all underground. Still, they are houses, of one or two floors, built to certain official designs, drawn out in section and plan. The main entrance from the trench level is, sometimes at any rate, through a steel door, of a pattern apparently standardized, so

that hundreds may come from the factory on one order and missing parts be easily replaced. The profusely timbered doorway is made to their measure. Outside this front door you may find a perforated sheet of metal, to serve for a doormat or scraper. Inside, a flight of from twelve to thirty-six stairs leads down at an easy angle. The treads of the stairs and the descending roof of the staircase are formed of mining frames of stout timber, with double top sills; the walls are of thick planks notched at the top and bottom to fit the frames, and strengthened with iron tie-rods running from top

section of a platoon had its allotted places for messing and sleeping, its own place for parade in a passage, and its own emergency exit to the trench. In another, used as a dressing station, there are beds for thirty-two patients and a fair-sized operating room. A third, near Mametz, was designed to house a whole company of 300 men, with the needful kitchens, provision and munition storerooms, a well, a forge riveted with sheets of cast iron, an engine-room, and a motor-room: many of the captured dug-outs were thus lighted by electricity. In the officers' quarters there have been found full-length mirrors,



Plan of German Dug-out near Mametz, accommodating 500 men.

to bottom of the stairs and with thick wooden struts at right angles to these. At the foot of the stairs a tunnelled corridor runs straight forward for anything up to fifty yards, and out of this open rooms and minor passages on each side. In many dug-outs a second staircase, or two staircases, lead to a lower floor, which may be 30 feet or 40 feet below the trench level.

All these staircases, passages, and rooms are, in the best specimens, completely lined with wood, and as fully strengthened with it as the entrance staircase already described. In one typical dug-out each

comfortable bedsteads, cushioned armchairs, and some pictures, and one room is lined with glazed "sanitary" wallpaper.

Other German trench works show the same lavish use of labour as the dug-outs. In the old German front trench south of La Boisselle an entrance like that of a dug-out leads to a flight of twenty-four stairs, all well finished. At their foot a landing 3 feet square opens on its farther side upon a nearly vertical shaft. Descending this by a ladder of thirty-two rungs you find a second landing like the first, opening on a continuation of the shaft. Down

this a ladder of sixty rungs brings you to the starting point of an almost straight level tunnel 3 feet wide and about 5 feet high, cut for fifty-six paces through pure hard chalk. It ends in a blank wall. If you take its bearings with the compass, return to the parapet, and step fifty paces in the same direction as the tunnel, you find yourself in a huge crater, which had evidently been held, and probably made, by British troops. So that, at the moment of the advance in July, nothing remained, presumably, for the Germans to do but to bring the necessary tons of high explosive to the end of their tunnel and blow the mine under the base of the old crater. Some rungs of the ladders in the shafts are missing or broken, but as a whole the shafts and the tunnel are remarkable for amplitude and finish. Like an incomplete dug-out near Fricourt, this mine still contains parts of the machinery used for winding up the excavated chalk to the surface.

Nobody who reads this should leap to the conclusion that, simply because German trench work is more elaborate than ours, it is a better means to its end—the winning of the War. No doubt the size and the overhead strength of German dug-outs keep down casualties under bombardment, and sometimes enable the Germans to bring up unsuspected forces to harass our troops in the rear with machine-gun and rifle fire when a charge has carried our men past an uncleared dug-out of the kind. On the other hand, if our advance is made good, every German left in such a dug-out will be either a dead man or a prisoner. No doubt, again, the German dug-outs give more protection from very bad weather than ours. But they also remove men more from the open air, and there is nothing to show that the half-buried German army gains more by relative immunity from rheumatism and bronchitis than it loses in the way of general health and vitality. In England troops have better health in tents than in huts, and better health in huts than in billets. For a man of sound constitution "exposure" often means something unpleasant rather than unhealthy, and it would not be surprising if the close underground villages of the Germans yielded higher figures of general sickness than our own simpler, shallower, and more airy trench shelters.

Originality

A day never passes without our hearing of our English architects called upon to be original and to invent a new style: about as sensible and necessary exhortation as to ask of a man who has never had rags enough on his back to keep out cold, to invent a new mode of cutting a coat. Give him a whole coat first and let him concern himself about the fashion of it afterwards. We want no new style of architecture. Who wants a new style of painting or sculpture? But we want some style—"Ruskin."

* * * *

"Proportion is, of course, the real secret of architectural dignity."—*Sir Charles Nicholson.*

The Architecture of the Renaissance

A paper read before the Technological Branch of the Otago Institute, by Leslie D. Coombs, A.R.I.B.A.

Before describing Renaissance Architecture it is necessary to give a brief sketch of some of the preceding styles. The prototypes, or rather supposed prototypes, of many Hellenic Greek architectural features and ornaments have been found. Nevertheless Grecian architecture was so different to the styles that preceded it that we are accustomed to acknowledge to the Greeks the honour of having created their style, and not having merely borrowed it. Hellenic Greek architecture may be said to start from the 8th century B.C., and to extend to B.C. 146 when Greece became a Roman province. Greek architecture for its beauty and refinement was as near perfection as anything man has ever made. This fact has always been acknowledged and it is noticeable that all nations as they have become acquainted with it have adopted it—with, of course, modifications to suit special requirements. The Romans were the first to follow the lead. They altered and adopted much but the similarity of the two styles is very evident. The chief feature which the Romans added was the arch, which had been much used by the Etruscans, and they so developed it, that their arches, vaults, and domes have never been excelled. The principal examples of Roman architecture were erected between B.C. 100 and A.D. 300.

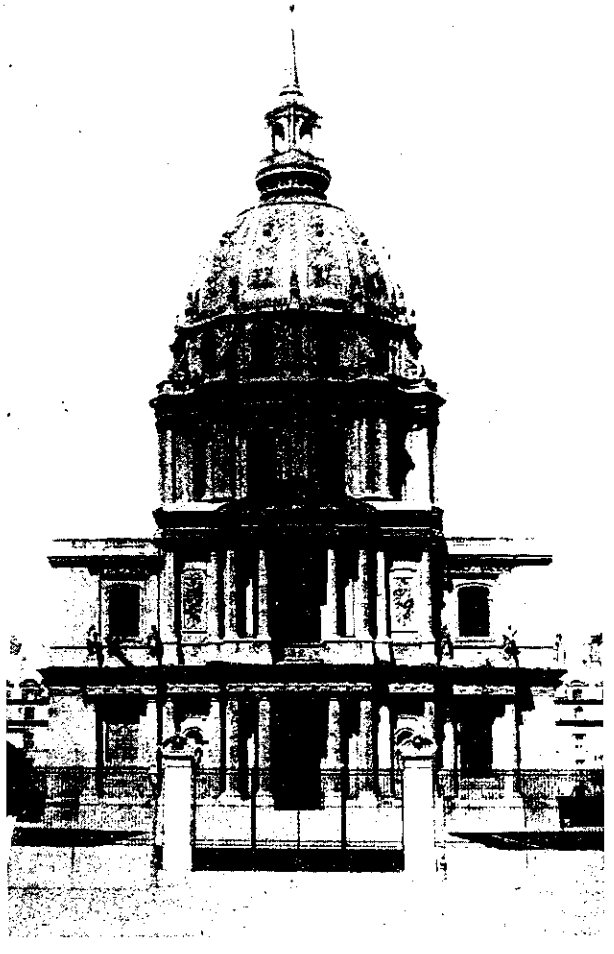
The Early Christian period of architecture is generally taken as lasting from A.D. 300 to 600. As Rome fell so her architecture fell. Early Christian architecture consisted of little more than the erection of basilican churches from the remains of Roman buildings. For about two centuries after the year 600 architecture was at practically a standstill, after which the Roman traditions were to a great extent thrown aside and what we term the Romanesque style was evolved.

The Byzantine style is that which was developed at Byzantium (Constantinople) on the removal of the Emperor Constantine to that city. It included not only the buildings in Byzantium but those which were erected under its influence. Examples are St. Mark at Venice and St. Vitale at Ravenna. Many other buildings in various parts of Italy although classified as Early Christian or Romanesque in style, show much Byzantine influence. The Byzantine builders added much to our knowledge of dome construction by the way they developed the use of pendentives, which are the triangular shaped curved supports of a circular dome which is over a square compartment. The Romans, when they erected a dome, placed it over a compartment circular in plan, and so avoided the constructional difficulty. However, a late Roman building known as the Temple of Minerva Medica has a circular dome over a decagonal base and pendentive forms are used to bring the one shape to the other. The Byzantine builders went further, and, as stated before, built circular domes over square compartments.

The Romanesque architectural style includes all those phases of Western European art, based more or

less on Roman work, which were carried out, from the departure of the Roman style to the introduction of Gothic architecture in the 13th century. Gothic architecture developed very quickly, and the beauty of many of the buildings erected in this style, especially of those erected in France and England, was near perfection. In Italy, however, the style was never developed properly, and as soon as the Renaissance movement started, Gothic was abandoned.

The Renaissance was the re-introduction, or re-birth of Classic work. Various theories have at



Les Invalides.

different times been brought forward to explain its cause. It has been stated that the enthusiasm of the fourteenth and early fifteenth century Italians to study Roman literature naturally led to an appreciation of Roman sculpture and ornament, and ultimately to the adoption and development of what we term Renaissance architecture. This theory is no doubt true, but somewhat misleading, as undoubtedly other factors, in addition to literature, influenced the movement. Religion was one. The short-comings of the Italian Gothic style was another. Gothic was foreign to Italy. The Italians never entered into the spirit of the style as did the French and the English. The Italians always had examples of Roman work in front of them, and it would have been extraordinary if the influence of such examples had not been felt. When we talk of Italianised naturalistic Gothic we explain the result of this influence. The Gothic of France was full of conventional methods of representing life. Italian sculpture was more natural. When we look at examples such as Ghiberti's first door to the Baptistry at Florence, or the ornament over the Porta Della Carta at the Doge's Palace, Venice, we find the treatment such that we at once admit the coming of the Renaissance, or at any rate the necessity of it, for the figures and ornament could not be called Gothic. I have said that religion was a factor. It was in this way. Religious enthusiasm created the desire for ideal sculpture. Educated Italians, who had no two opinions as to their being the most cultured people of the times, and who were familiar with the wonderful sculpture of ancient Rome, could not be expected to form their Madonnas and angels after the manner of the barbarous French, German and English. Figures carved in the Gothic style were to the Italians crude and not by any means ideal.

It is customary to speak of Brunelleschi as the founder or inventor of Renaissance architecture, and the history of this architect is the history of the beginning of the style. Brunelleschi was born in 1377. When a young man he started his career as a sculptor, and became so proficient at his art that few were considered his equals in Florence. The story is told that his disappointment was so great when Ghiberti defeated him in the competition for the bronze door at the Baptistery at Florence, that he decided to study another art in the hopes that he might perhaps attain the undisputed supremacy his ambitions desired. His foresight in then doing what was an unheard of thing in those days was remarkable. He went to Rome, apparently for no other reason than to study Roman architecture. For about four years Brunelleschi remained in Rome. Nothing very much is known of him till about 1420, when he was 43 years of age, and when he was entrusted to carry out the erection of the dome of Florence Cathedral. This was an enormous work, and the cupola was not entirely completed till, 1434, while the lantern was not finished till 1461, after the designer's death. The diameter of the dome is 138 ft. 6 in., and the top of the lantern is about 430 feet above ground level. Although this was Brunelleschi's greatest and most famous work, he really laid the foundation of the Renaissance broader and deeper in other works which he erected at the same time that the dome was being built. One of his earliest buildings erected about 1420 was the Pazzi Chapel. The design of this building is quite original, and although the mouldings and other details may be described as "late Roman" they are treated and applied in quite new ways. Of other important buildings designed by Brunelleschi, may be mentioned the well-known Pitti Palace, the Spedale degli Innocenti or Foundlings' Hospital, the churches of S. Lorenzo and S. Spirito, and the Badia de Fisole. The Pitti palace is a remarkable building. Except for buildings like the Vatican and the palaces of the Roman Emperors it was the largest residence ever erected in Italy. Its length was 475 feet, and

its height, although of three floors only, 114 feet. The walls are erected of huge rusticated blocks of stone, and the whole effect is that of Cyclopaean grandeur. Ruskin, who was evidently impressed by the bold and strong effect obtained wrote in his book "The Seven Lamps of Architecture," "his eye must be delicate indeed who would desire to see the Pitti Palace polished." The design of the loggia of the Spedale degli Innocenti is considered very fine. It is remarkably simple and yet so appropriate. Compare the appearance of the building with the design of most of our modern hospitals. In the spandrels of the arches are medallions of infants in swaddling clothes. These should be noted as they were designed by Andrea della Robbia, one of a famous family of artists who worked in enamelled vitrified earthenware in sculptural form, and who carried on the manufacture of such statues and reliefs for nearly a hundred years. The two churches by Brunelleschi which I have mentioned, S. Lorenzo and S. Spirito, are important and they are equal in dimensions to many English cathedrals. The reason why Brunelleschi has always been looked upon as such a genius is that although he made use of Roman architectural features and ornament he never exactly copied Roman architecture; he applied and treated such features and ornament in original ways. No buildings similar to any that he designed existed in ancient Rome.

As Brunelleschi started the movement, other architects were quick to follow his lead and even to rival him. The Palazzo Medici was erected by Michelozzo Michelozzi in 1430. A magnificent design had been prepared by Brunelleschi for this building, but Cosmo de Medici, who was at that time the greatest citizen of Florence, rejected it for a cheaper design by Michelozzo. Cosmo is reported to have said "Envy is a plant one should never water." This remark attracts the attention to the quiet outward appearance of many Italian Palazzi. A modern author has written "A gentleman's private house, like his manners and conversation, should be somewhat reserved and modest, reticent towards strangers." I think Cosmo's remark and this modern author's ideas are both well worth remembering.

The town of Verona has lately come into prominence in the cables as it is possibly the chief fortress of Northern Italy. It was so in the 16th century and for that reason were constructed to the designs of San Micheli the strong yet remarkably beautiful gate ways to that city. Never before nor since have fortifications been made so beautiful by the application of architectural features. This same architect, San Micheli, designed a number of palazzi, chief among which is the Palazzo Grimani at Venice. The Libraria Vecchia at Venice is a well-known building designed by Sansovino. Its position opposite the Doges' Palace makes it conspicuous.

The great building of the Italian Renaissance is S. Peter's at Rome. Bramante, Sangallo, Raphello, Peruzzi Michael Angelo, and many other architects were employed on its design, and each on his appointment seems to have rejected as much as he could of his predecessors' work, and to have tried to make the design as far as possible his own. Bramante was the first whose plans were seriously considered, and under his direction the foundation stone was laid. Later, San Gallo, Raphello, and Fra Giocondo were his associates, and after Bramante died in 1514 they carried on the work till 1520 when Peruzzi was appointed architect. In 1536 Sangallo succeeded him. In 1546 Michel Angelo was appointed. Most of the building, as we know it, is his design. In 1564 Vignola was architect, and he added the cupolas on either side of the great dome. From 1585 to 1590 Giocomo della Porta and Fontana erected the dome from Michael Angelo's wooden model. From 1605 to 1612 Moderna lengthened the nave to form a Latin cross and erected the existing facade. From 1629 to 1667 Bernini erected the colonnade enclosing the piazzo.

Of all the Italian architects of the Renaissance we English owe more to Palladio of Vicenza (1518-1580) than to any other. He is considered the cleverest architect of the late Renaissance, and it was under him that our greatest English architect, Inigo Jones, studied. His best known work is the facades of the basilica at Vicenza, but scarcely less famous are his Villa del Capra, the Teatro Olimpico, the Church of the Redentore at Venice, and many of his palazzi. The Teatro Olimpico, as its name implies, was intended as an imitation of an ancient Greek theatre, but the idea of constructing the permanent scenic background of three streets in perspective was entirely a sixteenth century Italian one. This idea of constructing buildings or portions of buildings in perspective, in order that apparent dimensions may be increased, was used in other Renaissance buildings, and I remember when visiting Bramante's church of S. Satiro at Milan, noticing that the chancel was not a chancel but was merely constructed in low relief with the usual form and decoration in perspective. Viewed from a particular position the deception was wonderful, but from other positions the result could hardly be considered as satisfactory. St. Maria della Salute at Venice is a late example of the Italian Renaissance. It is most beautiful, and possibly has been drawn, painted, and photographed more than any other building in the world.

In Italy, as has been explained, the Renaissance came very suddenly, there being practically no transition period. This was not so in other countries. In France, Germany and England the transition lasted a considerable time. The builders of these countries had practically no examples of Roman work to guide them. Hence we find that for a long period they adhered to their traditional forms of Gothic construction at the same time that they introduced very crude imitations of Italian Renaissance ornament. In France this transitional or early Renaissance period lasted from about the latter part of the fifteenth to near the end of the sixteenth centuries. A great number of chateaux were erected during this period. Practically all had picturesque high pitched roofs, a feature which was retained in later work, and which, in the form of the so-called "Mansard roof" is characteristic of French architecture to the present day. The Classical period of French Renaissance lasted from the end of the sixteenth to the beginning of the eighteenth centuries. The most remarkable and beautiful building erected during this period is the

Dome of the Invalides designed by Mansard. The Rococo period lasted during the eighteenth century during the reigns of Louis XV. and Louis XVI. The Pantheon at Paris is a building erected during this period, from the designs of Soufflot. Its dome and that of the Invalides are the two well known domes of Paris. The Madeleine at Paris, erected in 1804 is externally a copy of a Roman Temple. For public buildings the modern French Renaissance work is recognised as the most beautiful and best in the world.

The early Renaissance in Germany is remarkable for picturesqueness of gables and other features, and grotesqueness of ornament. A great number of German workmen of the period were employed in England during the time of Elizabeth, and their influence on

Florence Cathedral and Giotto's Campanile.

English work was very great as will be described later. During the last century many important buildings were erected at Munich, Berlin, Dresden, and elsewhere in what has been called the "Classic Revival" style. These buildings like most other German architecture, are considered vulgar in taste. A modern author, writing about 1897, in describing the architecture of the new German Houses of Parliament sums up his description as follows:—"In short, the building is a highly characteristic production of a nation strong in arms, exceedingly self-assertive, and exceedingly deficient in artistic taste; it is a national building which at once stamps itself as German to the core."

The early Renaissance in Spain is known as the "Silversmiths'" style on account of the minuteness of detail. It was undoubtedly influenced by the exuberant fancy of Moorish work. The ornament was generally grafted on to Gothic forms and the result has been described as being rich and poetic. The great building of the Renaissance in Spain is the Palace of the Escurial near Madrid. It was designed by Herrera, who had been a pupil of Michael Angelo.

In England, the first signs of the Renaissance are to be seen at Hampton Court. Cardinal Wolsey leased this palace in 1515 and at once commenced additions to it. Much of the ornamental work was carried out by Italians and we know that Giovanni de Majano made the terracotta busts of Emperors that are placed over the entrance. Many other Italians were employed in England about the same time. They do not seem to have been architects, but carvers and decorators only. No instance of a complete building designed by one of them is known. During the reign of Elizabeth (1558-1603) the Italians disappeared from England and their place was taken by German workmen. These Germans did a great amount of crude ungainly carving. The results were always picturesque and not without character, but for refinement could not be compared with the work of the Italians. Nearly every Elizabethian building of importance has examples of German carving, very often in the form of chimney pieces, with male and female figures growing out of tapering shafts or columns, placed at either side.

The first English architect to introduce in England pure Renaissance architecture was Inigo Jones.

He was born in 1573 in the parish of St. Bartholomew's, Smithfield. When a youth he was apprenticed to a joiner in St. Paul's Churchyard. Towards the end of the sixteenth century he paid his first visit to Italy. On returning to England his chief employment was the designing of scenery for Court masques. He introduced movable scenery into England. In 1613 he again visited Italy, and did not return till the Autumn of 1614. While in Italy he spent most of his time at Rome and Vicenza, and while at the latter place studied under Palladio. His first architectural design is dated 1616. In 1617 he prepared designs for a new Star Chamber, and began the Queen's House at Greenwich. In 1619 he was ordered to design the new buildings for Whitehall. He prepared two designs for these buildings; the first for James I. was to cover an area of 630 feet x 460 feet; the second, for Charles I., was to have a similar plan, but the area was approximately doubled—1280 feet x 950 feet. Only one portion of this scheme, the Banqueting House, was ever erected. This building, the first pure Renaissance building erected in England was completed in 1622, 200 years after Brunelleschi designed the Pazzi chapel at Florence. Of other buildings designed by Inigo Jones, may be mentioned the water gate of old York House, St. Paul's Covent Garden, the west end of St. Paul's, London, the chapel of Old Somerset House, Barber Surgeon's Hall, and a number of residences including Wilton, Lindsay House, Shaftsbury House and others. The work at Greenwich was completed by Wren, but to Inigo Jones belongs the credit of the original designs. Professor Blomfield says "The double cube room at Wilton 60 feet x 60 feet, x 30 feet with its panelling, designed by Jones to receive Vandyke's portraits, is probably the most beautiful room in any house in England, as the Banqueting Hall at Whitehall, also a double cube, 110 feet x 55 feet is unquestionably the finest state room." Inigo Jones died in 1652. His architecture has never been bettered in England.

Christopher Wren was born in 1632. He was in many ways remarkable. He was a mathematician, an inventor, an astronomer, and not till about 1663 did he become an architect. His first work was Pembroke College Chapel at Cambridge, built in 1663-64. About the same time he began the Sheldonian Theatre at Oxford. In 1665 he visited Paris and studied there for six months. The Louvre, or rather a portion of it, was then being built from the designs of Bernini, and Wren had introductions to the architects employed on the work. Wren's great opportunity as an architect was after the Great Fire of London in 1666. He prepared a design, well-known to town-planners for the rebuilding of London. This design was never carried out. St. Paul's Cathedral, London, was Wren's masterpiece. It ranks among the finest Renaissance cathedrals in the world. The dome is 109 feet in diameter. The top of the lantern is about 365 feet above the ground. Besides St. Paul's, Wren designed fifty-three city churches in London. Other works include the Library of Trinity College, Cambridge, The London Monument, The Garden Facade of Hampton Court, two blocks of Greenwich Hospital, the Orangery at Kensington Palace Gardens, Temple Bar, London etc. Wren died in 1723. Of Wren's contemporaries may be mentioned Vanbrugh, who designed Blenheim Palace, Castle Howard, and other buildings remarkable for their size and bold architectural treatment; and Hawksmoor, who was Wren's assistant, and who also assisted Vanbrugh with his designs.

Of the 18th century architects mention may be made of William Kent, who designed the Horse Guards, James Gibbs who designed the churchs of St. Martins-in-the-fields, St. Mary-le-Strand, the Radcliffe library at Oxford, and the Senate House at Cambridge; the Earl of Burlington who was one of a regular school of amateur architects of the time, and who erected at Chiswick an imitation of Palladio's Villa Capra; George Dance who designed the Mansion House, London; Dance's son who designed Newgate Prison; the Brothers Adam who were the authors of a distinct style of interior decoration that is known by their name, Sir William Chambers who designed Somerset House; and Sir John Sloane who designed the Bank of England. During the 19th century lasted what may be termed the Battle of the Styles when Gothic and Classic revivals were carried on one after another and simultaneously. The beginning of this century sees the Classic ideals on top and at the present day practically ninety nine out of every hundred buildings erected are in what we term the "Modern Renaissance" style.

In concluding this paper I wish to make an appeal —that architecture be studied more than it is by the general public. It is not an art for architects alone. We all have to do with buildings, and we all should know something of its forms and features. As Longfellow wrote:—

"To build! to build!
That is the noblest of all the arts.
Painting and sculpture are but images,
Are merely shadows cast by outward things
On stone or canvas, having in themselves
No separate existence. Architecture
Existing in itself, and not in seeming
A something it is not, surpasses them
As substance shadow."

Notes from Garbett's "Principles of Design in Architecture."

"A building devoid of architecture displeases all who see it,—all whose share of heaven's light is intercepted,—whose view of the fair earth is bounded by it; because they see and feel that it benefits its owner at their expense;—they have not been thought of in the design; it is all for self, without appearing to care whether they are incommoded or not, or to know that there are eyes without as well as within. It is this crude selfish *rudeness* which requires to be softened down by a *politeness* either natural or acquired; and this politeness we term architecture.

"—desire to *be* what you would appear—unselfish. If this desire be wanting, it is waste of time to attempt elegance, waste of money to add decoration; all the graces of Palladio, and all the ornaments of Barry, will avail nothing; the mask will never completely cover you; your real self *will* peep out somewhere, and spoil all.

Minutes of a Meeting of the Council of the New Zealand Institute of Architects

Held at the Accountants' Chambers, Johnston St., Wellington on Thursday, 20th November, 1916, at 10 a.m.

PRESENT: There were present: President, Mr. W. A. Cumming; Past Presidents, Messrs Chatfield, Mountfort, Atkins and Wales. Vice-Presidents, Messrs Allsop, Clarkson, Lawrence and Gough. Elected Members, Messrs Cumming, Crichton, Dawson, Fielding, Hurst Seager, and Walden, together with Mr. J. S. Swan and the Secretary.

APOLOGIES: Apologies for non-attendance were tendered on behalf of Messrs Brodrick, Hunter, Warren, Hart, Collins and Mandeno.

ELECTION OF PRESIDENT: The first business of the meeting was to elect a President. On the motion of Mr. Lawrence, seconded by Mr. Roberts, Mr. W. A. P. Clarkson of Christchurch was nominated for the office and in making the nomination Mr. Lawrence said that he considered it a fair and reasonable proposition for the Presidency to move round the different District Branches, so that adequate representation might be enjoyed by each district in turn. In his view the Presidency this year should go to Christchurch, and he therefore had pleasure in nominating Mr. Clarkson, who was the Chairman of the Christchurch District Branch. Mr. Chatfield agreed with Mr. Lawrence as to the wisdom of his suggestion and desired to nominate Mr. Hurst Seager, as one of the Senior Members of the Institute. This was seconded by Mr. Allsop. The President thereupon requested Messrs Crichton and Atkins to act as scrutineers for the election, and on a ballot being taken Mr. W. A. P. Clarkson was declared elected.

Mr. Clarkson thereupon thanked the members for the honour they had done him. Each Branch Chairman present also voiced the congratulations of himself and his Branch, and expressed the hope that Mr. Clarkson would have a useful and enjoyable term of office.

ELECTION OF COMMITTEES: **1. Executive Committee.** The Executive Committee by Rule 96 consists of the Wellington members of the Council, together with the Honorary Secretary and the Honorary Treasurer.

2. Finance Committee. The Finance Committee to consist of the Honorary Treasurer and the Honorary Secretary, together with Messrs Atkins and Chatfield elected by this meeting.

3. Committee of Architectural Education. The members elected on this Committee were the President, together with Messrs Lawrence, Gray Young, Hurst Seager, Crichton, Fielding and Dawson, together with Messrs Vanes and Gummer as Advisory Members.

4. Committee of Practice and Discipline. This Committee is to consist of the President, Messrs Chatfield, Atkins, Wales, Cumming, Crichton and Lawrence.

6. Honorary Secretary. On the motion of Mr. Lawrence, seconded by Mr. Cumming, Mr. W. Gray Young was re-elected Honorary Secretary.

7. Honorary Treasurer. On the motion of Mr. Crichton, seconded by Mr. Walden, Mr. John Sydney Swan was re-elected Honorary Treasurer.

8. Honorary Editor. On the motion of Mr. Atkins, seconded by Mr. Chatfield, Mr. Gray Young was re-elected Honorary Editor of the Institute's Journal.

TRAVELLING EXPENSES: On the question of the payment of travelling expenses it was decided to allot a sum of £100 and to leave the allocation of this money in the hands of the Finance Committee.

ANNUAL MEETING OF MEMBERS: Mr. Wales brought up the question of an Annual Meeting of Members generally, or in the alternative the admission of members to a portion of the Annual Meeting of Council. It was finally decided on his motion seconded by Mr. Cumming,—

> "That the Annual Meeting of the Council be "held in that City where the sitting President "resides—and that the Annual Meeting be "followed by a general meeting of all mem- "bers at which the Presidential address shall "be delivered and brief papers read—the onus "of preparing the papers to be on the Dis- "trict Branch of that centre in which the "meeting is to be held."

SPECIAL EXAMINATIONS: On the motion of Mr. Atkins, seconded by Mr. Walden it was proposed

> "That it be a direction to the Education Com- "mittee to arrange at once a special examin- "ation for those applicants who are now in "practice, the syllabus to be of a special "character suitable to the applicants; the "examination to be held at such period or "periods as may be found most convenient."

Mr. Hurst Seager moved as an amendment that one examination only be held in each year, in accordance with Rule No. 166. As the amendment found no seconder it lapsed, and on the original motion being put it was declared to be carried.

RETIRING MEMBERS OF COMMITTEES: On the motion of Mr. Roberts the thanks of the Council were accorded to those Members of Committees who were now retiring from office, especially Wellington Members on whom the bulk of the work had fallen. The Council also thanked the Secretary for the interest he had taken in the work during the past year. Mr. Chatfield in reply thanked the Council for their consideration. On the motion of Mr. Chatfield, seconded by Mr. Atkins, the Council recorded a hearty vote of thanks to the retiring President for his invaluable efforts during the past year.

Several other members having spoken the motion was put and carried by acclamation.

The meeting then terminated.

The Motor as a Fighting Factor

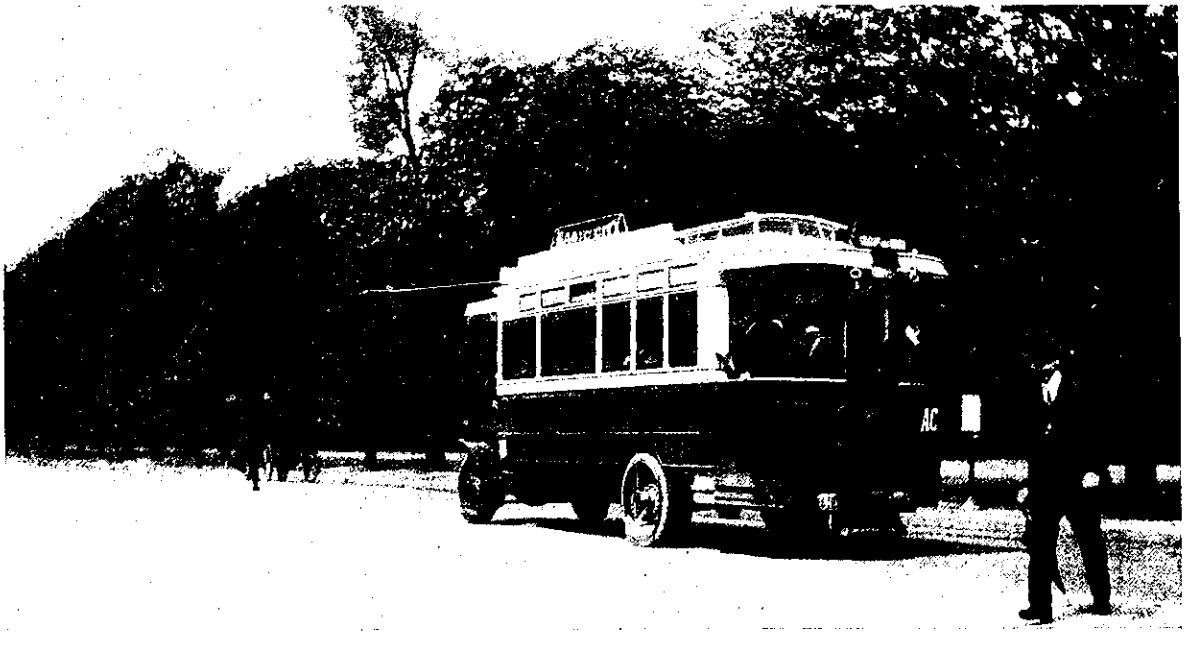
Various uses of the Petrol Engine—The British Trump Card.

A fascinating theme, "The Motor in War"! We are not permitted to know all that will some day be told about it, but sufficient has slipped past the watchful censor to prove that warfare has changed in a revolutionary way, not because of fresh and brilliant genius in strategy, increase in gun range, or the organization of the human factor. What good would twenty-mile range guns be, if they were simply firing "into the blue"? The aeroplane gives the artillery the telescopic eye, so to speak, and most gunners now fire at an invisible mark, thanks to the perfection of observation due largely to the aeroplane.

What would Hun "frightfulness" have accomplished without the Zeppelin and submarine, both made possible by the inter-combustion engine? Their "kultured" methods would have been limited to disseminating disease germs in sweets and imported food-stuffs, arranging time-work bombs and spontaneous combustion packages in steamer's holds.

And the Hun might, after all, have entered Paris but for the humble motor omnibus which enabled General Gallieni, in the fateful days of Mons and the Marne, to suddenly concentrate twenty thousand Frenchmen on an unexpected spot. They were all swiftly taken there from Paris in motor 'buses. The lightning stroke turned the scales. The onward march of the Hun was checked almost within sight of the capital, then slowly pushed back, thanks to that brilliant stroke of the veteran Gallieni, who found the motor a great aid to his plans.

Although the war came upon France at a time when its automobile organization was not yet complete, it would be an exaggeration to say that the aggression of which they were the victims in August, 1914, found them unprepared in matters connected with motor transport. Those who were at that time following the annual military trials of motor vehicles were astonished to see the lorries on their return to their depot at Versailles upon one of the last days of July receive an order directing them to set out immediately for the Eastern frontier. These lorries, which had not then terminated their tests, were thus submitted to a new trial which had not figured anywhere upon the programme.

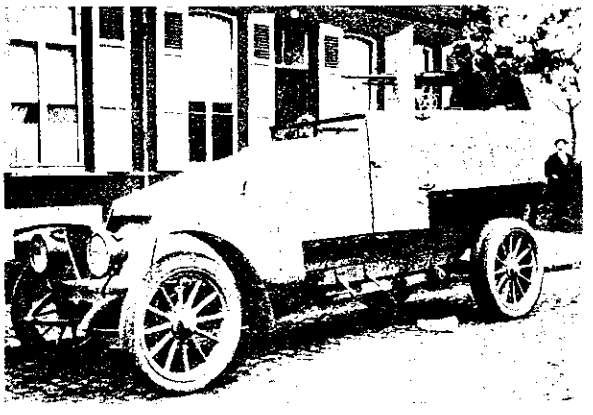


THE NEWER TYPE OF PARIS MOTOR OMNIBUS.
Designed to meet the requirements of the Military Authorities. It can rapidly be turned into an Ambulance by replacing the seats with stretchers.

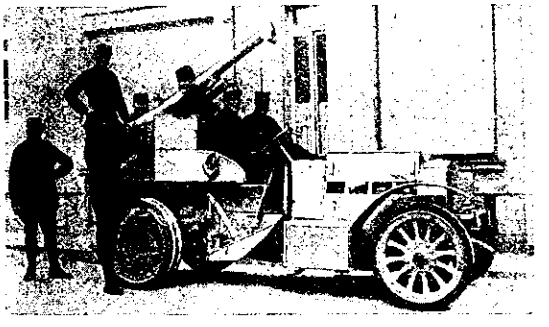
The 1,120 motor omnibuses which operated upon the various routes in Paris were requisitioned on the day of mobilisation. No less than 900 were immediately transformed—as regards their body fittings—with a view to ensuring the carriage of regular supplies of fresh meat to the troops, while the others were reserved for the transport of the men themselves. As showing how plans had been carefully thought out beforehand, a few years ago, when the old Parisian 'bus monopolies expired, and when the new arrangements were made it was stipulated that the 'buses should all be single-decked and capable of carrying about thirty-six passengers in specially designed bodies, as illustrated on page 877. It was not until the outbreak of war, at which time there were about 1,100 'buses in service in Paris, that it was realized that the body design had really been dictated by the military authorities. Directly war became inevitable the whole fleet of 'buses was mobilised. Some were promptly employed for the transport of troops, while in other cases the bodies were rapidly converted, as arranged beforehand, for the carriage of food supplies and of wounded men. Simultaneously big fleets of motor cabs and private cars were equally promptly appropriated by the Government, with the magnificent result that, when the Germans reached the Marne, the French army in reserve was so unexpectedly and rapidly transported by motor as to outflank the invaders and bring about a decisive victory.

And how has Britain met the policy of submarine sea piracy and murder? Firstly, by the never-failing watchfulness of the British navy, seconded by a great auxiliary service of fast motor boats. New Zealanders, alert and resourceful as they are, find in this auxiliary service great scope for their qualities, and the Old Country paid us the compliment of sending its naval recruiting officers to New Zealand with a call for nearly two hundred recruits. A high standard of technical ability and manual dexterity was set, but New Zealand met the demand.

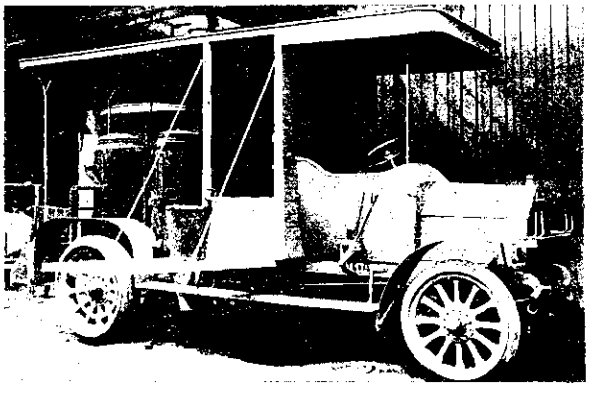
The gas attack was the German trump card in 1915. We played the joker with a vengeance in September, 1916, with the motor "tanks"! It is a great source of pride to Englishmen that the national resource and inventiveness found expression in something effective, yet fair fighting. The "tank" came just at the right moment, to give impetus to the tremendous struggle for the strongly fortified German first-line positions, but it came in too late for the Hun to copy and use against us until the



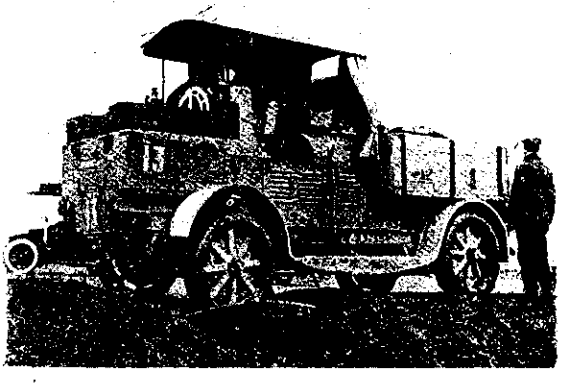
MACHINE GUN OF FRENCH CONSTRUCTION LEAVING FOR THE FRONT IN BELGIUM.
A Fort on wheels—The precursor of the "Tank."



HOW THE FRENCH COUNTERED THE ZEPPELINS.
One of the famous French 75's mounted on a motor lorry, which is capable of being raised and kept firm by means of four supports, which have the effect of eliminating the action of the springs and converting the lorry into a perfectly stable gun platform.



A Typical Motor Field Kitchen.

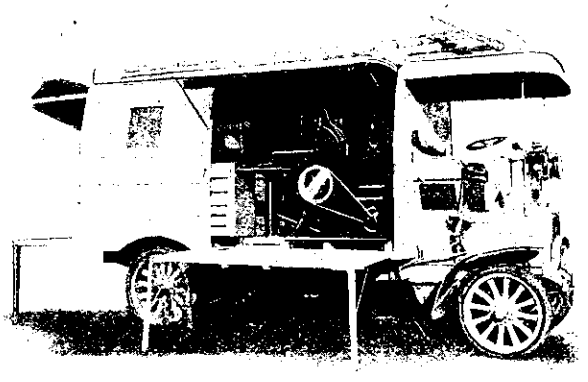


French Four-wheel-driven Tractor.

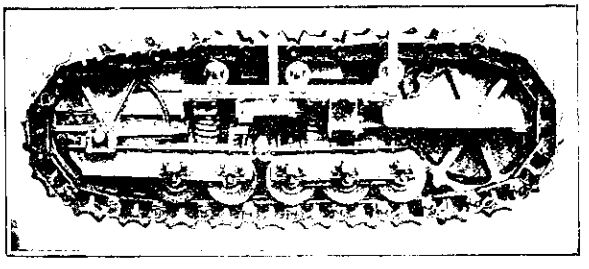
winter ends, and the ground becomes solid enough for these uncouth but wonderful machines.

H. G. Wells, with the imagination of Jules Verne and a substantial equipment of common-sense, can pride himself on his talent for prophesy. He correctly predicted that when war came with Germany, it would take the shape we now realise. In his essays "An Englishman Looks at the World," published in 1914 before the war, he contended earnestly for the development of the aeronautic service and greater utilisation of the motor submarine. He foretold exactly what the German fleet would do, and ridiculed general anticipations about naval warfare thus: "The plan of action is presented with an alluring simplicity. Our adversary will come out to us, in a ratio of 10 to 16, or in some ratio still more advantageous to us, according as our adversary happens to be this Power or that Power, there will be some tremendous business with guns and torpedoes, and our admirals will return victorious to discuss the discipline and details of the battle and each other's little weaknesses in the monthly magazines! This is a desirable but most improbable anticipation. No hostile power is in the least likely to send out any battleships against our invincible dreadnoughts. They will promenade the seas, always in the ratio of 16 or more to 10, looking for fleets securely tucked away out of reach.....The enemy we shall discover using unsportsmanlike devices against our capital ships. Unless he is a lunatic he will prove to be much stronger in reality than he is on paper in the matter of submarines, torpedo boats, waterplanes and aeroplanes."

Britain needed waking up, no doubt, to the tremendous potentialities of the motor-driven destructive machine, and we can now say with confidence that the process has been accomplished. The aviators of the Allies dominate the position on the Western front, and our steadily-growing preponderance in artillery is being used to good advantage because we have developed a type of slow-flying 'plane which can fly low, and keep closely in touch with the movement of advancing infantry.



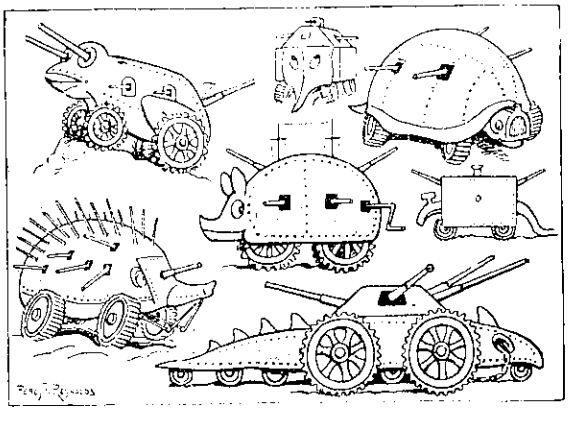
Aviation Repair Lorry.



Caterpillar Tractor Gear.

PARIS MOTOR-BUS CHASSIS FULLY EQUIPPED AS A SURGICAL DEPOT.

The installation includes a small Operating Theatre and X-ray Apparatus.



MR. PUNCH'S IDEA OF THE TANK.

A few conceptions picked up from the Press accounts here and there, of what the Tanks are really like.

The "tank" is a development of the farm tractor with caterpillar tractive mechanism. Several types of this machine were listed by British makers before the war, and the "caterpillar" was experimented with for gun hauling several years ago, the motive power being steam. It was a desperately heavy, but efficient machine, with strict range of action owing to its capacity for using up large quantities of fuel and water. But the petrol engine solved this side of the problem, as the previous volatile fluid gives a store of power in small space enormously in advance of coal.

The Germans, by advancing rapidly through Belgium were able to take advantage of the vast and intricate system of railways in that once flourishing country. On the French side, the railway system, good as it was, would not compare with that at the enemy's disposal, and the deficiencies were met by motor transport. Heavy guns were transported together with the artillerymen and ammunition, with great rapidity, while the enormous business of feeding the fighting men was efficiently done, thanks to petrol and skilful organisation. Good food, well prepared, keeps men in excellent spirits and fighting trim. This was well recognised by the British and French army organisations, which quickly put into the field self-contained self-propelling field kitchens of the type we illustrate. The two boilers shown in the photograph are provided with mechanism for quickly tilting the hot food into the "dixies." They were designed after careful experiment in peace time, and were in use during the 1913 French manœuvres.

In its system of subsidy of approved commercial vehicles adopted several years before war broke out, the English military authorities showed wisdom, for thousands of vehicles were instantly ready to hand in August, 1914, and the Tommies, to their surprise and delight, found themselves making the journey from Havre to the front in 'busses labelled "Picadilly," "Tottenham Court Road" and other familiar destination-signs. Supplies came to them in Pickford's vans, just as they were used to be catered for as civilians by the great English carrying firm. Our illustrations include one of a French four-wheel driven tractor, which has beneath one of the front wheels a steel bridge-piece carried as part of its equipment, to assist in crossing ditches.

Repair work, as may be imagined with thousands of motor vehicles doing extremely hard service, constitutes in itself a branch of importance. Though waste was prominent in the early days of the war, every item of motor equipment is carefully watched nowadays, the greatest pains being taken to save and classify parts from worn-out machines, to be kept on hand as spares. Only when the vehicle is beyond repair is it put out of use, but even then its magneto, springs, and machine parts may find fresh service in a less-worn machine requiring repair. This work is done in extensive garages at the base. There are also numerous travelling workshop lorries (one of which we illustrate) well provided with the necessary tools. These do, particularly in the aviation depots, excellent work, quite as good as that which would be effected in permanent repair shops. Figures are not available to prove the vast use of motor machines by the Allies, but one fact, the careful conservation of petrol by strictly limiting its use in England shows how enormous is the consumption of that source of motive power by the allied armies.

Our 53rd Competition—*Continued*

Drawings to be executed in black and white or monochrome, and to comprise lay-out plan, section, and elevation of Esplanade. Scale 1/16-in. Birds-eye view is optional.

Messrs Chilwell and Trevithick of Auckland have kindly set this subject.

Designs must be sent in, finished as above, under a nom-de-plume, addressed to **Progress**, 8 Farish Street, Wellington, and marked clearly "Fifty-third Prize Competition" on outside with a covering letter giving competitor's name, and address of employer. Designs to be sent in by May 21st, 1917.

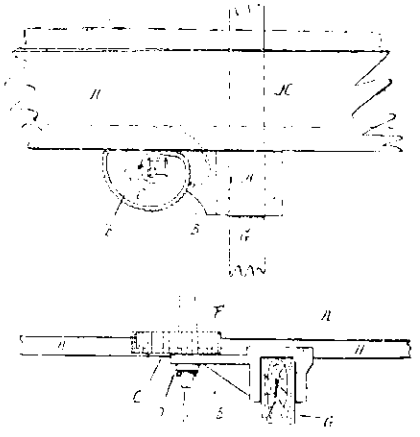
Conditions of "Progress" Competitions

The Editor reserves the right of publishing any or all the designs submitted, and while every care will be taken of drawings, no responsibility is accepted should any loss or damage be sustained. Those desiring their designs returned must send postage to cover cost of same. No award will be made unless at least three designs are sent in for any one competition. Unless otherwise stated drawings are to be in black and white only.

Recent Building Patents

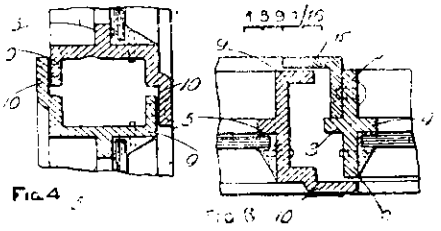
Flooring and Lining Cramp.—A patent No. 37,965 has been granted to James Upchurch of Marton, N.Z. for an invention relating to a flooring and lining cramp.

It has hitherto been proposed to form a cramp of this class with an eccentric cam mounted to pivot on a saddle-frame, and provided with a handle for turning it, which handle is made integrally with such cam. This construction is open to disadvantage that in working the cramp enough space must be left between the point at which it is working and the wall, or floor, or ceiling, as the case may be, to allow for the swinging of the handle. Consequently it is only possible to work up to a distance from the edge that is slightly greater than the length of the handle. With the present invention, it is stated, this disadvantage is overcome. According to this invention the cramp is composed of two parts and a loose handle. One part consists of a saddle-frame adapted to fit over the joist or stud and having an extension-plate on its side. The other part consists in an eccentric cam that



is mounted on the face of the extension-plate of the first part so as to move round thereon. It is formed with a stud projecting from its outer or top side, and which stud is adapted to receive a handle by means of which the cam may be turned and caused to engage with its eccentric face against the edge of a board laid on the joists or studs, and press such board away.

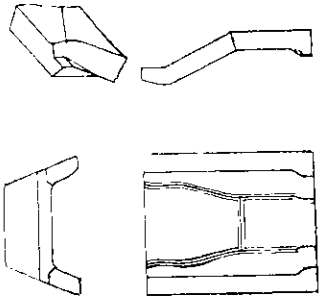
Metal Window Frames Etc.—A patent No. 1591 has been taken out by A. Woolnough of Dunedin. In this invention bars of three different sections are utilized. To form framing, glazing bars, and the like.



The flanges 9, 10 which carry the glazing bars 5 are screwed together to form a transome or mullion.

Various arrangements utilizing the bar sections are also shown.

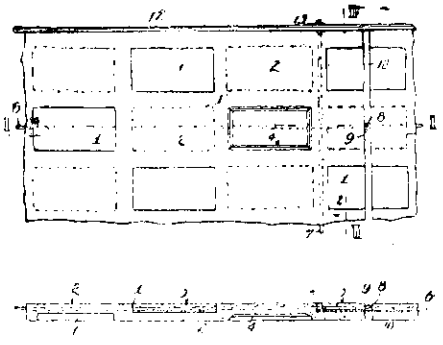
Lock Back Brick for Fireplace.—A patent, No. 36,921, has been taken out by John McKissack Reid of Luke's Lane, Wellington. It consists of a brick the upper corners of which are cut away, and an angle recess is thus formed in



them. The side bricks have projections, conforming to the shape of the recess, in the top part of the top back brick. The projecting portions of the side bricks fit into the recess of the top back brick, which is thus retained in position.

Concrete Building Slab or Sheet.—A Patent No. 37,957 has been taken out by John Knowlson of Melbourne.

This invention consists of an improved concrete slab or sheet adapted for building purposes, as, for example, in the construction of walls, partitions, ceilings, roofs, fences, and the like, and particularly when it is desired that same shall be ornamented by panels, flutings, bands, or like designs in relief on one or both sides. Accordingly the sheets are formed on each side with recesses of predetermined design or pattern, so arranged that a recess on one side is opposite



a flush face portion on the opposite side. The sheets are made of moderately coarse concrete composed of cement with ashes or coke-breeze and screenings of about ½-in. gauge, so that a rough surface suitable as a good key is provided for the other coats of concrete, cement, mortar, or the like that may be plastered on to produce flat surfaces when required. If the patterns on the sides of sheets are not required, the recesses, when the sheets are erected, are filled in with concrete of the same composition as the sheets, so that a solid wall or the like is provided. In some cases

the panelled design is left on one side only, in which case the recesses on the opposite side are filled in flush with the surface of the sheet, after which both sides receive the finishing-plaster coats. The sheets may be reinforced by metal rods or other well-known mediums for this purpose, and the sheets may be connected together by means of the metal rods which are preferably embedded in the sheets during manufacture.

Building Notes

AUCKLAND.

A case of interest to architects was heard by Mr. A. Cooke, S.M., at the New Plymouth Magistrate's Court, when James Thomas Mannix, architect, New Plymouth, proceeded against Thomas Knowles, Moturoa, to recover the sum of £14 0s. 1d., alleged to be due to plaintiff for travelling expenses and other disbursements, including advertising, incurred in the erection of an hotel at Opunake for defendant. Knowles gave evidence that he thought the 5 per cent. charged for preparing plans and specifications and for supervising the building covered everything. The plaintiff stated he had informed Knowles that the charge made by architects was 5 per cent., a charge of 1½ per cent. also being made to the contractors. Nothing was said about advertising or travelling expenses. After some argument judgment was given for plaintiff for the full amount claimed, leave to appeal being granted.

One of the features of civic progress in Auckland during the past year has been the additions to the attractions of the Free Public Library and Art Gallery building. The old colonists' museum and the new Art Gallery wing have enhanced the interest of the building in no small degree. The necessity of rendering the many treasures that the building contains as secure from fire as possible is not being forgotten by the City Council. The Mayor stated yesterday that a contract has been let for putting in ferro-concrete stairs and landings at the main entrance. The cost, £1400, will be defrayed from the library rate of a penny in the pound. It is proposed to do similar work at the Art Gallery entrance next year.

CANTERBURY.

Good progress is being made with the new building under construction at Canterbury College. The new lecture wing, fronting on Rolleston avenue, will be, when finished, a notable and pleasing feature of the architecture of the avenue. It is anticipated that this building will be completed for the beginning of the session in March. The Physics Laboratory is practically completed, and apparatus is at present being moved into it. This building should be ready for use in a few days. It is claimed for it that there is no other Physics Laboratory in the Dominion to compare with it.

WELLINGTON.

Inquiries made in Wellington go to show that during the past year the position of the building trades generally has been quite as good as ever it has been, and that the New Year, so far as the prospects can be gauged at present, promises to be equally good.

Owing to the war, there has been during 1916 considerable difficulty in getting men and materials, and it is thought that the same difficulty will be experienced in 1917. In fact, the labour difficulty will very possibly increase owing to more men going to the front. Builders fully expect that it will increase. Steel construction is practically at a standstill on account of the difficulty of obtaining the necessary material. Reinforced concrete buildings are going on to a limited extent, but the excessive cost of iron and steel has caused some of the projected larger jobs to be postponed.

House-building it was stated, has been surprisingly busy throughout the city during the past year. The work that is being done is mostly for people who are building for themselves on account of the great difficulty in securing or retaining rented cottages and the excessive rise in rents. "There is not much speculative building going on at all," said a well-known builder. "People come along and pay a deposit for a house, buying it over the tenant's head; and after a couple of experiences like that, he decides to build if he can by any possibility do so. And the reason the people pay the small deposit is because they have been turned out themselves, and can only secure a house in that way."

Notice to Subscribers

"N.Z. Building Progress" is posted each month through the G.P.O. at Wellington. If any subscriber should not get his copy, another will be sent him if we are notified in good time. The paper is supplied from year to year only, and if subscribers continue to receive the paper after expiry of the current year, we shall accept it as an intimation of their desire to continue for another twelve months. We undertake to supply the paper for such further term. Notice of discontinuance must be sent to the Manager, 8 Farish Street, Wellington in writing, as no Agent has authority to receive notice of discontinuance on our behalf. The subscription is 7/6 per annum. A discount of 1/- will be allowed off this amount if subscription is paid in advance.