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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 26th Competition for Architectural Students

FOR ADDITIONS AND ALTERATIONS.

We offer a prize of £1 1s., and a second prize of 10s. 6d. for the best two solutions of the following problem:—

Competitors are to suppose a client to have purchased a cottage in a town on a corner section, drawings of which appear on page 1165 of this issue. The purchaser has consulted an architect who advises him that the house is well built, is worthy of considerable expenditure of money for its size, and that it can be converted into an up-to-date bungalow.

Competitors must turn over in their minds what can be done to make the house a thing of beauty, and improve the planning arrangements to give two additional rooms. A large and comfortable living-room is required, which must be a good feature. Students may use their own judgment as to how additions can be effected.

The roof is now covered with iron (in good enough condition to be left), but other roofing may be suggested by competitors if they think same can be used without causing the work to be too extravagant in price. Outbuildings to be enlarged to take a motor. Provide for drainage to connect with sewer in North Street.

The doors are of stock four-panel type 6ft. 10in. by 2ft. 10in., with 5in. stock moulded architraves; 6in. moulded skirting, etc., throughout. Ceilings of two front rooms are 12in. by ½in., covered with moulded battens—balance 4in. by 1in. P.T.G.V., with 4in. by 1in. margins and 1¾in. mould of satisfactory design. Grate, old-fashioned style, cement hearth; kitchen range satisfactory. Client wishes repainting and papering throughout. There are friezes in two front rooms.

Fencing satisfactory, but new large drive gate and small entrance gate required, the style of fencing being plain square picket 3in. by 1in., 3in. apart. Designs for gates required.

Competitors to show block plan, including outline of new house, ground, entrances, etc. In addition to plan section and say two (2) elevations, a short report with suggestions on the work is required, and a skeleton specification of materials and description of general finish, etc. A perspective view may be included finished in pen and ink, pencil or colour, but this addditional drawing will not necessarily add points to the judging of best design. Work not to cost more than £300 (three hundred pounds).

Mr. Alec. Wiseman, of Auckland, has kindly consented to adjudicate on this competition.

Designs must be sent in, finished as above, under a nom-de-plume, address to PROGRESS, 10 Willis Street, Wellington, and marked clearly "Twenty-sixth Prize Competition" on outside, with a covering letter giving competitors' name and address. Designs to be sent in by September 21st.

(Continued on p 33)

Our 27th Competition for Architectural Students

We offer a prize of £1 1s. 0d. for the design awarded first place for a

TRAMWAY WAITING PLACE

with *Newspaper Stall, &c.*

The adjudicators make the following remarks re this competition:—"In selecting this subject we have endeavoured to set your student readers the task of designing, in cheap, durable, and readily obtainable materials, such as would be employed by any City Authority, a very common desideratum for the convenience of the citizen, in such a way that it may be an ornament and not a disfigurement to its surroundings. We venture to think that our City Authorities might pay more attention to the artistic side of their erections and trust that the outcome of this competition may excite the interest of some of your numerous readers in the subject and show them what might be done towards the improvement of their Cities in this direction.

This may also be regarded as an item in the Town Planning movement in which, like yourself, we are deeply interested."

(Continued on p 33)

Our 28th Competition

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

GOLF CLUB HOUSE

to be erected for a club consisting of about 150 members (100 men, and 50 ladies). The site is open, and unrestricted, and the building is to be placed on a slight rise overlooking the links and facing North. The ladies', and mens' apartments, also the caretaker's rooms, are to be kept separate, but of easy access to one another.

Accommodation—MEN'S—One large Tea Room, two Dressing Rooms, one Sitting Room, two Lavatories, two W.C's., large Verandah.

LADIES.—One Tea Room, one Dressing Room, one Sitting Room, one Lavatory, two W.C's., Verandah.

CARETAKER.—One large Kitchen convenient to both Tea Rooms, large Scullery, one small Sitting Room; three Bedrooms, Bathroom, W.C., large Pantry, Store Room, Larder, Large Workshop, etc.

The building to be two-storeyed, the Ladies', and Men's Sitting Rooms up-stairs, opening on to a common Balcony, and with a Common Room between. The Caretaker's bedrooms etc., also on the first floor. Separate stairs to each. The whole to form one block, but the different portions—Ladies', Mens', and Caretaker's, to be marked, and apparent, from the exterior. A low, broad effect is desired, the upper rooms will therefore be better to be partly in the roof. The Balcony need not be covered. The materials to be brick, and rough-cast, with tiled roof. Cost about £1,500.

The sizes of rooms and other details are left to the competitors to decide, and to consider what is necessary for the purposes of the building and the sum allowed.

Drawings to be ⅛-in. to one foot, and to consist of a plan of each floor, three elevations, and one transverse section. To be inked in, and shaded in Sepia, but not coloured.

Mr. Basil Hooper, A.R.I.B.A., of Dunedin, has kindly consented to adjudicate.

Designs must be sent in, finished as above, under a nom-de-plume, address to PROGRESS, 10 Willis Street, Wellington, and marked clearly, "Twenty-eighth Prize Competition" on outside, with a covering letter giving competitor's name and address. Designs to be sent in by December 21st.

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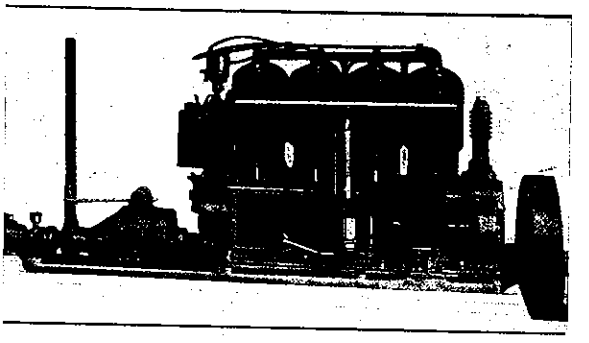

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VOL. X. NO. 1. MONTHLY [REGISTERED AS A NEWSPAPER]

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WELLINGTON, AUCKLAND, CHRISTCHURCH, AND DUNEDIN, NEW ZEALAND, SEPTEMBER, 1914

Contents for September

Editorial Comment

The War! No one talks of anything else. As for the newspapers there is very little else in them, and that little is made nothing of by the eager readers of the war news. It has been one of the most sudden wars of our time if not of all history. On the first of July an article in the "National Review" contributed some argument to the discussion that has been going on for twenty years about the prospects of peace, proving most conclusively that for a hundred reasons war between Britain and Germany was a thing unthinkable. But before that number of the "National Review" got here the Governor had made that famous announcement in the presence of 12,000 citizens of Wellington of the outbreak of war, and fighting had been going on since then. The article causes no amusement because it shows as clearly as facts can show that for twenty years men have been regarding the armed camp into which Europe was converted as having only an academic connection with war. The article coming at the time it did is a startling reminder that the menace which has been so long standing over Europe has at last fallen and destroyed the peace of the world.

At the moment the allies have been driven out of Belgium and out with great difficulty defending the invaders' road to Paris, which city is strengthening her works. But the Russians are masters of East Prussia, and are marching on Berlin, and Austria is in the grip of Servian and Russian troops. It is probable therefore that the tide of German invasion in France will be stopped.

Japan has come into the strife on our side and it is likely that the Balkan alliance may be revived for the purpose of attacking Turkey. Italy which covets the Austrian possessions on the Adriatic is watching the progress of the fighting with impatience ill concealed and may at any moment get the bit between her teeth. In truth the ambition of the German War Party and its cranky Kaiser has thrown the whole world into the hell of war. But the chances are that he and the party will be des-

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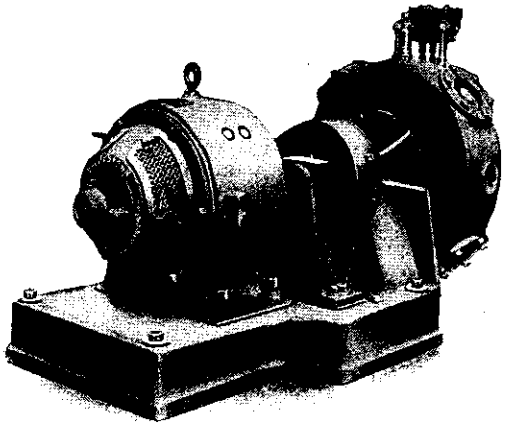

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troyed. Anyhow it is the last kick of Feudalism in Europe and Democracy is bound to prevail. Even the Czar of all the Russias is promising "Home Rule" to Poland and freedom of citizenship to the Jews. On such a colossal scale as the operations of war are now attaining the duration can not be very long.

The best thing to think about it is that (1) the war will be fairly short and (2) that it will end satisfactorily to Britain and the Empire. But the best is not the only side unfortunately to this bad business. There is a worse side too. But that side is not so bad as the pessimistics regard it. Our Commerce our Industry our Producing power, and our development—all these are according to the pessimists about to be fatally injured, if not ended. Why do they think thus? The answer is on the very surface of things—because there has been dislocation at the outset.

Of course there has been dislocation. When everything is uncertain finance stops. It is the sea we must question for the why and the wherefore. At the outbreak of the war the supremacy of the sea had to be decided. Most people expected to see it decided by a great battle or series of battles between the British and the German fleets. A large literature had been ten years dinning it into our heads that war between Britain and Germany must cripple the trade of Britain and sweep the sea of British commerce to a very large extent. The Magazine writers were the great offenders in this respect, reducing the public opinion of the Empire to abject cowardice incapable of reflection. It is always the man on paper who frightens people. He always forgets that there are two sides to every question. What actually happened in this case is to these people an eye-opener. There was no fight, no disturbance, no doubt. Britain simply extended her hand and took the command of the seas. Before the declaration of war the fleet sailed. Immediately after the declaration the fleet sought out the German ships, with offer of fight or be bottled up, and the Germans went quietly into the bottle. The fleet has acted as a cork ever since. Other fleets went out and swept the sea. Officially it was announced that the seas are clear for British commerce.

Another thing became clear—like the lightning that lights up the sky from the east to the west. The destruction of the commerce and the mercantile marine of Germany. The very fate designed by the foolish pessimists for us was inflicted on the Germans. In war the great superiority of the British fleet told at once. Thousands of ships worth many millions of money were at once paralysed some in our hands and those of our allies and the rest is neutral of German ports. Above this one thousand millions of annual trade stopped dead.

From these two facts one deduces much. Britain depends on the sea for food and raw material. The sea is clear. Nothing prevents the food and the raw material from being taken by sea to Britain. There was deadlock in the first scare of the war. For the reasons we have pointed out. But why should it continue when the seas are safe and there is business to be done? The British manufacturer is offered the markets of the world vacated by Germany and to some extent by Austria. He will strain every nerve to make good his footing. Britain is guaranteed the continuance of the food supply. The people who live by producing it, transporting it and selling it to the consumer will strain every nerve to get it. Finance? Of course finance must adjust itself under such propitious conditions, to the surrounding circumstances.

The British Government and the New Zealand governments have come to aid the situation by legislation. The first guaranteed the bills of trade and helped the Bank of England in the matter of the legal tender of its notes. The other government helped the banks in this way too and have taken precaution against the undue raising of prices. It has also got the Legislature to pass the Bank Act Amendment Act which makes the paths straight and the rough places plain for the raising of money for the public exchequer. The British Government has also taken up the question of marine insurance and the premiums are no longer excessive. Why should they be when the seas are swept and garnished for the convenience of the Red Ensign?

* * * * *

In referring to the Dilworth Competition last month, we stated that we thought the New Zealand Institute of Architects should have made some effort to have the conditions for this competition revised. It seems that the Institute's first intimation of the Competition was through the daily papers, and that as soon as the Hon. Secretary heard of it, the matter was taken up. The following is from the "Chronicle" of Proceedings of the Institute" for May:—

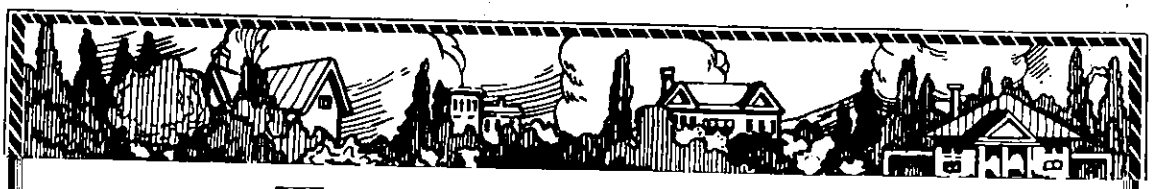
"COMPETITIONS.—Correspondence in connection with the Thames High School and Dilworth Trust Board Competitions was read and discussed. With regard to the former it was resolved that a reply be sent to the promoters stating that the conditions governing their competition are unsatisfactory to this Institute, and that in future all members be asked to refrain from taking part in any competition the conditions of which do not substantially accord with the Regulations.

With regard to the latter it was resolved to again approach the promoters particularly urging that the assessors' duties should be defined in accordance with the Regulations and should not be merely advisory.

The Board has since replied explaining the difficulties attached to this in their particular case."

We understand that in addition to the above, the Institute asked that the name of the Professional Assessor should be published, and that the successful competitor should have the carrying out of the work, providing that he were fully qualified.

We are very glad to learn that the Institute is watching things on behalf of its members, but it is a great pity that its members do not immediately advise the Secretary of any forthcoming competition as soon as they know of one, so that the parties could be communicated with, and some arrangement made whereby architects could compete on a fair basis, under conditions that would be much better for all concerned, including the client. In most cases the Institute does not know of Competitions till they are advertised, when it is too late to alter "conditions." Cannot members assist here?



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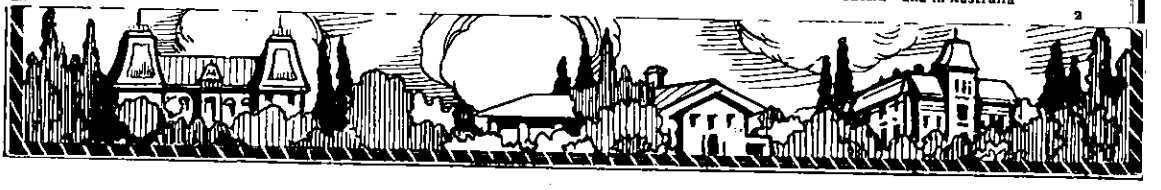

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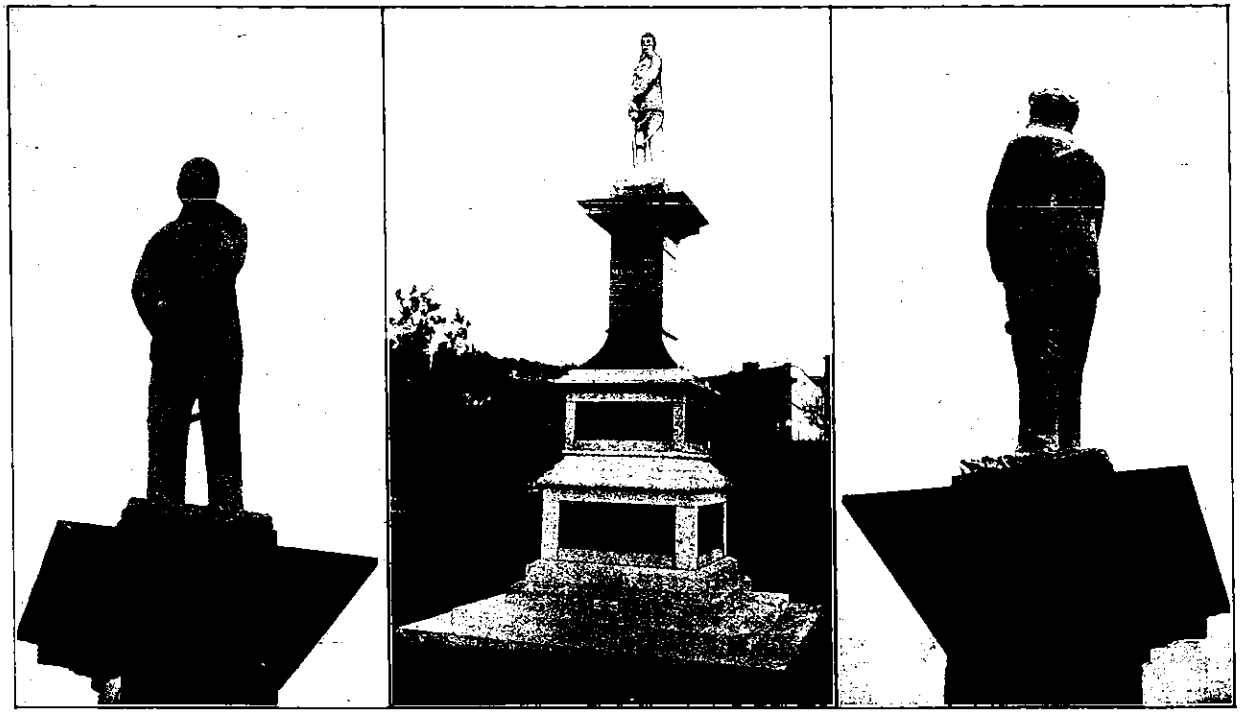
Architecture and Building

The "Guy Fawkes" Statue and the Law

On July 25th 1911, Mrs. Rora Hakaraia, actuated by the highest motives of patriotism and with the desire to perpetuate the memory of a hero and kinsman, gave a written order to The Frank Harris Granite Co., Monumental Masons, Auckland, for the erection of a statute of her brother, the late Major Kemp, well known as the Maori Chief and warrior who so greatly assisted the British side in the Maori wars. This order was ultimately completed but so badly that payment for it was refused. The majesty of the law was at once invoked and in June, 1913, Mrs. Hakaraia was called on to defend an action by the Frank Harris Granite Co., for £600 which was claimed as the balance due for the erection of this "Work of Art", after deducting £550 which she had paid on account.

The Defendant pleaded non-liability to pay on the grounds that the work was not according to order, and generally badly done, and she also sought to recover the £550 she had already paid, and for the same reasons. How badly the work was done can easily be gathered from a glance at our illustrations. One does not require to be an art critic to notice the ludicrous incongruities of this abortion of a statue. Let the reader look for himself. We ourselves had an opportunity before the trial, of personally inspecting the weird figure and, instead of inspiring us with the respect that the statue of such a man should have done, it had no other effect than to reduce us to a state of uncontrollable merriment. It was so ludicrous that we laughed outright. In the first place, it is ill-shaped in the way our illustrations show, the hair is parted on the wrong side of the head and the trousers are not like anything we have ever seen on mortal man and can only be likened to inverted drain pipes.



IS IT LIKE HIM?
Statue of the late Major Kemp erected by the Maoris of Wanganui and District at the River City, for which they refused to pay

The fact that the work was a botch and absolutely inartistic, indeed almost amounting to a caricature of the deceased, was to our mind conclusively proved at the trial. A great deal of evidence was given, but we will only refer to the evidence of two of the witnesses. Mr. William L. Morrison, sculptor and artist, stated that after an

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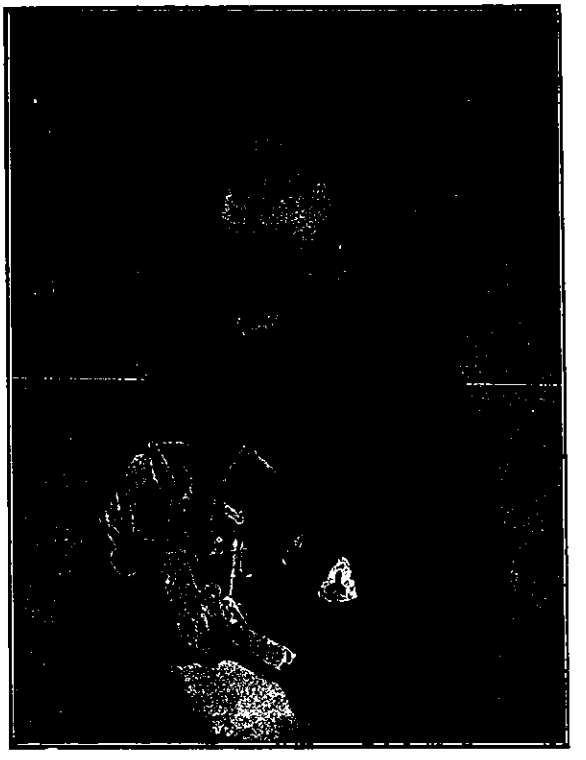
inspection of the figure the impression left on his mind was that it was "what he would expect a boy "to prepare on the 5th of November for a Guy "Fawkes." This witness, in addition to a personal inspection, took measurements of the statue and said that the head should have been 8¾ inches in height instead of 10½ inches as it actually was, that the legs of the figure from the knee downwards were like cylinders or drainpipes, and that there was not a particle of likeness between the photographs and the statue. Mr. Denis Seaward, Art Master at the Technical College at Wanganui, said that he could not refer to one point of artistic merit in the whole of the statue, the figure was very crude, the arms gave one the impression that if they hung straight down they would not be the same

Copy of a painting in the Wanganui Museum from which the expression and pose were to be taken

length, and that the back of the figure looked like a "sack on a post." In spite of the testimony of these experts, and of other evidence in the same direction, the jury gave a verdict for the plaintiffs for the full amount claimed and costs. Knowing what we did we were astonished at this decision at the time of its pronouncement and intended to comment on it there and then, but were unable to do so, the case being *sub judice*. From this astonishing verdict the defendant appealed by way of a motion to the Judge for a new trial on the grounds that the verdict was against the weight of evidence. This application the Judge granted, and in doing so remarked, *inter alia*, "The "real question relates to the character of the statue "as a work of art and as part of the monument "contracted for. The evidence showed that to "produce a work of art in sculpture, there should "be a model in clay or some other plastic material, "and that the sculpture should conform to this. "No model was made in this case. A bust was "made in Oamaru stone, *which was neither a work "of art nor a likeness of Kemp. It is somewhat "difficult to recognise that it really exhibits human "proportion.* I am bound to say that so far as "the statue is concerned I cannot conceive that it "comes, as a work of art, within the category to "which the defendant (Mrs. Hakaraia) is entitled."

It is easy to be seen, from these remarks, what views the learned Judge (Mr. Justice Chapman) held on the matter, and what the verdict would have been had the case been left for decision to him alone. The parties now being exactly in the



Another Photo. of Major Kemp

same position as they were when they first began, it was necessary for one of them to make another move and this the plaintiff did by appealing against the decision of the Judge granting the new trial. This appeal came on for argument at the last sitting of the Appeal Court and was unanimously dismissed, the learned Judges of Appeal directing that judgment be entered for the defendant in the Court below with all costs and remarking that Mr. Justice Chapman was quite justified in the conclusions (above referred to) at which he arrived. Their Honours said "Indeed, the case "against the appellants (Harris & Co.) may be "put far more strongly than it was put by him "(Mr. Justice Chapman); so strongly, indeed, that "it appears to us that if the attention of the learned "Judge had been drawn to the whole of the facts,

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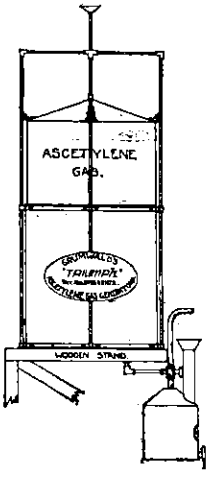

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"the Appellants must have been nonsuited or judg-"ment must have been entered for the respondent "(Mrs. Hakaraia) at the trial". The Court left the matter of the counterclaim an open question.

Thus has ended the protracted litigation which wil hereafter be known as "The Major Kemp" case. The defendant is to be congratulated on the firm stand she has taken, and on her successful resistance to an unjust claim. From our own personal knowledge we feel that, had the matter been allowed to rest on the finding of the jury, a grave miscarriage of justice would have been allowed to take place, apart from the injustice which would have been done to the defendant. The case is only another instance of the waste of time and money that follows from submitting questions for decision to common juries which they are quite incompetent to decide. It is quite apparent, from the remarks of the Judges quoted above, that, had the decision of the matter been left to them alone, all this waste of time and money would have been saved. Much has been written and said on the question of whether trial by jury should be abolished or not. There can be little doubt that in criminal cases they are desirable, if not perhaps necessary. In a great number of cases, especially those such as the one we are referring to where special and expert knowledge is required, they appear to us to be worse than useless. The exact methods of reasoning adopted by some juries in arriving at a decision is a mystery. How the jury in this case arrived at the decision they did, appears to us to be like the peace of God—it passes all understanding.

Our 24th Student's Competition

ESSAY ON THE USE OF COLOUR IN ARCHITECTURE

Won by Neville H. Arden ("Blue") New Plymouth

Only three essays were sent in for this competition viz:—"Blue" by N. H. Arden, with Mr. F. Messenger, New Plymouth; "Revival" by Edward D. Reidy with Messrs. May & Morran, A.R.I.B.A., Auckland; and "Colour" by H. R. Saunders with Mr. T. L. Flaus, Christchurch.

The paucity of entries is a little disappointing considering the simplicity of the subject set by the judge, Mr. Basil Hooper, A.R.I.B.A. of Dunedin, but as this is the first of a proposed series, no doubt more entries will be received for later competitions. We publish below the judge's comments on the three essays sent in and also the winner's essay by "Blue." If space permits the second prize essay will be published next month. The judge says:—

"Before offering any criticism on the essays, I must say how pleased I was to see that the competitors had evidently had to read their Histories of Architecture pretty thoroughly from beginning to end. This in itself is a good result obtained, and the Students should gain great good from this indirect result alone. The "placing" has been rather a difficult matter, as the general quality of the essays has not been marked by any very great difference between them, but after carefully going through them several times, I have awarded, first place to "Blue," second place to "Colour" and third place to "Revival."

Generally speaking the subject has been very well treated though the historical side has been made more of than I intended. I hoped for more original ideas as to present day requirements.

Being essays, naturally one looks for a certain amount of literary style, not to mention correct spelling, punctuation and grammar. But unfortunately none of these points have been realised; in every case the essay has been full of mistakes, showing that carelessness has been displayed in reading over the copy, and also that insufficient attention has been paid to proper phrasing and clearness of expression. Students should realise, that when they go into business themselves, a clearly written "report," for instance, is of far more value than one full of ambiguities and errors, and therefore it behoves them to pay attention to such details and cultivate a good style. Doubtless the mistakes in spelling will be corrected by the printer and so will not appear in the published copies, but otherwise I presume the essays will be printed as they were written. I do not therefore propose to pick out any special faults, but leave the writers themselves to consider where they could improve matters in the way of style etc. A few of the facts I consider are not quite correct; e.g., "Blue" says that the Greeks did not use colour, except for the less important buildings, but as a matter of fact they often did put a thin covering of cement on their best buildings and picked out the mouldings in colour. "Blue's" theory as to the Sun shining through the stained glass of the Gothic windows, denoting Christianity in "Gothic Colouring," contrasted with the Paganism inherent in frescoes and Mosaic, is ingenious, though not expressed very clearly. "Blue" does not mention which materials "used for their colour in Sunny lands," would soon decay in moisture-laden atmospheres? "Colour" mentions, towards the middle of his essay, that "In Romanesque Architecture, subject as it was to many influences, the Mosaics being influenced by the Byzantine....." The meaning is rather hard to follow here. He also asserts, a little later on, that the roofs of the Gothic Churches, "in every case" had colour applied. It is only in exceptional cases that this was so. Then towards the end "Colour" makes the astonishing assertion that England has a much "milder" climate than Italy. I presume he means "cooler."

"Revival" informs us that the Greek's method of employing colour is "considered the standard of perfection." Quite likely they themselves thought so. The item about the "brick walls at St. Sophia at Constantinople being plastered over and distempered white and red, to represent stone and brick," —is news to me. I would not say that "Brunelleschi was responsible for the introduction of Renaissance Architecture," though he certainly helped a great deal.

In conclusion I hope some more essays will be added to the list of Progress Competitions, as it is evident they can serve a very useful purpose."

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The Prize Essay

"THE USE OF COLOUR IN ARCHITECTURE"

By "BLUE" (Neville H. Arden, New Plymouth)

The sculptor produces pleasure mainly by beauty of form. The painter works on the eye by the joint effect of form and colour. The architect uses both.

From the very beginning man rejoiced in colour, and to-day there have been discovered prehistoric paintings on the walls of ancient cave dwellings in Southern Spain. When he erected his primitive hut to protect him from the elements he was not satisfied with its bare mud walls, but hung them with the skins of animals killed in the chase, while at the present time nothing fascinates the savage more than bright colours.

The first people who rose to prominence in the use of colour were the Egyptians. These people used chiefly the primary colours, blue, red and yellow. Their columns and capitals of conventionalised lotus flowers, their walls even when of granite, and their floors, were invariably treated in colour. The walls of course offered great opportunity for hieroglyphics and were covered with battles, triumphal processions, and scenes of agriculture and domestic life. These paintings were generally simple and resembled the order of a bas-relief. The floors also gave considerable scope for diapers in which the strong primary hues were again used.

The Assyrians, after the Egyptians, used colour to face most of their buildings, completely covering the more important both inside and out. The interior walls had high dadoes of sculptured slabs, representing hunting, battles, and gods, and were surmounted with brightly coloured friezes wrought with men and animals. One authority Texier says of the great mosque of Ispahan, which is probably true of the principal buildings of Babylon, that "every part of the building without exception is covered with enamel bricks. Their ground is blue, upon which elegant flowers, and sentences, taken from the Koran, are traced in white. The cupola is blue, decorated with shields and arabesques." One accustomed to the dull uniformity of colourless buildings can hardly imagine the effect of a structure, such as this, rising from a plain upon a stepped pyramid, each tier being faced with glazed bricks of different colours.

To obtain their colour the ancients first used paint. The foundation colours being made from different earths, to which were added the brighter and more expensive pigments as vermillion. All the natural colour of materials used in construction was generally sacrificed to obtain an even surface for the application of paint. Later however colour was obtained from the materials used in construction and glazed bricks of many shades and hues, lime-stone, granite and alabaster all found a place in their structures.

Greece, having large quantities of marble, a clear atmosphere and abundance of sunshine used the most delicate of mouldings and dispensed with colour, as undoubtedly the beautiful gradation of shadow would have been ruined by its employment. Many of the less important buildings of brick and stone were covered with cement which was used to receive wall paintings and decorations in colour. The Romans, always fond of pomp, used everything obtainable to decorate their buildings and give a colour tone. Granite, jasper, porphyry, marble, painted stucco, bronze and mosaic were used in profusion to produce the rich effect in which they revelled.

The Roman baths, corresponding to the club houses of to-day, were the culminating point in magnificence. Externally they were plain, colour being obtained by masses of rough brick-work relieved with bands of better bricks. What was lacking outside was amply atoned for within. The pavings were patterned in Mosaic cubes of strong colours, the lower parts of the walls cased with marble and the upper portions enriched with molded stucco bright with colour, which treatment was carried on into the vault in black and white or coloured Mosaic. In their houses also colour was everywhere, the darkest always being near the ground. Sometimes, even, a whole room was painted black relieved only with a central wall figure in strong colours.

Mosaic now became the favourite colour material and it was used extensively, both internally and externally, in the early Christian Basilicas, and in many cases figures were treated in Mosaic upon a gold background. In Byzantine buildings the mouldings were done away with altogether and colour used entirely for decoration. The shell was of different patterned brickwork in large masses, bands of coloured brick taking the place of the mouldings. The interior was of coloured Mosaic having the corners rounded, thus one surface melted into another and the whole rose from floor to ceiling in one unbroken mass. From this point the use of colour began to diminish and with Romanesque, frescoes and stained glass made their appearance.

Stained glass—what a mighty influence it had upon the proceeding architecture. Prof. Bannister Fletcher says:—"Neither the painted sculpture and hieroglyphics of Egyptian temples, the coloured sculptured slabs of Assyrian palaces, the paintings of Greek temples, nor the Mosaic of the Byzantine or Romanesque periods, produced colour effects, that can be compared with the brilliancy of the many tinted splendours of the transparent walls of a Gothic cathedral with its windows a blaze of glorious colouring."

In fact the windows, and therefore firstly the colour must have greatly influenced the whole construction and style of Gothic. Hence we see that the sun, the source of all natural colour, produced per medium of shining through these windows, more beautiful effects upon the dull stone surfaces than the ancients could achieve with all their cunning working of paint and mosaic.

All Northern Europe seems to have relied upon stained glass for its colour effects, blue predominating. Brick, mostly used in Germany, coloured distemper, tapestries and tiles and slates all helped to add a touch of colour. The South however, and especially Italy returned to the classic times of ancient Rome and copied their magnificence, added to which was the fact that this was the time of Michael An-

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gelo, Raphael, and other great masters. Little wonder then that colour was here the key note, while frescoes and mosaic chiefly supplied the colour. It is interesting to note in these two divisions of Gothic colouring in Europe, how we can trace Christianity in the one, which by means of the sun endeavoured to impress the wonders of God upon the people, while in the other the materialistic side handed down from Paganism is always foremost.

With Renaissance the classic colouring naturally returned stained glass being little used, while all the best efforts were obtained by opaque decoration as frescoes and Mosaic, which were lavishly applied to interiors, the domes always giving great opportunity for coloured frescoes. After the first stimulus given by the revival of ancient colouring a counter action set in and colour in architecture gradually dwindled until about the middle of the nineteenth century when renewed interest awoke in architecture, and has continued growing, until to-day every housewife, more or less, is an amateur architect with some new colour scheme for the house.

Climate which to a great extent should govern architecture naturally affected the colour employed therein. As instance the great and daring colour schemes employed by the Assyrians in their bright and clear atmosphere. On the other hand how incongruous and obstrusive their brilliant hues would look when employed in a wet and foggy country. Not this alone, but where in the former the bright light would tend to emphasise the colour, in the latter the dull light would lessen the effect. Colour should be employed in large unbroken surfaces, which are not usual in countries lacking in sunshine, due to the fact that moldings etc., are required to cast what little shadow the sun is kind enough to provide. Moreover many of the materials used for their colour in sunny lands are not adaptable to a moisture laden atmosphere and would soon crumble and decay.

As a building should always harmonise with its surroundings, so colour in architecture has followed this law. The nearer the equator the more brilliant is the colouring in the sky, the trees and the flowers, gradually diminishing throughout the tropics and temperate zones till we reach the colourless polar regions. It is only natural therefore that architects, wishing to get harmony with surroundings should copy nature in their colours. Thus it is we always associate brilliant hues with bright sun.

With the advance in machinery and transport almost any kind of material can now be made or imported. More the pity, for whereas structures were once erected of the material near at hand they are now built, more often than not, with material from afar, thus striking a discordant note upon the surroundings. Bricks of various shades, building stones and marbles, terra-cotta and tiles all give a variety of colour for walls, while slates, tiles, shingles, thatch, lead and copper serve as roof coverings. Copper especially being admirable for domes, its beautiful shades of golden browns giving a very rich effect. Besides these the plaster surface of buildings is often treated with coloured distemper or waterproofing preparation. Internally tiles, mosaic, brick, terra-cotta, marble and granite and many other beautiful stones are extensively used for colour decorations in all large buildings, the columns, dadoes, and stair-cases usually being treated with colour. Besides these 'natural' colours, mural decorations and cartoons in distemper by well known artists as Frank Brangwyn are sometimes employed. Modern printing has given us wallpapers of endless variety, while distemper, oil paint, stains and the natural colour of woods give ample scope for colour schemes in the home.

Externally the materials of construction should give all the colour necessary in a building. Where a band of colour is required it should be the natural colour of the material forming that band and not stuck on or painted. Colour should be employed in masses here and there relieved with bands or dressings, the dark being kept near the base and lessening in tone as the structure rises. It should be used with discrimination but whenever possible, as there is still some savage left in most of us and we are rejoiced at the sight of bright hues and speak of such as gay colours. When as is so often the case in this country the background is of evergreens or will eventually be, colour should invariably be employed in either walls or roof. When a town is a seaside or holiday resort the buildings both residential and commercial should possess colour, while on the other hand a large manufacturing town should have subdued colours not materially affected by smoke. When an impression of wealth is required as in Banks and Insurance offices colour can be used to advantage in expressing the materialistic side of life. Contrast this with ecclesiastic architecture where beautiful colour effects are obtained from the sun shining through leaded windows, thus impressing the spiritual side of life upon us. Broadly speaking colour should be used when the building is for relaxation or for pleasure but not so much in business premises and manufactories, where the interiors should be white to reflect all the light possible.

Colour should be used in broad plain surfaces, always in roofs and bases, or where massiveness and strength are required. Internally floors, dadoes and friezes should be of colour. To express cosiness, and warmth, to relieve an expanse of white, to soften or emphasize an outline, colour will always adapt itself and harmonise if in skilled hands but will rebel and start out at us unless masterfully employed.

Unfortunately it is probably less understood and used as a means of architectural decoration, than any other medium of expression the architect is concerned with. However the modern trend in architecture to break from the classic set rules, is daily bringing greater opportunity to raise colour as a means of decoration to its deservedly higher level.

Henley: How are you getting on with your writing for the magazines?''

Penley: ''Just holding my own. They send me back as much as I send them.''

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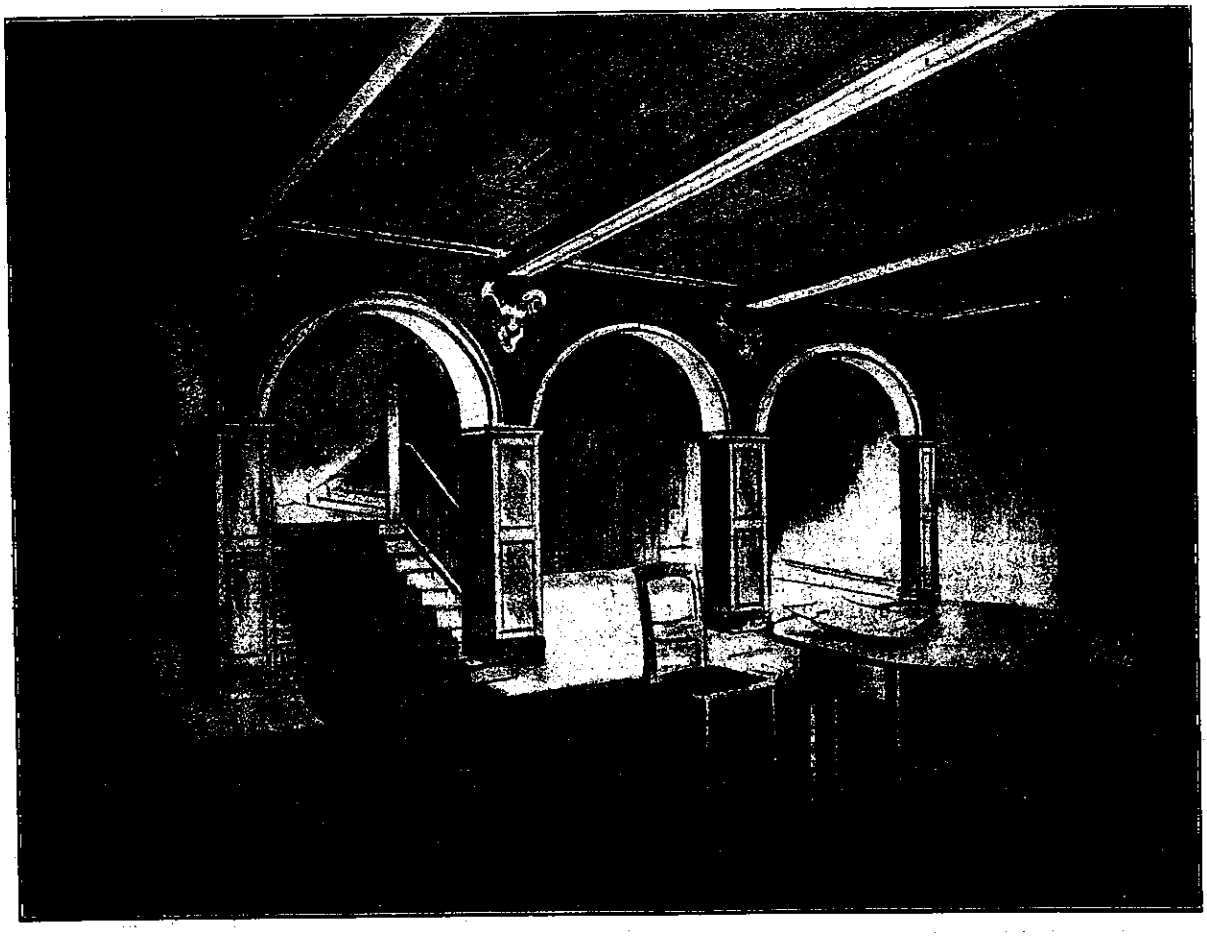

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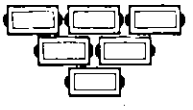

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The Wanganui Club

The illustrations on page 18 are of the New Club house in course of erection for the Wanganui Club. The elevations are being carried out in pressed brick and cement facings. The roof is being covered with Marseilles tiles. It was at first intended that the Loggia and facings were to be carried out in granite, but owing to the cost of the stone it was cut out and cement substituted. The accommodation consisted of a Lounge, Billiard Room, with four tables, Sitting Rooms, Dining Room, Committee Rooms, Card Rooms, Stranger's and Secretary's Room. The Staff and Kitchen quarters are most complete in every detail.

The interior decoration, of which the view of the Lounge is a sample, is being carried out in plaster, relieved by timber. The building will be lit by electricity generated by a private plant.

It is expected that the building will be completed early in the New Year. The Contractors for the building are Messrs. Russell & Bignell of Wanganui, and the Architects, Messrs. Rush & James of Hastings. The total cost will be between £9,000 and £10,000.

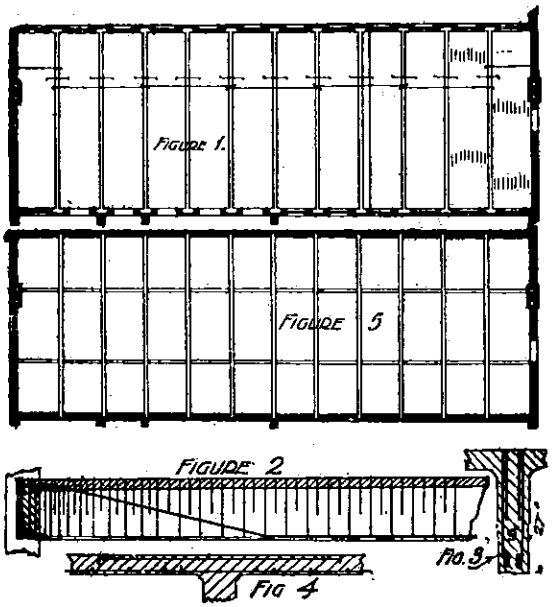
Re-inforced Concrete Construction

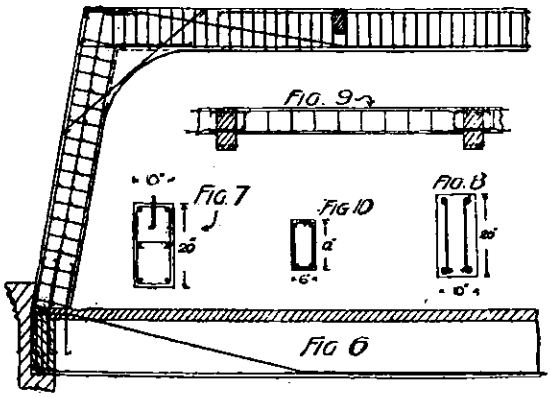
We illustrate a novel piece of re-inforced concrete work carried out at St. Mary's College, Chesterfield, England, together with details showing reinforcing.

A typical floor construction in the former is illustrated in Fig. 1. The total span of the main beams in this section exceeds 40ft. The total depth is 27in., and the width 9in. The elevation of these beams is shown in Fig. 2, and the central section in Fig. 3. It will be seen that the maximum tension resistance comprises four stout rods, the upper pair of which provide the shear resistance, in conjunction with the stirrups. The hooked ends in the bearing-lintel are a feature of the design, the construction forming in reality a T end to the beam bearing on the piers, and providing a satisfactory solution of the difficulty which is sometimes found in obtaining an efficient template to distribute the load over an adequate area of brickwork. The floor is 5in. in thickness, designed on the continuous principle, with negative tension-rods across the top of the supporting beams. The grip of these rods is increased by hooking the ends, as shown in the section of floor (Fig. 4.)

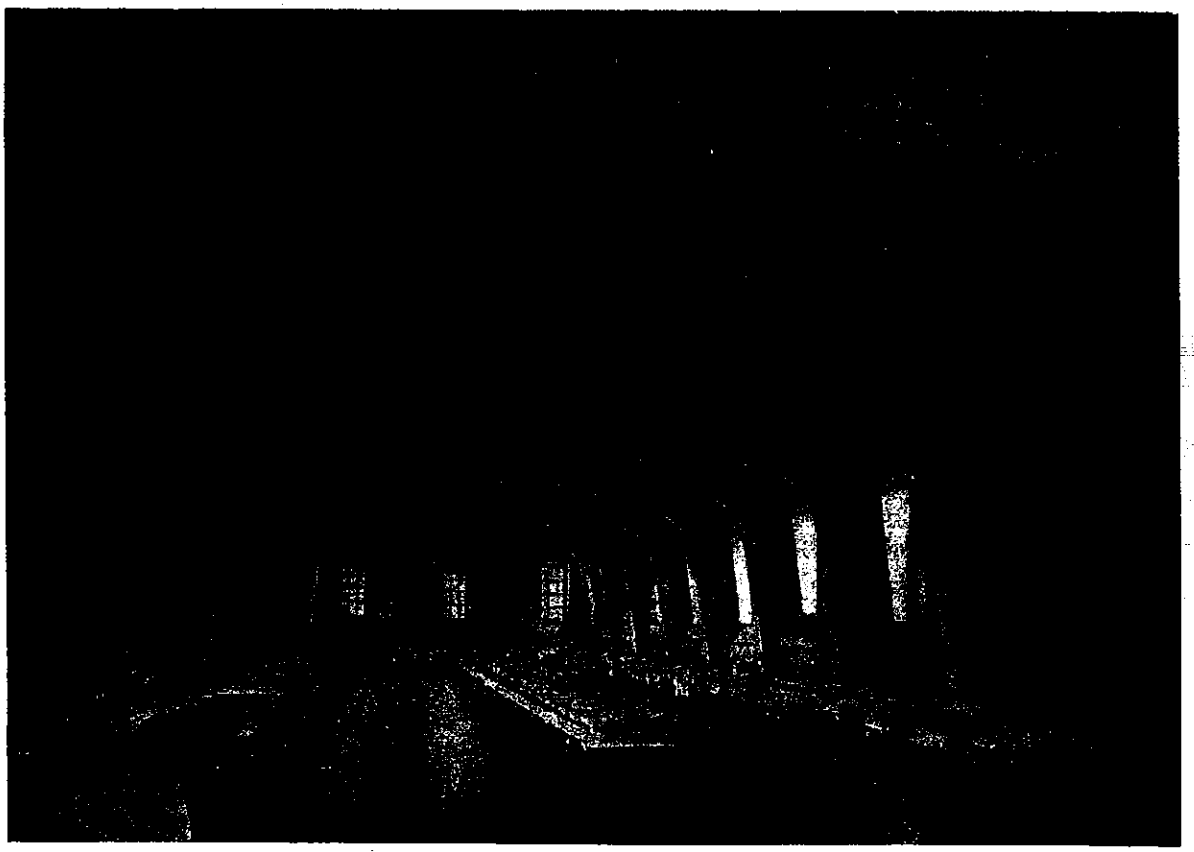
Fig. 5 illustrates a plan of the roof main beams. The principle ribs are shown in elevation, Fig. 6. These beams, or ribs, are, as will be seen in Fig. 7 (section), reinforced in the raker with six stout rods, well bound together with links, and hooked and wired at the angles. The ribs are made homogeneous with the template and main beams of the floor below, and secured to the horizontal roof-beams by reinforced quadrant angle-brackets. These have a radius of 4ft. and are the same width (10 in.) as the raker and horizontal of rib. Fig. 8 illustrates a section of the horizontal portion of

main rib. This has a span of about 35ft., and is constructed in a twenty in. by 10in. beam, with four tension and two compression rods well linked together. The purlin, or smaller cross-beams, are shown in elevation in Fig. 9 and section in Fig. 10. The dimensions are 12in. deep and 6in. wide. The effective span is 10ft. 6in., and the beam is equally reinforced in tension and compression, in accordance with the detail shown in section, Fig. 10.





The architects were Messrs. C. & C. M. Hadfield, FF.R.I.B.A., of Sheffield, Wm. G. Shipwright, Licentiate R.I.B.A., M.C.I. and Chartered Surveyor (by Exam.). *Building News.*



Novel Re-inforced Construction carried out at St. Mary's College, Chesterfield, England

English Wall-Papers and their Place in Decorative Art

Twenty years ago one might have safely used the old tag that "an Englishman's house is his castle." To-day, in view of the advent of the motor, it would in many cases be more exact to describe it as his "lodgings."

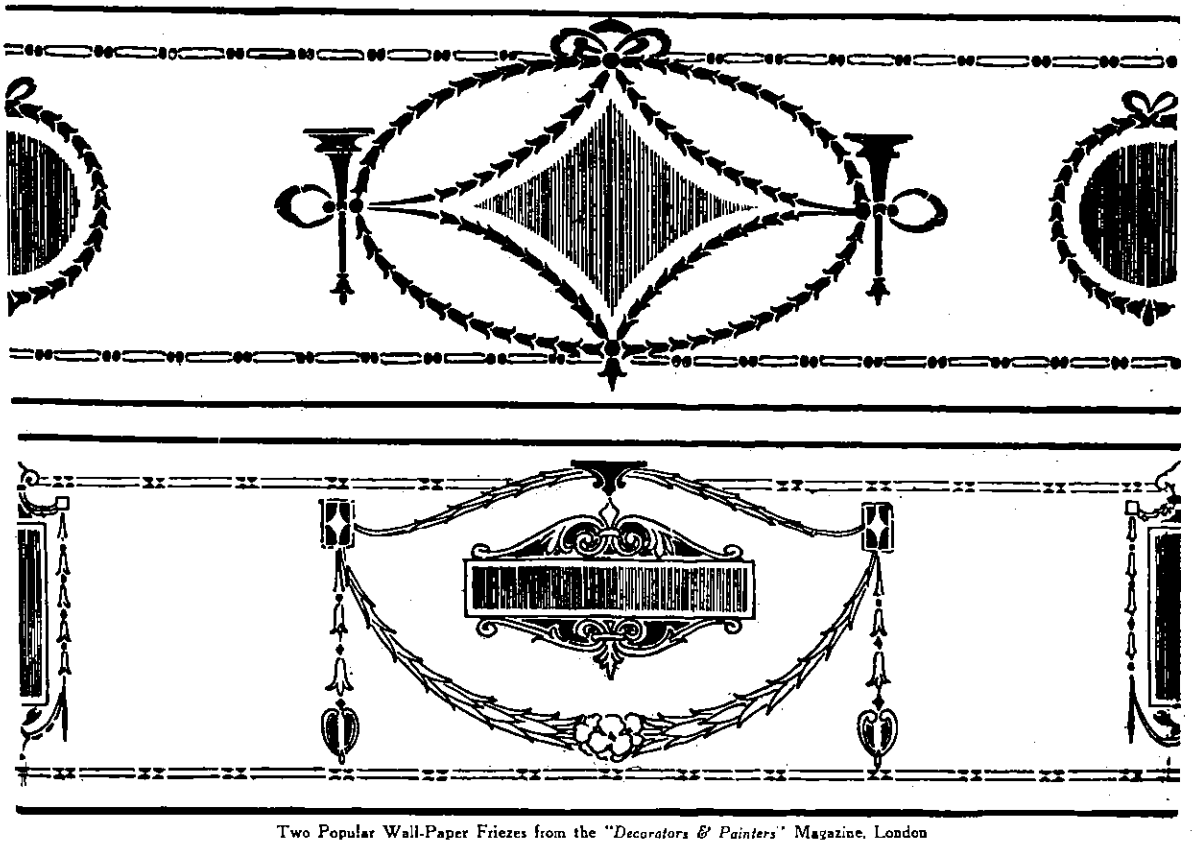
Notwithstanding this, however, one can hardly do justice to the subject if we do not take into account the Englishman's overmastering love of his home. It is here, after all, where his interests and affections centre, and happily the day has not yet arrived when he is indifferent to its aspect and appearance.

advent of the ingrains and silk fibres, which since then have developed into an enormous range of textures, which have fitted into the taste of the day and which has been prolonged and fostered by the great variety and beauty of these special goods.

Now there are signs that this ascendancy of plain and textured surfaces is giving way to the more decorative patterned surfaces.

The advent, in increasing numbers, of the tapestry paper, is one proof of what we say. In many of its phases the soft broken colour effects which they yield are the attraction, but it is also the richness which the pattern imparts that is the underlying secret of its renascence.

The question for the householder, or those who are about to embark on internal decoration, is,



Two Popular Wall-Paper Friezes from the *"Decorators & Painters"* Magazine, London

The position which wall-papers have occupied in the affection of the householder for more than a century is a testimony to their suitableness and their decorative value. True, of late years, there has developed a taste for plain surfaces, fostered in no small degree by the beautiful textures and self-coloured wall-papers that manufacturers have from time to time put upon the market.

The run of fashion for plain surfaces has been a long one, but there are indications that it is giving place to a reasonable desire for pattern. Each decade seems to develop its own standard. In the seventies, eighties and nineties, it was for pattern, strongly marked and mannered by the individuality of the designer. The reaction to this set in with the

"What will yield the best result?"

This is not quite the simple question to answer that it appears to be on the surface.

If one were starting *de novo* in the decoration and furnishing of a room the problem would be much simplified, especially if the cost were not an object.

One can conjure up a room with a framed and panelled dado, with the walls panelled out and painted in light tones, and with a decorated frieze to make the ensemble complete. Against this, choice chippendale furniture, carpets, silver and hangings, with suitable water colours on the wall, would make a beautiful picture. But such a room is not of everyday occurrence, and it demands a very just

and reticent taste to make it a success; even when money is no object. We recall such a room—gone wrong—where opulence and vulgarity glared at you from every wall, and where taste was notable for its absence.

What we have in our mind is the average good middle-class room where the furniture is sound, without being rare or precious, and where the pictures are good without being notable.

This class of room is to be counted by the tens of thousands in good homes, homes that still represent the mainstay of the country.

Now what are the considerations which most appropriately fit into such a room? With such conflicting elements, what is required is that some harmonising medium should be brought into play to weld the room into one congruous whole.

It is here that the patterned wall-paper comes into view, for nothing is so useful for this purpose as a suitably designed and coloured wall-paper.

The enormous variety of pattern and colouring, the choice of "scale" in design, the applicability of certain designs to particular rooms, drawing rooms, dining rooms, breakfast rooms and bed rooms, make the wall-paper pre-eminently the medium for such a purpose. In no other field is there such choice and such adaptability.

The secret of a well decorated room is that no single feature should obtrude itself on the view. The sense of oneness should predominate. Anything in the way of emphasis should only be there, if there at all, to be discovered quietly and naturally; it should not hit you as you enter.

Given the conditions which we have outlined above, this unity of the room is much easier attained by the use of pattern than by a self-coloured surface.

There attaches to a good, well designed and well coloured paper, on the part of the occupants of the home, a sort of intimacy and affection that all intrinsically good things attract to themselves. The lover of beautiful things quite understands this feeling. We have a paper that, in parts, has almost ceased to be respectable, yet we are loath to replace it, because of the long association with its beautiful lines.

One never has this association with a plain surface. We may like it for its colour, or for its appropriateness to the things upon it, but there the feeling ends and we sever the connection, and replace it with another colour without a sigh.

We recall a house we once visited in England, the retreat of a well known and gifted authoress of wide world fame, where we saw a paper that had originally not cost more than 2s. per piece, but which had rare qualities of beauty about it, and that had lasted for over twenty years and had been touched up with pencil and colour to restore the ravages of time. Yet the owner and her daughters would not have sacrilegious hands laid upon it, and even in its decadent days it was beautiful and suitable.

The choice of papers which our manufacturers to-day offer the trade, in their great range and variety of colour, pattern and surface, was never surpassed, and in the technical excellence of their production, both in the machine made goods and in the more expensive hand-printed papers, leave nothing to be desired.

It is in the field of design that our English wall-papers make their strong appeal to the taste of the lover of home. There is a spirit of homeliness—not to be confused with dullness—about them, an avoidance of the things that rasp and grate on the nerves, in other words, a beautiful domesticity, that draws one to them and makes them eminently fit for their purpose.

Yet another aspect of wall-papers may be cited, and this not an unimportant one, viz., their furnishing quality.

There are rooms where, to preserve their entity, a certain note of austerity is required. This can best be secured by the use of a plain surface, either paint or paper; but in the average room what is required is a sense of brightness and gaiety, or a feeling of richness and repose, or an expression of cheerful daintiness. There are many rooms where the main effect of the room is realised by the treatment given to the walls.

This may be said of most rooms, the decoration of the walls strikes the key-note to everything in the apartment; and in rooms where the furnishing of the walls is sparse the decorative and furnishing value of the paper becomes the most important item to be considered. This is where the wall-paper scores over all other means of covering walls of a moderate character. The finished result is quite in excess of the cost. It is this aspect of the modern wall-paper that makes it so valuable to decorator and client alike, and that will maintain its popularity over other treatments.

—*The Journal of Decorative Art.*

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Gisborne Buildings

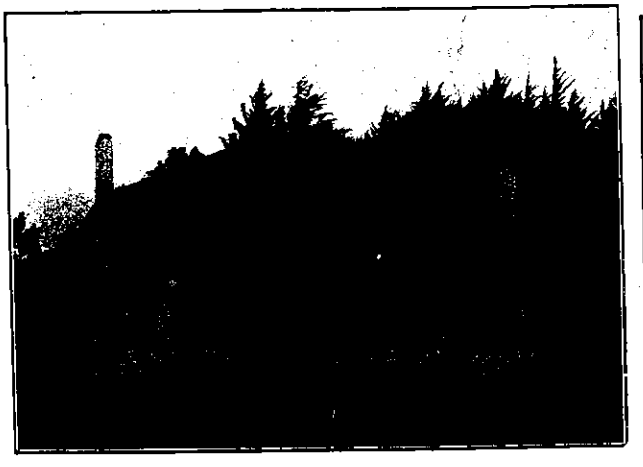
The buildings illustrated below were designed by Mr. P. H. Graham (late Graham & Brown) Architect, Gisborne.

The upper one is the Gisborne High School and has been in occupation about three years. It provides for an Assembly Hall 66ft. x 32ft. The school and Rectory stand in six acres of ground, the former having a frontage of 144ft. with two wings of 86ft. and 82ft. Walls of brick, relieved with cement-stucco base etc. The entrance with vestibule leads to spacious corridor left and right opening into Class Rooms, Library, Head-master's rooms etc., while two wings are devoted to Assistant Masters' room, various class rooms, Science room 32ft. x 24ft. The interior walls are rimu pannelled dadoes, finished above with ivory cement—Universal finish. The roofs are covered with asbestos slates. The building is heated throughout with hot water apparatus and cost about £4,500. The Rectory a half-timbered gabled residence cost £2,500.

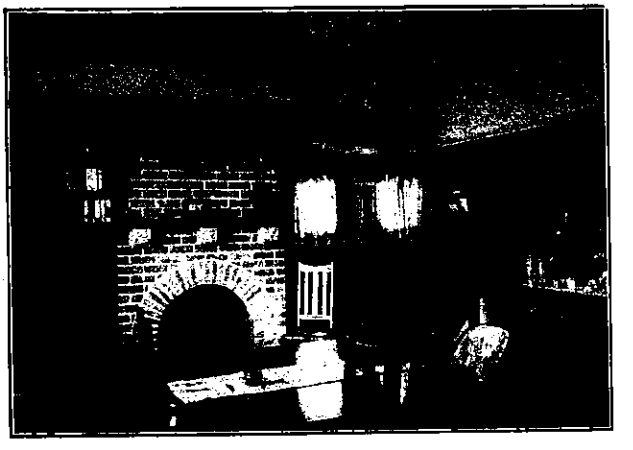
The Illustration No. 2 is of a house in Gisborne by the same architect. It stands on the brow of a hill and enjoys one of the most extensive views in the neighbourhood. The house contains eight rooms, lounge hall (pannelled in rimu), nursery, two sleeping balconies. The kitchen walls are of asbestos sheets enamelled. Other walls tinted with "Duresco," the ceilings are asbestos.

The third illustration shows an interior, the walls of which are treated with burlap canvas pannelled. The ceilings are plastered and covered with hydrated lime. The furniture is in keeping with the scheme.

1—The Gisborne High School *P. H. Graham, Architect*



2—House in Gisborne



3—Interior *P. H. Graham, Architect*

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Wishing your company every success,

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Yours faithfully,

(Sgd.) Geo. H. Webster

THE MOTOR BILL

By BOBT. WHITSON, Engineer

Is the Proposed Taxation Basis Wrong?

The Motor Bill is at last with us in its preliminary stages, and motorists throughout the whole Dominion have expressed decided approval of the introduction of a measure that is at least an honest endeavour to procure funds for the all-important purpose of road repair, from those who are partly responsible for the wear and tear.

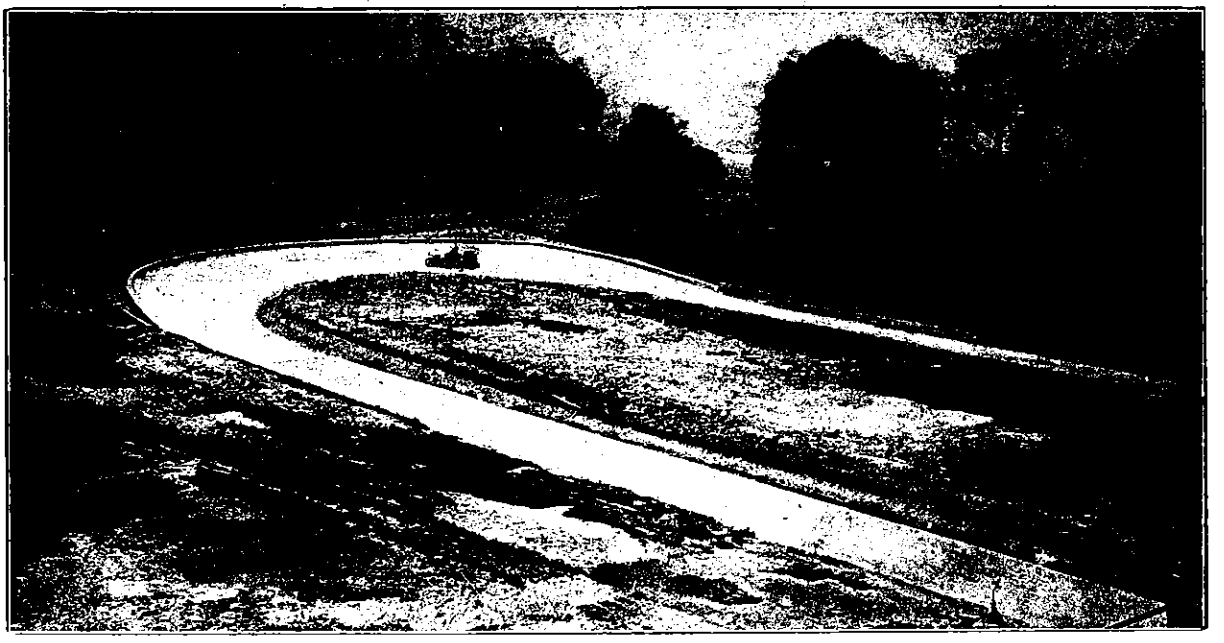
Of course on broad lines it may be said that a universal wheel tax is the only fair method by which revenue for road work should be obtained, and there is no gainsaying this view of the question, but on the other hand the enormous amount of work involved in preparing a schedule of taxes that would cover any road vehicle from a farmers' milk cart to a touring pleasure car, would be so great if tackled in the shape of a single "Bill," that the only possible method of giving satisfaction to all road users, must be by dividing the traffic up into classes and units that can be handled economically and efficiently.

There would seem to be not the slightest doubt that the "Motor Bill" is only the forerunner of other legislation controlling road upkeep, for it is not to be imagined for a moment that the intention of the government is to penalise one class of vehicle, and let others pass scot free, while all will share alike in the improved state of things.

Even if such a state of things were contemplated, the motor owners of the Dominion are now so well organised and so numerous that their eventual cry for equality of taxation would have to be heard.

Many have expressed surprise that the motor owners, (who are in the minority of road users) should be the first section to be forced to contribute to the necessary revenue, but the reason of this move is of course evident.

First, all motor vehicles are already registered, therefore the various authorities are more or less in touch with the individuals; secondly, disintregation of the country roads has undoubtedly been far more rapid since the advent of the motor, and thirdly, the motorists themselves have been mostly responsible for the present legislation by their insistent demands for better roads, and their bitter complaints about existing ones.



Testing Track for Messrs Rolls-Royce's Motor Cars

As motorists, we are not of course very immediately concerned as to what shape the general tax shall take, when we arrive at the time when all users of roads shall pay their fair proportion of upkeep, but what we are concerned about, is, seeing that one class of traffic has been selected for taxation, that the division of the tax among the individuals of that class, shall bear as fair a proportion to the amount of damage done by each unit as possible.

The "Motor Bill" as at present framed does not take care of the individual. It makes a graded tax on the basis of horse power of cars, and disregards in a wholesale manner factors that are considerably more important in relation to road upkeep.

Horsepower of course has an important bearing on the question, for it has a direct influence on the speed of the car, but to show the injustice of a horsepower basis as at present provided for, it needs only to be pointed out that while a twenty h.p. car is taxed £4 by the new bill a forty-five h.p. car is taxed £15, and yet on our average touring country roads the twenty h.p. car will probably make better time on a given run than the heavier horse power, simply because the car with the bigger power cannot in the present state of the roads use more than a fraction of the power possessed, so that the owner is being taxed for the possession of horse power that is not being expended in doing damage to the roads.

In selecting h.p. as a basis of taxation, one can only believe that the framers of the bill have made an earnest endeavour to arrive at an equable basis, but in its present form, the bill certainly does not show the amount of forethought, or grip of the subject that it should.

Most of the Motor Clubs, where this Bill has come up for discussion have unanimously, and certainly unthinkingly endorsed a tire tax, arguing by the rule of thumb method that the more a car runs, the more tires it will use and the more damage it will do to the roads.

To appreciate how far from just this proposed tire tax would be it has to be realised that not 25 per cent. of the average membership of our motor clubs are genuine touring members.

The average motorist is the owner who uses his car about the cities for six days a week with perhaps a country run once a month and possibly an annual tour.

This division of town and touring users, (and it is approximately correct), gives us then 75 per cent. of town users, and 25 per cent. of touring owners.

Now the touring owner who gets abroad over the countryside, damaging the soft country roads, wears out and pays for perhaps one set of tires per annum, (for nobody can afford to tour all the time), and the revenue for roads derived from him would be equal to the tax on one set of tires.

Then the town motorist, or 75 per cent of the owners, use their cars every day that it is possible to take a car out throughout the year, and in the course of that time will probably run through at least two sets of tires, and so contribute the tax on two sets to the road revenue.

Now the injustice would be, that in the first instance, the car doing the damage to the country roads, would be only taxed to the extent of one set of tires, while the car running on city pavements, asphalt, blocks etc., and doing no damage to the road surface would be taxed to the extent of two sets of tires.

This per individual would be bad enough, for the town user would be contributing twice the tax of the touring user, but when one sees that the town users outnumber the touring users by three to one it will be realised that the stay-at-home motorist who does particularly no damage to the road surface is paying £6 to the revenue, to the tourists' £1 although the man who pays the smaller sum is most benefitted and does the most damage.

To be absolutely fair in the matter of taxation to all motorists, there would of course be only one method of apportioning the tax in order that the professed principle of "most damage most pay" should be carried out. This would be by taxing speed, weight, and distance travelled. This would of course be ideal if it could be arranged, but unfortunately there are many difficulties in the way at present.

What can be done however, is to introduce a system of taxation on horse power and weight that will much more nearly apportionate a fair division of the burden as between individual users.

Horse power should certainly be taxed, as this has a direct influence on speed which is a most destroying factor in a road problem, but to tax horse power without penalizing weight is manifestly absurd, for the amount of damage done to a roadway, is in direct proportion to the speed and weight of the moving bodies upon it.

The Motor Bill before the House at present makes no difference whatever in the taxes imposed on various cars of different weights.

For instance a car of 20 h.p. weighing say ten cwt., is taxed at £4, while a car of the same h.p. but weighing twenty-five cwt., carries only the same tax.

Where is the equity in this from the road users point of view?

Take these two cars and put them over a given hundred miles of soft country road, and even the framers of the "bill" will not need to leave their chairs to decide which car should be responsible for the greater damage.

The h.p. and weight system is absolutely sensible from a road upkeep point of view and it has the advantage of being easily arrived at, for a weighbridge ticket is all that is needed for the inspector, over and above the proposed requirements.

The exact proportion as to the amount that should be contributed to the tax by h.p. and weight respectively, would of course be a matter for expert consideration, but to illustrate the theory, the following examples could be quoted on a basis of taxation of say 2/6 per h.p., and 5/- per cwt., per annum.

Horse-Power	Weight	Total Tax
14 h.p. at 2/6	10 cwt. at 5/-	£4/5/0
20 „ „ „	10 „ „ „	£5/0/0
20 „ „ „	30 „ „ „	£10/0/0
60 „ „ „	35 „ „ „	£16/5/0

These are not imaginary horse powers and weights, but represent well known makers of cars in actual commission, and from the difference on the tax collectable from the two twenty h.p. cars one weighing ten cwt. and the other thirty cwt., it will be seen that some such scheme of proportional taxation that covers both factors, will give a much fairer basis of calculation than any other method so far suggested.

The mere fact that our "Motor Bill" has been framed on the English Act, is not sufficient excuse for the very palpable injustice that would be done to a large section of motorists, by allowing it to become law in its present form.

ROAD CONSTRUCTION

By ROBT. WHITSON, Engineer

Why Not Test the Different Methods ?

The extraordinary amount of attention that is being devoted to the question of road construction all over the world at present, brings home to us very forcibly the enormous influence of the motor in the present day methods of transport.

For centuries past in all countries, the cry has been for better roads, but under the slower conditions of travel that existed in the past, the need was not a very insistent one, and it has needed the acceleration of pace brought about by the use of the motor vehicle, not only to lay bare the defects in existing roadways, but also to establish the fact that drastic changes of method are necessary in the laying down of new roads if they are to stand up to modern requirements.

To the unthinking man it is probably a surprising fact that a rubber shod motor should prove such a destructive agent on an ordinary roadway, but without attempting to give the reasons for the fact, it may be well to point to several of the causes which transpire to bring about the results attained.

In the first place the diameter of motor wheels is very much less than that of the old horse drawn vehicles, which means that a small irregularity in the road surface that would have been bridged by the larger diameter wheel, does not escape the motor wheel, with the direct consequence that further abrasion takes place.

Again, owing to the increase of pace of the motor over ordinary traffic the shock or jar given to any irregularity in the roadway is enormously increased, and it has long been established that the percussive effort is the most destructive factor in road surface disintegration.

Lastly, the enormous increase of weight per wheel carried by the modern motor vehicle was never dreamed of or conceived to be possible when most of our existing roadways were laid down.

It is nothing unusual to see a motor lorry with a three-ton chassis, and a five-ton load on our city streets nowadays, giving an effective weight of two tons per wheel, and when it is seen that each wheel when steel-tired has only perhaps twelve square inches of bearing on the road surface, or in other words, that the crushing weight on the road surface equals some 370 lbs. per square inch, it will be realized that our Dominion roads were not built to stand up to this class of work.

One hears constantly, glib remarks about the old Roman roads, and their marvellous wearing and lasting qualities. Viewed from the point of view of our modern constructive methods of roads, which are expected to give good service, it would be an astonishing thing if the Roman roads had not lasted.

Here is a brief description of the construction of the famous Appian Way, and be it remembered that this roadway was laid about the year 312 B.C. with a view to handling a traffic (as far as we know) which consisted mainly of horse and foot soldiers, and war chariots.

After the route was laid out, drains were cut the full length of the roadway at each side, well below the level of the excavation in which the road was to be built. All loose soil was then removed until a good foundation was obtained, and this was left standing until the foundation was thoroughly drained.

On this foundation, were laid two or three courses of flat stones, snugly fitted by hand but leaving ample room between for free drainage, next came a course of rubble masonry, or in some cases very coarse concrete. The third layer was a dressing of finer concrete on which were bedded hard stone blocks, handfitted with great nicety.

There is some diversity of opinion as to whether the stone blocks were grouted in the joints, but the point is immaterial. The roadway was in many places three feet in thickness when laid on the ordinary soil, but varied in proportion to the hardness of the subsoil as it proceeded.

The Roman roadways and their method of construction have not been referred to casually, for they convey a message of enormous importance to the present day road engineer. This old roadway put down some 2226 years ago, was undoubtedly centuries ahead of its needs, but the very fact that some of the finest traffic avenues of the world for both horse and motor traffic, are to-day built on the foundations of the old Roman roads, both in France and England, goes to prove that when all is said and done, it is the foundation of the road that counts, when length of life and good service are demanded.

Macadam maintained in the face of all opposition that if the ground was thoroughly drained, a thickness of 9 inches of broken metal, water bound, well rolled and top-dressed with metal screenings, would stand up to all the ordinary demands of traffic.

And for the traffic of his day, it undoubtedly would, and did, but not even the wildest dreamer of Macadam's day would have predicted a wheel load of 370 lbs. per square inch.

The "Main Arterial Roads" that are claiming so much attention at the hands of the daily papers, Motor Clubs, and particularly members of Parliament at present are, in this Dominion, for many miles at a stretch innocent of all road metal, and these portions do not of course come within the pale of criticism. But on those portions that are metalled, it would appear to be only common sense for those responsible for the work, to see that such work that is done, is done as well as possible.

Macadam based the success of his method on good drainage, and yet in our local road construction, this is about the last portion of the work to receive any attention.

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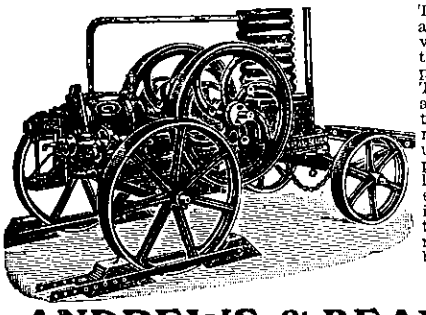

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are of course faced with an alternative problem. Shall they merely top dress the roadways of the district, so making a yearly patchwork job of the traffic ways, or shall they each year undertake a section, and make and form it thoroughly? In the former case the available funds are usually more than absorbed in making the roads passable for winter traffic, and in the latter case, if a section is to be taken in hand and thoroughly formed, there will probably be no surplus of funds to maintain even a passable surface on the other portions of the district.

With the paving or traffic surface of city streets this article is not greatly concerned, for from the diversity of opinions held by the leading engineers of the various countries who are concerned about the road traffic problem it is very evident that road engineers are themselves still searching for the ideal surface that will stand best for all classes of city traffic.

We have lately had before us in the daily papers, long reports of the impressions of various Dominion engineers who have lately tripped over the Continent and England, gathering data as they went, as to the most favoured class of road surfacing in the various large cities, and as might be expected, even among these authorities, there is a very great diversity of opinion as to the best method to adopt in our Dominion city streets.

Wood blocks, stone setts, asphalt blocks, and the numerous bitumen surfaces all seem to have their advocates, and we can only suppose and hope that the long suffering public who move on wheels, will eventually get a good road surface in the cities by the slow process of the elimination of the unfit.

All those engineers however who have been abroad to study the road problem are unanimous on the subject of the road foundation, and Mr. F. W. Furkert, Inspecting Engineer of the Public Works Department, who attended the International Congress of Road Engineers held in London last year, is reported to have said in the course of an interview with a reporter of the "Dominion" on his return to New Zealand:—"The exceptionally fine roads of England and France are due not so much to any magic power contained in the up-to-dateness of their engineers, but to the foundations laid by hundreds, and in some cases even thousands of years of consolidation under traffic, with, in places feet of metal." In that statement we are given the prime factor of road construction, and as the trend of motor development is to still further increase the wheel load of vehicles, the question of road foundations is apt in the future to demand even more care than it is receiving in the present.

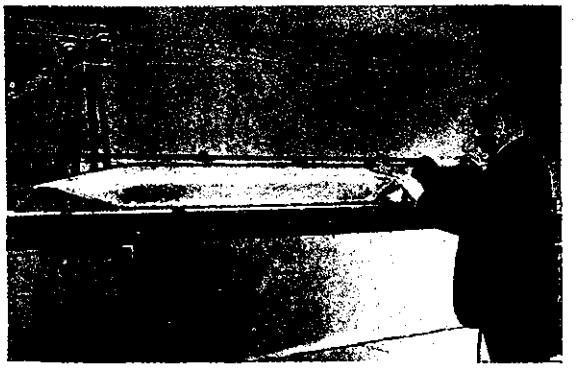
In the matter of pavements for city streets there are of course many things to be taken into consideration. There is first the question of the class of material that is available in the neighbourhood, the cost of laying, cost of upkeep, and the amount of skilled labour that each class of roadway requires in the laying.

Taking into consideration the number of paving systems offering, each doubtless with some points in its favour, and after reading the latest reports from our engineers, which all differ more or less, it would seem that the only way in which the vexed question can be finally settled, will be by resorting to the old rule of thumb method of trying them out.

Why has this method not been tried? Older countries than ours have freely admitted that without experiment they have been unable to arrive at definite conclusions, and our road engineers in order to keep abreast of the times must surely fall into line. The only satisfactory method of arriving at a definite conclusion, as to which system of road paving is best suited to our city streets is by selecting a thoroughfare carrying all classes of traffic, and laying sections of the various pavements along it. This will ensure that the same amount and class of traffic passes over all sections alike, and if first cost, maintenance, life, and suitability for tractive purposes are carefully noted, the question would in a comparatively short time be settled at first hand.

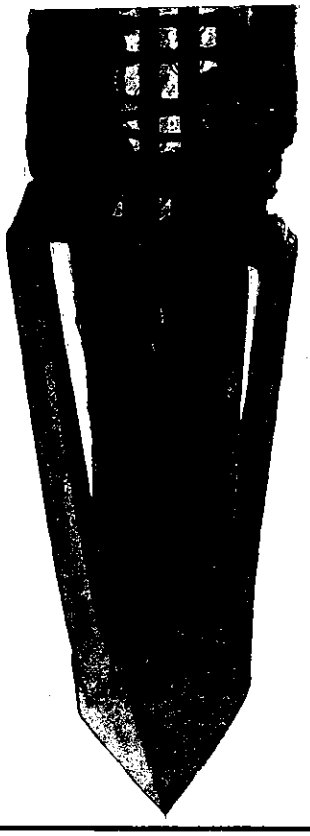
The Bachelet Electric Railway

The inventor of this Railway, Mr. Bachelet, which we illustrate herewith states that a speed of 300 miles an hour is a possibility! He terms his invention "Bachelet Levitated Railway System." There are no locomotives, no engines, no motors, no wheels, no gearings, and practically no friction. This model, we believe, has been constructed by Mr. Bachelet himself, and has been brought from the United States. It consists of a length of track consisting of a series of electro-magnets placed in a straight line, and above which the car runs. At each end is a narrow solenoid, through which the



Mr. Emile Bachelet and his Model Electric Railway

car passes. Over the track above the car is a central guide of channel brass, and each side of the track under the car is a similar guide. At the top of the car is a pair of brushes, one at each end, and at each end at the bottom is a pair of similar brushes. At each brush is a guide piece. The brushes and guide pieces run in the channel guides, the brushes making and maintaining electrical contact with the horizontal surfaces. The guides are divided lengthways into sections, the sections being separated at each interval by insulating material. The movement of the car, when supported in air, is very rapid; it travels almost instantaneously from end to end of the track. The term railway is somewhat of a misnomer, as the car does not travel upon rails.



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Miners' Cap Lamp

The electric lighting outfit for miners is intended to take the place of the present oil lamp, which burns with open flame and is carried in the hand or is fastened to the cap, or of the present safety oil lamp the wick of which is enclosed in a tube of wire gauze.

The electric outfit consists of the reflector, inside of which a small tungsten lamp is placed, and of the battery, which is connected to the tungsten lamp by means of an insulated double wire. The wire is protected at both ends by steel flexible springs so as to prevent its breaking.

The cap lamp is to be fastened to the miner's cap just like an ordinary oil lamp, no change of the cap for this purpose being necessary. The battery is carried on the back of the miner on a belt. Care is taken that the miner is not able to open the reflector, unscrew the tungsten lamp and cause a spark, nor to lift the cover from the battery, in which case he would again be in a position to produce sparks by short-circuiting the poles of the battery. For this purpose, the reflector is provided with a flange through which eight holes are drilled, the counter-flange of the ring which holds the lens in place showing one

Electric Cap Lamp for Miners' Use

hole which meets one after the other the eight holes of the flange of the reflector. A steel wire with a lead seal, drawn through the holes, prevents the ring from turning unless the seal is broken. On the other hand the plug, which fits in the cover of the battery container, is mechanically locked inside the cover by a moveable steel rod which is automatically pushed through a protruding steel tongue of the plug. The latter can be pushed into the cover but cannot be taken out unless the cover is unlocked and lifted. As the miner gets the container in a locked condition, he cannot reach the battery unless he breaks or opens the lock by force.

The Edison Battery is intended to feed the tungsten lamp for ten hours after a normal charge, but will give, in case of emergency, current for as long as fifteen hours.

Normal discharge rate Amperes	0.45
Total weight of battery in case- ounces	42.5
No. of cells per lamp	2.
Capacity Ampere hour	4.5
Normal charging rate Amperes	1.
Length of charge, hour	8.
Weight of cells—ounces	15.
Rated candle power of bulb	7/10
Reflected candle-power	3.
No. of hours lamp will burn on one charge	15.

Constructing Motor Road Surfaces

The New Plymouth Borough Council and their Engineer, Mr. S. Skitrop, have for the past fifteen months been experimenting on the construction of a road surface that shall be suitable for motor traffic and at the same time be not too expensive. Success has crowned their efforts, judging from the appearance of the northern portion of Currie Street, which has been treated in a special manner with two coats of soltar and shingle. The street is nicely shaped with an even cambre, the surface is even and smooth, and somewhat resembles rubber; is waterproof, resilient, practically dustproof, and silent. It has been laid down 8 months, and carries the heaviest traffic of any street in New Plymouth, leading directly from the railway station to the centre of the town, and does not yet show the slightest sign of wear. The first application of soltar was sprayed into the metal before the blinding was applied, coarse shingle was then spread over the surface and rolled thoroughly hard; the second coat of soltar was then sprayed on the surface and covered with coarse sand and again rolled. The road was open for traffic practically the whole time it was being treated. The thickness of the treated portion is about 2½ inches, and is a soltar macadam with a smooth non-slippery surface. The cost of the two coats, including material and labour, was 1s 1½d. per square yard. This is a cost that is within the reach of County Councils and small Boroughs, and would be cheaper and would give far better results than the present method of repairing and maintaining roads with broken metal or other stone, which is continually being washed away by rains and blown away by winds.

There is no doubt local bodies will have to face the problem of improved road surfaces to prevent excessive wear and tear partly caused by motor traffic.

There are several other portions of street surfaces treated with the same preparation, but not applied in the same manner, and not, in the Engineer's opinion, so successful as the portion referred to, which is certainly a fine piece of street at a reasonable cost.

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Pilasters dividing supporting cornice with wing pediments and parapet, 30 tons of steel in beams and staunchions. Overhanging verandah, forged ironwork brackets by David Third Mitchell. Plumbing by J. Allan. Shop fronts, etc., Smith and Smith. Cost £4,500. Contractor, Archie Kirk.

Reynal's Hall, Tolaga Bay. Auditorium, 60ft. x 40ft., stage, 40ft. x 18ft., 2 dressing rooms, 18ft. x 14ft., 10ft. entrance hall, gallery, 22ft. x 40ft., 2 cloak rooms, seating 600 persons, overhead ventilation, cove ceiling, Calmon's Asbestos introduced on walls and ceilings. Cost £2230. Contractors, Shearers Bros.

Also 4 shops in brick, 66ft. x 42ft., suspended verandah. Designed for 2 storeys for Mr. Robert Robinson. Cost £1327. Contractor, John Webster.

Arcadia Hotel (additions and extensions) 10 bedrooms, dining room and new wing, 2 contracts, 1st £1200, Contractor, Charles Taylor, 2nd £547, Contractors, Wheeler and Riddell. The work was for Mr. Frerichs.

The same architect has in hand The Gisborne Sheep Farmers Co., produce store, 124ft. 9in. x 107ft. in brick, a portion 2 storeys, saw tooth roof, Griffith's skylights, steel girders and columns, cart dock and convenient egresses. Cost £5,500. Contractor, C. M. Taylor. A gabled residence for Lady Carroll, essentially English in character, yet embracing the best features of Colonial work in harmony with surroundings, entrance hall, 21ft. x 30ft., Ingle and Stairway, drawing room, 24ft. x 17ft., billiard room 24ft. x 18ft., Ingle and Alcove, suggesting "Snuggery" with side door, attendants rooms, 5 bed-rooms, best bedroom, 17ft. x 24ft., landing and corridor casement windows, lead lights, 10ft. balcony and verandah. Brick base level of ground floor to sills and timber with shingle treatment. Cost, £3000. Contractor, Archie Kirk.

Contracts signed for a home for Mr. Pavitt, £760, Contractor, T. Haisman. Residence for Mr. H. Wilson of seven rooms, dining room, 13ft. 6in. x 23ft., octagonal window, asbestos roofing. Cost £1200. Contractor, Geo. Smith.

Messrs. J. Greig and Son report the following work completed: The new building of chambers and offices for The N.Z. Shipping Co., corner block of brick and plaster, stone finish with effective details. 2 storeys, flat roof Neuchatel treatment, a well designed building successfully carried out, rooms en suite well proportioned, easy of access and great attention to lighting. Contract, £4,500. Contractor, A. F. Lawrie.

The Scottish Hall in brick relieved with plaster well chosen details, pleasing lines. Auditorium, 65ft. x 56ft., stage, 24ft. x 16ft., dressing rooms, reception room, 28ft. x 24ft., with private rooms opening from the entrance in the middle into vestibule, stairway to supper room, 38ft. x 26ft. in first floor, kitchen provided with 4 gas ranges, etc., most complete in arrangement and in comfort. £2,700. Contractors, Howell Bros.

Residence for Mr. J. Ponsford of 2 storeys with balconies, hall and lounge hall, music room in addition to reception room etc., 6 bedrooms etc.

Residence for Mr. M. B. Mander, 12 rooms in timber rough cast, splayed buttresses, Marseilles tiles, 2 verandahs and loggia projecting 10ft. with commanding view on 3 sides, reception hall, 24ft. x 24ft. with Ingle Nook. Leaded lights.

A week end cottage for Mr. T. E. Tonneycliffe with verandah, walls of "Eternit" with strappings, and papered inside, living room, kitchen, 3 bedrooms etc., motor shed and workshop. A system of Tank water storage with filtration provided. Cost £560.

Two shops for Mr. F. Harris under construction, cost £1400, this being the first portion of a larger building contemplated.

Mr. Albert Williams, Architect, is engaged on work being completed and to be constructed. Mr. Forge, reports a good amount on hand and to follow.

WELLINGTON.

Messrs. Beere and Greenish, Architects, have completed—a cottage in Tar Street, Highland Park Estate, S. Harris, Builder. In course of erection a House in Grant Road in asbestos walling and roof throughout with curved ceiling of asbestos in living room. Messrs. Ranson and Rosser, Builders. Proposed alterations to houses in Goldie's Brae, Petone and Paekakariki. Designs for Houses at Oriental Bay, Thorndon and Karori.

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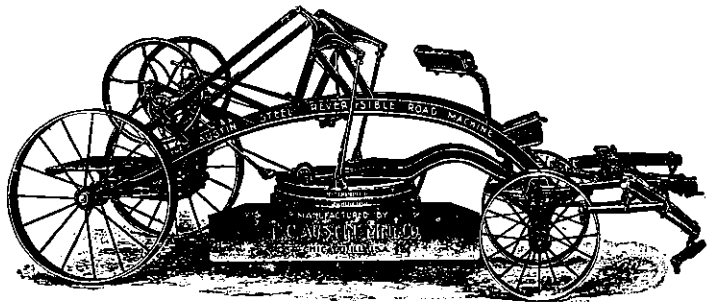

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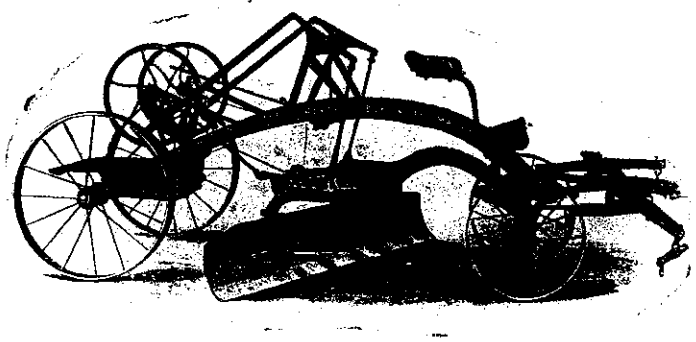

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