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WELLINGTON, AUCKLAND, CHRISTCHURCH, AND DUNEDIN, NEW ZEALAND, APRIL, 1920.

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Editorial Comment

Forest Management in New Zealand.

The first extensive report on New Zealand forests by Sir David Hutchins I.F.S., has been published. It deals with the kauri forest of the north, and also in a general way with forest management. The author's long experience of forestry in France, India and South Africa entitles his views to great consideration, and the Government took a wise step in securing the advice of so competent an authority. However, like most enthusiasts, his recommendations constitute the "counsel of perfection," and are made without full regard to important economic factors which do not come within his special sphere. It is significant, on this point, that Mr. E. Phillips Turner, Secretary of the new Forestry Department, in submitting the report to the Minister in charge of State Forests, remarks: "Mr. Hutchins has been afforded every facility to fully express his views and criticism, regardless as to whether the Departments concerned are in agreement with some of his conclusions, or are satisfied with the data on which some of those conclusions are founded." Mr. Phillips Turner does not go further, but those who thoroughly understand the kauri forests have already pointed out that Sir David Hutchins, in his insistence upon the point that popular opinion is wrong in regarding the kauri as a slow-growing tree, has proceeded hurriedly upon imperfect data. In the report of the Forestry Commission of 1913 it is stated definitely: "without exception our timber trees are of much slower growth than those used in forestry operations the world over," and that for this reason, "it is quite out of the question to practise any method of forestry that depends on their rapid regeneration." Yet this assumption of rapid regeneration is exactly the basis of Sir David Hutchins' elaborate calculations regarding the relative advantages of completely cutting out a timber area, or, as he suggests, going in for "selection falling," and leaving nature to fill up the gaps. This method

means the systematic marking off for felling, of the mature trees, and hauling them out of the forest, the consequent destruction of growth being estimated at only one per cent. Timber in New Zealand is already extremely high in price, but if it had to be obtained on these lines in every case, it would be even more expensive. To take the millable timber in the Manawatu district as an example. The forest is practically all mature, and the country excessively rough and hilly. To open out the average timber block involves great expense in building tramlines and haulage inclines. How some of the log haulers are got into position would puzzle the layman, who must have a great admiration for the perseverance and skill of the miller in making the necessary preparations for felling. If the miller, after all this preparation, was permitted only to cull a tree here and there, he would not pay wages, much less get a return on the large amount of capital which has to be expended before a penny of revenue can be earned. His equipment is such that it cannot be allowed to stand for years, to be utilised a little now and then, in accordance with Sir David Hutchins' idea of natural forest development and regeneration. However, in the report there is much valuable matter which will serve to encourage the building up of a definite policy having as its object the development of large areas of land, unsuitable for farming, so as to keep the Dominion supplied with timber, and return a better profit than if the land is laid down with a poor sole of grass, on which settlers will have to struggle hard to make a living from their herds.

**Tariff
Protection
Needed.**

We propose to return to the report itself at a later date, and meanwhile we reproduce one paragraph of special interest to the sawmilling trade generally. Under the heading "Tariff Protection for Home-grown Timber," Sir David Hutchins remarks: "If there is a strong case anywhere for a high import tariff, it is to protect the impoverished forests of New Zealand, and their industries, against this unfair temporary competition—timber "dumping." By the time that the Kauri and other forests mature as cultivated forests, with perhaps ten times their present average productiveness, foreign timber will have ceased to trouble home industries. Most of the private forests in North America will have gone the way of private forests generally, and the national forests will be insufficient to supply national needs in America, leaving nothing for export. As much as four-fifths of the present merchantable timber in the United States is private. Siberian forests are earmarked for the supply of Europe and a civilised China."

**Legislation
by
Rule of
Thumb.**

A very shrewd and well informed writer on economic subjects who visited N.Z. some years ago, for the purpose of investigating the legislation which at that time was extremely advanced, published his conclusions under the suggestive title of "Socialism with-

out Method." He demonstrated that New Zealanders, having a happy facility for experiment, and being unhampered by the traditions and vested interests of older countries, had drifted into one socialistic experiment after the other, entirely as a result of their practical efforts to solve awkward social problems, and that although the result was a series of statutes of definitely socialistic nature, their promoters were not academic socialists, and had no idea of carrying out reform according to the tenets of that party. New Zealand has dropped out of the van of socialistic experiment, but its legislative developments continue to proceed on rule of thumb methods, prompted by the ancient, well-worn motto, that "sufficient for the day is the evil thereof." And this has landed the industrial community into an awkward position. As a palliative to the rising cost of living, and to preserve industrial peace, Parliament passed an amendment of the Industrial Conciliation and Arbitration Act which enables the parties to an award to reopen it at any time, for the purpose of reconsidering wages in the light of current prices of necessities. The standard taken by the Arbitration Court is the index number of prices of articles of common use, as compiled by the Government Statistician. Upon that basis—a very unreliable one as we shall show—wages are rising all round, and the climax has not yet been reached. At present, the workers are suspicious of these official figures, which they regard as too conservative to be fair. We agree with them after looking carefully into the method of their compilation. Our space is too limited to go into the whole series of figures, therefore we will deal only with those relating to rent, a subject on which our readers will be able to form their own conclusions from actual knowledge. In February of this year, the Government Statistician was still using a table showing the average weekly rents in twenty-five representative towns for August of last year. Everyone knows that houses have become scarcer since that date, but so far as rents are concerned, the Arbitration Court, in adjusting wages of to-day, still takes the rents of August 1919 into consideration. The official table gives assurance that the "average rent" of a six-roomed dwelling is as follows in the four chief centres:—

Auckland	....	....	....	18s. 7d.
Wellington	....	....	....	24s. 2d.
Christchurch	....	....	....	19s. 3d.
Dunedin	....	....	....	18s. 5d.

If anyone attempted to get a house in any of these centres at the "average" price, what sort of a dwelling would he obtain? Wellington City Council is carrying out a housing scheme in Northland, which is not a suburb as easily reached as many although the City Council has advantages not possessed by private house builders, and intends to let other areas in the city, and complaint is made that the dwellings at net cost price, it is going to charge thirty shillings per week.

Messrs. BURNS, PHILP & CO.'S

— SYDNEY OFFICES. —

The fact that Messrs. Burns Philp & Co. has purchased Messrs. David Anderson's four-storied brick and concrete building in Molesworth Street, Wellington, and also a large section in Wakefield Street, Wellington, for a new building to be used as a warehouse, shows that this firm is preparing for big busi-

ness in the future. Messrs. D. Anderson's building has a frontage on to Molesworth Street of 90 feet, and on to Hawkestone Street of 86 feet, and is to be used as a bulk store and for temporary offices until the completion of their new premises. The frontage of the section in Wakefield Street is 70 feet, Farish Street, 135 feet, and the Old Customs Street frontage is 64 feet. In addition to the Wellington building a large one is in hand for Auckland.

these pages some illustrations of the firm's building in Bridge Street, Sydney, which are taken from "Architecture" published in that city. This building which was erected in 1900 from the designs of Messrs. A. L. & G. McCredie for Messrs. Burns Philp & Co., was originally occupied by



Messrs. Burns, Philp & Co.'s Sydney Offices.—Front Elevation to Bridge Street.

A. L. McCredie & Anderson, Architects.

ness in the future. Messrs. D. Anderson's building has a frontage on to Molesworth Street of 90 feet, and on to Hawkestone Street of 86 feet, and is to be used as a bulk store and for temporary offices until the completion of their new premises. The frontage of the section in Wakefield Street is 70 feet, Farish Street, 135 feet, and the Old Customs Street frontage is 64 feet. In addition to the Wellington building a large one is in hand for Auckland.

In view of the interest this firm has created through its progressive policy we are reproducing in

the Queensland Insurance Co., and other tenants until the latter company moved into their premises at the corner of Bridge and Pitt Streets when the owners occupied the southern half of the ground and first floors. The remaining leases having run out and the expanding business of Messrs. Burns Philp & Co. outgrowing the accommodation of their premises on the opposite side of Bridge Street, they determined to occupy practically the whole of the building; this necessitated alterations and the refitting of the premises, which have recently been com-

pleted from the designs of Messrs. A. L. McCredie & Anderson by Mr. D. M. Mitchell.

The two secondary entrances into the ground floor offices were closed, and large openings made through the walls into the main entrance, so that the whole of the ground floor is one large shipping

The Honour Roll, containing upwards of 220 names of the firm's employees from all their branches and fleet, has been placed in six white Sicilian marble panels, three on each side of the main entrance. The lettering is in gold, and the panels are framed in King Edward marble, with a



Messrs. Burns, Philp & Co.'s Sydney Offices.—Main Entrance.

office. Our illustrations of the main entrance and the northern side of the ground floor show these openings, which have been lined with King Edward and White Sicilian marble. The whole of the fittings on the ground floor are polished cedar, some very fine specimens of this rapidly disappearing timber being used in the counter and desk tops.

dado, the panels of which are Mexican Onyx, the first time, we think, that this beautiful material has been used in Sydney in such large slabs. Our illustration of the northern half of the Honour Roll shows the wonderful marking, but fails to reproduce the beautiful colouring of these panels.

The first floor has been utilized for the Managing Director's (Sir James Burns, K.C.M.G.), the Board Room, General Manager's and Secretary's Offices, the dados and panelling of which have been carried out in Queensland maple.

The second floor contains the Merchandise Department, the telephone switch-room and the two remaining tenants, while the basement has the Freight, Providore's and Store Departments, with a lunch room for the male employees. The whole of the Shipping Department and the offices on the first and second floors are fitted with semi-indirect electric

The result is one of the finest Shipping Offices in the city, with 120 feet frontage to Bridge Street, by an average depth of nearly 70 feet, and we congratulate the owners, architects and contractors on their successful achievement.

Frankton Model Village.

The Railway Department have what is described as a model village at Frankton in hand. We only hope it will be something better than their Kaiwarra (Welling-



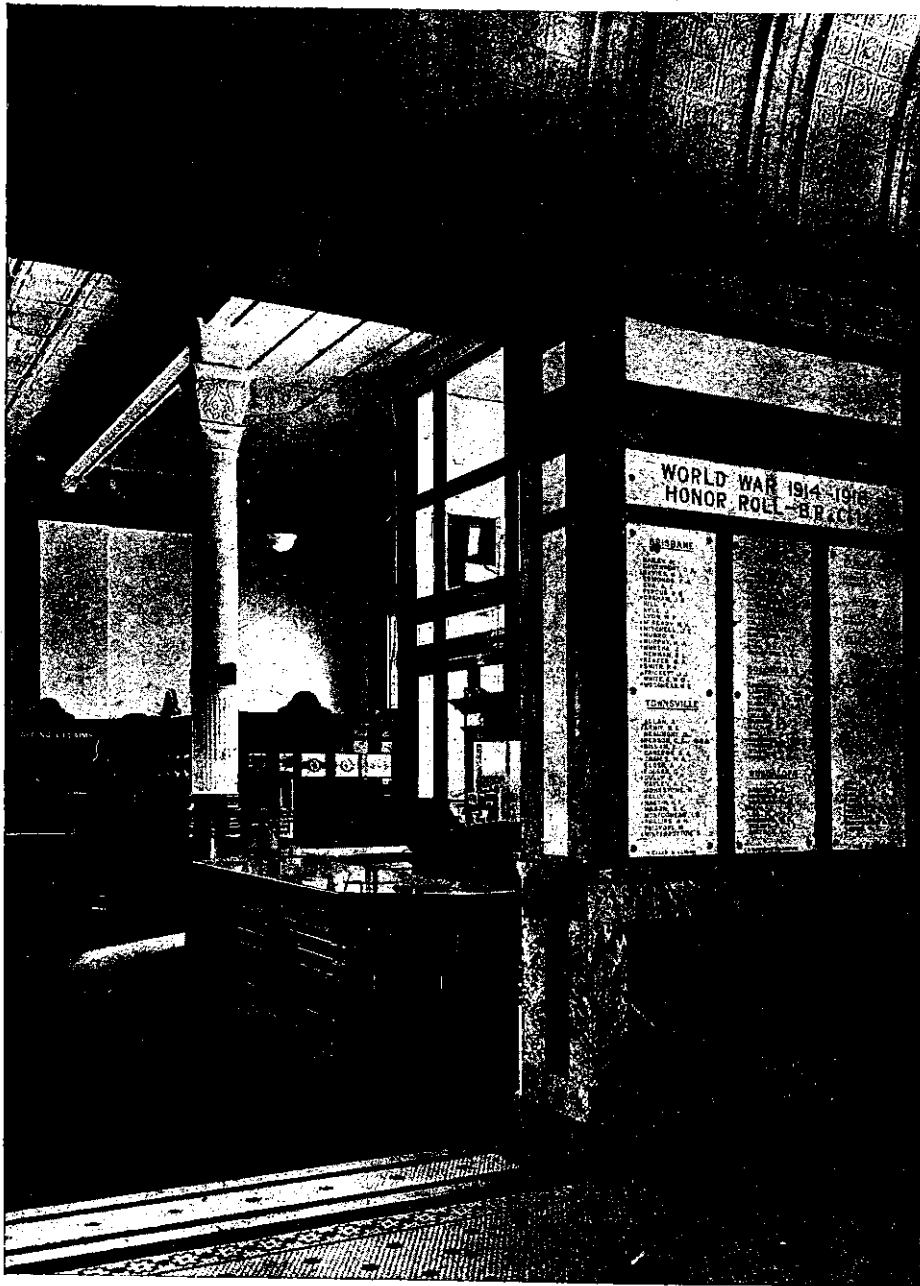
Messrs. Burns, Philp & Co.'s Sydney Offices.—Northern Side. Ground Floor. Entrance View.

lighting, and ample provision has been made by a power installation for radiators and fans. The caretaker's quarters are in the roof, with a roof garden at the rear.

The front elevation, which we also illustrate, is carried out in Waverley stone in Romanesque style, the main entrance being surmounted by a shield with the arms of the N.S.W. Lancers, of which Sir James Burns was the Colonel, with the Company's flags on either side.

The marble work was carried out by Messrs. Crane & Sons, and the electric installation and telephonettes by the Federal Electric and Engineering Works.

ton) effort. The plans are said to be ready for fifty workers' dwellings which are to be erected for married workers. The standard type of house will consist of a large kitchen, sitting-room, three bedrooms, bath-room, scullery and wash-house, with hot and cold water laid on throughout. An outbuilding will also be included. Wherever electric light can be supplied it will be laid on, and a point for the use of an electric iron will also be arranged for. While the plan throughout will be the same, the elevations, or exteriors, will be different, so as to provide some variety to the township. The timber will be supplied from the Department's own mills at Mamaku, and the house will be cut at the mill all ready to erect on the site.



Messrs. Burns, Philp & Co.'s Sydney Offices.—Entrance View.

The Housing Problem.

Big Conference in England.

Mr. HURST SEAGER, F.R.I.B.A., Writes a Paper.

Much interest naturally centres around the International Housing Conference arranged by the International Cities and Town Planning Association recently held in England. A number of New Zealanders were present at the Conference, including Mr. W. H. Gummer of Auckland and Mr. Hurst Seager of Christchurch, who wrote a paper for the Conference.

Time did not actually allow Mr. Seager to read his paper, but there was a generous supply of copies available for all the delegates. In the twelve minutes at his disposal, he showed a number of very attractive New Zealand slides, and he described New Zealand as an extremely beautiful country, worthy of all that could be done to make it all that could be wished from a garden city point of view—a country which it was worth while taking a great deal of pains to develop. From a geographical point of view it was rather peculiarly arranged, in that a series of plains was divided by a series of hills. It possessed a magnificent water-power, so that it will be possible to carry on industries by means of the electric power which the water companies will presently develop.

A Plea for Organised Control.

In his paper, Mr. Seager remarked that problems of housing in relation to industries is a world-wide one. "In New Zealand, with its broad, unoccupied acres, it is as acute as in the crowded areas of the Old World. It will require there, as here, the hearty co-operation of deep thinkers and hard workers before a satisfactory solution can be found. We started with the traditions and experience of the Old World to guide us, but those traditions have led us to allow the haphazard and individual growth of our towns and industries which has proved so disastrous to the workers in the old industrial centres. This unregulated development has led to conditions of life in some parts of our towns which must be remedied before we can take pride in our cities as a whole. A Housing Bill has been passed by Mr. Massey, and the New Zealand Government give favourable terms under the Workers' Dwellings Act for the erection of individual homes, but the larger issues involved in the industrial garden city and town-planning are not yet provided for. It is in the hope of being of some service in the development of the garden city that I am in England now. I wished to study at first hand the working out of the many and varied activities which are involved in the making of a perfect city—to see how the theories and ideas which had been so ably expressed were working out in practice; above all, to live in and study the conditions of life in the only example of a true industrial garden city, the garden city of Letchworth."

Still Falls Short.

As a result of that visit, Mr. Seager came away with an even greater admiration than before for the wonderful achievement of the promoters, and an unbounded feeling of gratitude to the man whose vivid imagination was the foundation on which the whole superstructure had been built. "It is unquestionably a brilliant success achieved under extraordinary difficulties—difficulties of finance, prejudice, vested interests, cheap cynicism, and apathy; and neglect on the part of the Government, who should have been the first to help. All these difficulties have been surmounted, and Letchworth stands before us to-day as an example worthy of being followed throughout England and the world. But it is not the end. It is as a signpost showing that we are on the right road. Letchworth is a success financially, a success from the point of view of the convenience and beauty of its development, and a great success from an industrial and social point of view when judged from the standpoint of industrial towns elsewhere; still, I am sure I am right in saying that it falls short of the complete purpose of the promoters. The exigencies of the case demanded that concessions should be made, that departures from the high standards set up should be allowed, in order to accommodate the scheme to individual rights and the practical views of those who were willing to form part of the community. This was wise; for without such concessions no progress could have been made."

Lacking Industrial Co-operation.

"We have regarded Letchworth as a model city in which every care and thought has been given (both in conception and realisation) in order that it may be possible to carry on industries under the most convenient and healthy conditions—a city where the workers may enjoy an advanced social life in healthy and beautiful environments. But if we view it in the light of the best modern thought and practice in industrial development, then we must admit that it falls short of the standard that could be reached. The whole of the framework is there, all that is required is that this excellent framework should be as quickly as possible filled in.

"Just as town-planners are rightly demanding that in all civic creation and improvements there must be the full co-ordination and co-operation between those who can help in the formation of the town, so sociologists and economists are demanding that in the modern industrial town there shall be the same thought and care expended upon the development and co-ordination of its industries. Thinking in terms of the individual must give way to thinking in terms of community welfare. Letchworth has to-day the industrial organisation that is common to our towns and cities, that is to say, it has no real industrial organisation of co-operation whatsoever. All its residents are thinking and working in terms of the individual, and strive for the success of the individual worker or the individual firm. Although so much has been written on the subject, it is not yet sufficiently realised that the success of the individual

is not so much dependent upon his individual exertions as upon the relation of his work to that of other workers—to the organised control of the whole industrial life of the community. For just as the heart of the nation is deep in the homes of the people, so the industrial welfare of the nation is dependent upon the spirit of co-operation in every individual worker. It should be possible, and was possible under war conditions, for individual workers to feel that the work he or she is doing is a useful part of a great national scheme, that they are all doing 'their bit' for the nation's welfare. Woeful waste of energy which results from that individual action for which so many are again clamouring. The wasteful distribution of commodities beyond the neighbourhood of their production is a more serious menace to national prosperity. As in the Dominions, so here in England, the goods manufactured in any one town, although necessary for the residents of that town, are not sold there, but local wants are very largely supplied from distant towns. A large number of resident agents are employed, an army of commercial travellers sent in the endeavour to capture the business of their rivals in other towns than their own. I think we should arrange the industries within our future garden cities so that the present waste of energy and industrial inefficiency may have no place there.

"It seems to me, and I hope that in all this I am in agreement with you all, that it is in the industrial garden cities that the industrial salvation of the nation lies—cities which are founded on the lines of Letchworth but which shall from the start give the same care and expert thought to the welfare of their inhabitants as Letchworth gave to the formation of the city itself. We want not only expert city builders, not only expert city management, but we want also expert industrial managers to govern everything which will in any way advance the best interests of the citizens."

The Panama Zone.

Referring to the wonderful success achieved under the most trying circumstances in the Panama area, not only in respect to the building of the Canal itself, but in the city building which had been carried on in conjunction with it, Mr. Seager said this success resulted from the appointment of one man, Colonel Goethals, who was responsible for the whole of the activities carried on there. He was responsible for the appointment of all assistants and subordinates, for the canal, the railway, the water supply, the electric power, the health department, the farms, the food supply and distribution, housing and places of recreation and rest, laundries, etc., and the government of the whole scheme.

An Important Distinction.

Mr. Seager was careful to point out that the "Unity of Control" must not be confused with the "Central Control," by which hard-and-fast regulations are issued by those in authority, and leave no room for that individual initiative which is absolutely essential to the success of any scheme. Such

"Central Control" is very rightly condemned, but those who condemn it fly to the other extreme, and ask for a continuance of the go-as-you-please policy, which is the base of our modern industrial life.

"We cannot too strongly insist on the fact that municipal government is a business, and that in it recognised business methods must be followed. The holding of any municipal position is not for the sake of the honour, it is for the opportunity it affords of doing good work. We cannot do good work unless we have been thoroughly trained in our task. The watchword of 'Government by the people for the people' has led us to appoint from among our citizens any who are found willing to undertake the task of government without any consideration as to their fitness for the responsibilities of the position. We have been willing to be governed by those who have been too busy with their own private affairs to give the necessary attention to the welfare of the people. It has been thought that it would be a violation of the democratic form of government if an expert were appointed as manager of our towns. But it is now recognised in business that it is only by thorough expert supervision in every department of work that success can be gained, and it is the experience of business men that must guide us in the business of town management. The country towns should be the cheapest possible places to live in—they are now no cheaper than the cities; how can they be when the produce grown around them is sent to London and brought back from there for local consumption and use. It can be seen that this scheme will not interfere in any way with those industries established in the garden cities which manufacture for the world market.

The proper forethought and care exercised in respect to its industries will make the garden city a still more attractive place for work and residence, by contributing to the wealth, the comfort, and happiness of its citizens. Everything that the community requires would be purchased, if possible, from the community itself, and if that is not possible, then at the nearest town or factory where the goods are made. Production should be encouraged to the utmost, for there can be no such thing as over-production if a proper system of distribution exists; such a system would be established by the Sales and Distributing Departments. Instead of the large cities supplying the country, the country towns must supply them, and they in turn collect for export."

Mr. Seager mentioned that Mr. Raymond Unwin's plan had been largely followed in the development of Durie Hill, at Wanganui.

Professor Wilkinson, of the Sydney University, has been appointed one of the judges in connection with the architectural competition for the new art building, which is to be erected by the Auckland University College.

* * *

The British Government's Timber Department has ceased to operate. It sold the entire stock of fifty million cubic feet of soft timber to a syndicate for £8,000,000. This is a record deal in timber.

Subsidy to Builders in England.

The great building programme foreshadowed by the English Government by which 100,000 houses were to be built by the end of last year has not materialized. The English Government is much perturbed, and a special meeting of Cabinet was held in December to deal with the matter, which appointed a Cabinet Committee to devise new measures for dealing with the most urgent domestic problems.

Dr. Addison is chairman of the Committee, which includes Mr. Austen Chamberlain, Sir L. Worthington-Evans, Mr. Munro, and Sir Tudor Walters. The Cabinet clearly regard the situation which the Committee has to face as a serious one. When Ministers



Type of Wooden House proposed to be erected in England.

took the matter into their own hands they were gravely disturbed at finding that only 180 of the 500,000 houses to be built under the national programme were actually occupied. The number of houses in course of erection is 10,000, which, according to the estimate of the Ministry of Health, will have been increased to 100,000 by next May or June.

The Cabinet have at last recognized that in this matter time is not on their side. They are now confronted not only with the original problem, but with two new factors of a serious character. The first is that, with every week that passes, the deficiency in housing accommodation becomes more acute. The position, in fact, is much worse to-day than it was 12 months ago. In the second place, building is a seasonal trade, and, with winter setting in earlier

than usual, progress would in any case have been slow in the next few months.

As 30 per cent. of the trade is engaged in the building or extension of industrial and commercial premises, only 10 per cent. is left for the provision of new houses. This balance must be redressed before any real progress can be made.

The third head under which the Cabinet Committee is pursuing its inquiry is the paramount question of finance. The only local authorities who have got to work on housing schemes are those which have been able to raise the necessary money. A subsidy of £150 per house has been proposed to builders.

New methods of house construction, involving the extensive use of concrete and timber, have been approved by the Ministry of Health.

A number of firms have submitted proposals for the provision of houses largely constructed of concrete. The houses are in each case to consist of a living-room, scullery, bath-room, and three bedrooms, and the Ministry's plans for north and south aspects are complied with, and the proposed period of loan in each case is 60 years.

Proposals have also been approved for timber-framed bungalows, each to be built according to the Ministry of Health plan, providing for a living-room, scullery, bath-room, and three bedrooms. The period of loan in each case is 40 years.

It is now possible to order a standardized wooden house by post, have it delivered on the site in sections, and erected ready for occupation in a month.

Durie Hill Garden Suburb Scheme, Wanganui.

We regret that in the article published in our November issue dealing with the Durie Hill Garden Suburb scheme at Wanganui, which covers an area of 65 acres—the first Garden Suburb scheme in New Zealand—Mr. Hurst Seagar, F.R.I.B.A., is stated merely to have reported on the scheme. The fact was, as was generally known at the time, that Mr. Seagar was the author of and solely responsible for the scheme and the planning and the lay-out of the suburb, including the roads, and that his report as set out in our article, was the detailed description and explanation of his scheme, and the plan that accompanied the article. Mr. Seagar's name appeared in the margin of the original plan as its author, but in the preparation of the block that margin was cut off, and the plan as supplied to us unfortunately did not bear his name.

Mr. Seagar is doing excellent work in England in connection with the Town Planning movement, and read a paper at the International Garden Cities Conference on "The Garden City as an Industrial Unit," a good part of which appears on another page in this issue. He has prepared and dispatched to the New Zealand Government a fine collection of photographs and copies of the best War Memorials in England, and is now engaged in the preparation of a permanent collection of Town Planning Exhibits for the Dominion.

BUILDERS' COSTS AND ESTIMATES.

By R. A. DERRICK.

(Concluded).

The weekly pay rolls are totalled and checked and extended on the morning of pay day, and they should then be up to date to the evening before pay-day. This is standard practice, and it will be seen that the keeping of these labour costs does not hold up the work on pay-day, but helps it on immensely. All of the hard work of pay-day is done in small pieces during the week.

A word might be said here about the extending of pay sheets. Workmen are rightly very touchy on the question of wages. If errors occur in working out the amounts (as they are very liable to) no end of dissatisfaction is occasioned. It pays handsomely, in time, and in satisfactory relations with the men, to use a good ready reckoner for wage calculations. A really good and reliable ready reckoner can be obtained from a bookseller for a couple of shillings, and it will save that in time the first day it is used, and be a clear profit-maker thereafter.

Just before leaving this question of time sheets, it may be well to restate the advantages to be obtained by using the daily time sheets here advocated. It is well known that many builders regard this as impracticable and unnecessary. Their use confers the following advantages:—

- (1) *Men do not put off making up time sheets—they can't.*
- (2) *Costing is easy if done daily, and a short period of time spent at this work daily is better than a long period spent weekly.*
- (3) *Immediate costs are available.*
- (4) *The foreman's supervision of the time sheets is worth something, for he has them before he has forgotten the work he had given to the men.*

Recording of Costs.

For the recording of costs nothing is better than the card system, though books specially ruled may give satisfaction. Such books must contain provision for date, cost unit symbol, name (of firm, article or other facts wanted), and a money column for costs. As all these columns are narrow ones, there is room in the ordinary book for three or even four sets to the page. All the cost units of one contract will often go on one double page, or three or four pages at the most.

Cards are, of course, much more elastic. Their use makes for quicker work, greater convenience in working, and economy. As costs units are finished and duly checked up and recorded in the job cost

record, the cost unit card can be removed from the active file, and transferred to another file for reference when determining rates for use in estimating. Thus, if there are ten jobs in progress, there will be ten cost unit cards for the cost unit "C.R.F." or roof framing. When the jobs are finished, these ten cards will have been transferred, one by one, to the reference file, and by looking at them it is possible in a few minutes to see how much each of the ten roofs cost for labour (or material) in total; how many hundred square feet of area was covered by each, and how they each worked out per 100, or for any other unit of measurement desired. A basis of comparison is thus available, without trouble in hunting through heavy cost ledgers and similar books. The information so gained is, of course, invaluable in making up future estimates, which would be based on actual costs and not on guess-work.

Costing cards may be ruled with provision for a heading giving name of subdivision and name of cost unit. It is best to adopt a separate colour for each of the five main subdivisions and another for sub-contracts. The three carpenters' subdivisions may be related colours—as yellow of different shades, etc. The use of colour in this way greatly facilitates reference and the sorting of cards is made very easy indeed. The body of the cards may be ruled with columns for date, particulars, estimated cost, actual cost, and then two more columns for showing the loss or the gain, as the case may be, on each item in the cost unit; that is, loss by cost above estimate, or gain by cost below estimate. These are facts the contractor must know, for each individual cost unit, before he can know accurately how he is coming out on the contract as a whole.

Provision should also be made for reducing the costs to standard rates, as cost per square foot for joinery, cost per hundred square feet for flooring, weatherboarding, etc.

The size of the cards to be used is a matter that will come up very early for decision. It must be remembered that the equipment for card systems—cabinets, and guide cards, etc.—is made in standard sizes, and if the card adopted does not conform to these standards a good deal of extra money and delay will be incurred in having fittings and equipment made to special order. Cards may be 5in. x 3in. or 6in. x 4in. or 8in. x 5in., etc, but for most businesses the most generally useful size is the 5in. x 3in. If a cost unit is large, it may occupy both sides of the card, or even two cards, pinned together. This will seldom be necessary, and most cost units will fit easily on one side of a 5in. x 3in. card, the fittings for which are, of course, a good deal cheaper than those for the larger sizes. On these matters it is best to consult a firm specialising in card equipment before getting the cards prepared.

The arrangement of the cards is not difficult. They must, of course, be indexed. Without an in-

dex a card system is a delusion and a snare. With a good index it is the most efficient form of record yet devised. The form of index usually adopted is a set of "guide cards," which are cards of stout material, cut with a tab projecting above the normal level of the cards, so that a name of subdivision or other index reference may be printed on it, and be always visible.

The subdivision of the guides is important. First of all, the cards must be filed under the headings of the main sections of the work, as carpenter, bricklayer, labourer, etc. These are then to be subdivided, with guide cards, in the same way as they were in a previous article, for cost units. The individual cards are then filed behind the guides, and it is easy to find any one of them quickly.

Guide cards are cut so that the tabs progress from left to right on successive cards. They may be, for 5 x 3 cards, either "3-cut" or "5-cut," which means that you may buy guides whose tabs are either one-third of the width of the cards or else one-fifth of the width of the card. It is best to get guides specially cut, for they will not all be wanted if a set is purchased. In dealing with guide cards we say that the tabs which are at the extreme left of the file are in the "first position left," the ones which are next to them are in the second position, and on on to the right-hand tabs, which are in the fifth position (right) for 5-cut cards, and in the third position (right) for 3-cut cards. Only the first three positions in a 5-cut series will be useful in our cost file. The first position will be used for guides showing the name of the main section of work represented by the cards behind it. The second position will be used for guides showing the main sections of each subdivision. Thus, there would be four guides in the second position behind section "C," carpenters' work, in framing, floor framing, wall framing, roof framing, and sundries. The third position would be used for guides showing the location of the cost cards of each contract. If there are three contracts running concurrently, there will be three guides behind each of the second position cards.

With an arrangement of guides such as we have described, it is possible to quickly refer to any cost card files in the cabinet. If the card for fixing window jamb (F.W.J.) is wanted, for contract No. 3 refer to guide card "F" in the first position, guide for windows in the second position, guide for contract 3 in the third position, and there is the card you are looking for. These operations are, of course, much quicker in practice than they sound in description.

In front of each subdivision it is well to keep a key card, on which is written the symbols and names of the cost units for that subdivision, so that it may be referred to should memory fail. Such a card may be a distinguishing colour or else the guide itself may be used for the purpose.

Only cards which are actually in use should be kept in the active file. Cards for cost units not yet started should be filed elsewhere till needed, and cards for cost units which are completed should be promptly removed, and filed as previously indicated. Nothing so increases the labour of running a card file as the presence of "dead" or inactive cards, each of which must be examined in looking for a card that is wanted.

Total unit costs may be transferred to a cost summary card, or to a contract cost summary book. Perhaps the latter is preferable. There should be four money columns—one for estimated cost, filed in at the commencement of the job; the second for actual cost—this is filled in as each cost unit is completed and the card transferred; the third and fourth money columns are for loss and profit respectively, as previously described. As the actual cost of each cost unit is entered, the difference between it and the estimated cost is entered in one or other of these two columns. To know definitely how the job is "panning out" the contractor has only to total these two columns, subtract the lesser total from the greater, and then add or subtract the difference and his estimated profit. The columns referred to are easily totalled, for the entries will probably be small amounts (or should be if the estimating has been worth the name).

Summing the whole matter up, if the contractor gets his invoices promptly, uses such a system of time sheets as has been described, and posts the figures which these documents, and others like them, give him, regularly, to an adequate cost book or card file, summarising to the cost summary as each cost unit is completed, he will have immediate and reliable information about the cost of his work, and the profits he is making. Having installed the cost system, all that is necessary is regularity of work and accuracy in copying and figuring, and the figures cannot fail to be of the greatest possible value, both at the present time and for reference in connection with the estimating of future jobs.

Sawdust Stops Fire.

Recent experiments went to prove that sawdust is useful as a fire extinguisher. It was found to be very successful in quenching fires in oil, and much superior to sand for fires in tanks of inflammable liquids. Experiments were conducted with tanks of burning lacquer; though the same principles appear to apply largely to tanks of burning oil. The floating sawdust forms a blanket that shuts off the air from the flames, and sawdust itself catches fire only slowly, and then does not burn with a flame. The sawdust blanket was completely successful in putting out the fires in these tests. It made no difference whether the sawdust was wet or dry.

SAWMILLING SECTION.

[This Section is published by arrangement with the Dominion Federated Sawmillers' Association (Incorp.) in the interests of the Sawmilling Industry of N.Z.]

Editor: W. T. IRVINE.

In another column we publish a statement prepared by the Rangitikei Co-operative Timber Co., Taihape, for the Board of Trade, which shows the exports of timber made by that Company to Australia for the past six years. Of the total quantity exported it will be seen the bulk is white pine, and that ordinary building timber only figures at 2,330,000 feet, or an average of about 400,000 feet per annum. A statement of this kind compiled from authentic records should effectually silence the foolish talk indulged in by interested parties who are wholly ignorant of the facts, but use the argument that because of the exportation of so much building timber they cannot obtain supplies for local needs, and our own people are suffering for the benefit of Australia. The shortage of timber is attributable to a variety of causes, chief amongst which may be mentioned the scarcity of labour during the war period, with the consequent lessened output of the mills that carried on; the fire that destroyed a number of mills in the Raetihi district; the fear that if new mills were started plant, equipment, and men would not be forthcoming to run them, and last but not least, the restrictions with regard to limitation of price and export. During the war period, too, it must be borne in mind that the erection of dwellings almost ceased for a time, and there can be little doubt the limit of 8 per cent. on capital value by way of rent return, was too low to induce any one to build for speculative purposes. If a fair return can be obtained for timber produced from the less accessible milling areas, and labour becomes more plentiful, we may hope to see mills erected that will help to ease the present shortage.

* * * *

The Australian Commonwealth proposed alterations in the Customs Tariff provide for an increase of duty on timber other than that used for the purpose of box making for the dairy industry. This would mean that rimu and white pine used for building purposes would be placed on a level with other timbers and if the previous duty on these is maintained, would be subject to an increase of 2s. 6d. per 100ft. super.

* * * *

In the turmoil of unrest throughout the civilised world no problem of greater moment stands out so prominently as the relationship of Capital and Labour, employer and employee, and we notice that

the N.Z. Federated Employers' Association has taken the matter up and called a conference, to which delegates have been invited, for the purpose of considering it and if possible finding some reasonable solution. From the employers' point of view, it must be increasingly clear many of our old ideas must be swept away, and that a definite interest under proper safeguards should be given to workers who assist in bringing about the results that capital looks for continually. On the part of the employee "go-slow" methods must end if he is to reap the benefits he looks for, but unfortunately too often tries to obtain by "direct action" or some other method that must in the end defeat its own object. In the interests of the community as a whole, the best brains of the country could not be devoted to a more worthy subject, and we shall look forward with great interest to the outcome of this conference.

* * * *

In connection with re-forestation in N.Z. it is stated that "probably on the whole the most useful advocacy of a better forest policy has come from a few timber merchants and millers, alarmed at the approaching extinction of their industry. It was the millers and hardwood dealers of New South Wales that at last brought about the adoption of a national forest policy in that state. As is pointed out when speaking of white pine, if every dairy-farmer would join the Forest League, there would be no more talk about getting butter-box timber from Siberia. And if every miller and bushman would do the same, there would be no fear of the extinction of their great industry."

* * * *

The milling of *pinus insignis* for rough boxes proceeds apace, and we hear of "stands" producing up to about 300,000 feet to the acre. This should be an inducement to farmers and others to go in for planting this quick-growing fir.

* * * *

The crop of apples in the Nelson district is so prolific this season that the estimate of the box makers is proved to have been only about one half of the actual quantity of timber required, and the manufacturers are in trouble to fill their needs and keep pace with the quantity of boxes demanded by the growers of the fruit. Hitherto shorts and rough timber have been supplied by the local mills and the West Coast for this purpose, but enquiries have lately been made to obtain supplies from the North Island.

The Diggers' Sawmilling Company.

The Hons. Sir William Fraser, D. H. Guthrie, and J. G. Coates were present at a meeting of the Ministerial Repatriation Board held lately. A great deal of business was transacted, including the passing of 137 loans to returned soldiers, totalling £33,000.

One outstanding case which received a kindly hearing was a proposal from a dozen men to form a Diggers' Sawmilling Company to operate on the West Coast. It was decided to grant each of the men a loan of £300, and to arrange with the Forestry Department for the issue of a license to the company to cut timber over 630 acres of land about five miles from Hokitika. This block, which contains from 9 to 12 million feet of good white pine timber, has been eagerly sought by other millers, but the returned soldiers have been given the preference. The necessary plant will cost the company £4000. An interesting fact in connection with the Diggers' Company is that the men all belong to Hokitika, and have known each other from boyhood upwards. The proposition is one which had the hearty recommendation of the Hokitika Repatriation Committee.

Statement of Output of Ordinary Building and White Pine Timber produced by the Rangitikei Timber Co., Ltd. (Taihape), for six years ended January, 1920, showing quantity exported.

½-Year Period.	Total Output.	Ordinary Timbers.	White Pine.	Shipments.
July '14	17,482,986	16,294,986	1,188,000	923,000
Jan. '15	11,024,826	9,834,226	1,190,600	761,000
July '15	13,918,524	12,728,524	1,190,000	344,200
Jan. '16	15,017,427	13,500,520	1,516,907	1,095,400
July '16	13,899,702	11,928,902	1,970,800	109,800
Jan. '17	12,712,153	10,165,186	2,546,967	480,500
July '17	13,316,962	11,034,162	2,282,800	531,762
Jan. '18	14,341,128	11,681,328	2,659,800	611,542
July '18	12,211,378	10,278,578	1,932,800	433,608
Jan. '19	12,840,855	10,252,155	2,588,700	332,948
July '19	14,989,339	12,203,076	2,786,263	621,776
Jan. '20	20,123,907	16,476,965	3,646,942	1,986,408
	171,879,187	146,378,608	25,500,579	8,231,944
Summary of Shipments:—				
	White Pine	.....	5,901,911	
	Rimu	.....	1,781,313	
	Matai	.....	548,720	
			8,231,944	

Decrease in Lumber Consumption in Australia.

From a total of one billion feet in 1913, the annual lumber consumption of the Commonwealth of Australia has declined steadily, until the consumption for 1918 amounted to slightly more than one-half the pre-war figure.

The decrease has been chiefly in imported woods, Oregon pine, redwood and Baltic lumber. The native lumber industry of Australia since 1913 has been fairly steady. While the production dropped from 684,890,000 feet in 1913 to 444,955,000 feet in 1917, there was a corresponding decrease in Australian ex-

ports, from 121,252,000 feet in 1913 to 35,829,000 feet in 1917. The export figures when deducted from the total native production figures, shows the home consumption to be on a comparatively stationary basis, even during the trying days of the war.

A clearer idea of the relation of the consumption of native woods to imported is to be had from an inspection of the table below. It demonstrates that Australia uses considerably more home-grown timber than imported, a fact that is not generally recognised by the United States.

Australian Lumber Consumption (Feet B.M.)

Year.	Home-grown.	Imported.	Total.
1913	548,713,000	455,590,000	1,004,303,000
1914	568,605,000	326,248,000	894,853,000
1915	448,224,000	257,079,000	705,303,000
1916	436,502,000	200,451,000	636,953,000
1917	*400,000,000	169,981,000	569,981,000

*Estimated.

United States Supplies Half of all Imports.

The United States supplies Australia with one-half of her requirements of foreign soft woods. New Zealand comes second, with her exports of rimu and white pine, largely for food containers. Following in importance are Norway, Sweden, Canada, Japan, and Russia. The following tables show the imports from the various countries for the years 1912 to 1917, inclusive:—

Australian Lumber Imports. 1912.

	Feet B.M.
United States	231,840,000
New Zealand	93,602,000
Norway	49,959,000
Sweden	30,980,000
Canada	13,699,000
Japan	11,912,000
Russia	9,270,000
All other	3,090,000
Total	444,352,000

1913.

United States	258,295,000
New Zealand	64,488,000
Norway	62,584,000
Canada	13,277,000
Japan	15,998,000
Russia	11,140,000
All other	1,518,000
Total	456,794,000

First Six Months of 1914.

United States	130,777,000
New Zealand	41,655,000
Norway	32,776,000
Sweden	18,343,000
Canada	3,641,000
Japan	2,560,000
Russia	2,482,000
All others	1,066,000
Total	233,300,000

1914-1915.

United States	172,896,000
New Zealand	71,025,000
Norway	49,440,000
Sweden	14,147,000
Canada	3,346,000
Japan	12,576,000
Russia	3,302,000
All others	2,199,000
Total	328,931,000

1915-1916.

United States	140,954,000
New Zealand	75,255,000
Norway	18,409,000
Sweden	9,352,000
Canada	654,000
Japan	12,425,000
Russia	212,000
All others	2,884,000
Total	260,146,000

1916-1917.

United States	111,726,000
New Zealand	76,616,000
Norway	3,315,000
Sweden	26,000
Canada	1,700,000
Japan	8,665,000
Russia	—
All others	2,462,000
Total	204,510,000

1917-1918.

United States	85,927,000
New Zealand	64,469,000
Norway	—
Sweden	—
Canada	11,986,000
Japan	1,999,000
Russia	—
All others	5,748,000
Total	170,129,000

Baltic Stock out of Market.

At the present moment the American exporters have but little competition from the Baltic producers, since the imports of Baltic lumber into Australia have been small since 1915.

Dealers in Australia, however, are looking forward to heavier trading with the Scandinavian manufacturers in 1920.

Prior to the war there were regular subsidised lines plying between the Baltic and Australia. The distance is in round numbers about 12,000 miles. The rate on sailing vessels carrying one to two million feet from Sydney and Melbourne was 35/- to 70/- according to port of loading and the freight market, using Gothenburg and Fredrickstad as a basis. Partial steamer cargoes, 57/6. The Baltic

rates were the cheapest lumber rates in the world, equivalent to 2/6 per 100 superficial feet.

The lumber rate from Sydney to Melbourne, a distance of 500 miles, is 5/- per 100 feet. The freight from New Zealand to Melbourne, 1500 miles, is 10/-. By comparison, the exceedingly low lumber rates from the Baltic will be noted. The present rate from the Pacific Coast lumber ports to Sydney is 37.50dol.; it was formerly about 10dol.

Domestic Timbers have Advantage.

Although the cost of producing domestic timbers in Australia is high, owing to scarcity and inefficiency of labour, the home-grown product sells very much lower than the imported.

As, however, the local timber industry is carried on in a comparatively primitive manner, due to the comparatively sparse forests, inaccessibility and difficulty of bush transport, most distributors will welcome the time when prices and other conditions will allow the importation of foreign timbers.

Forestry Research in Sydney.

A committee consisting of Professor R. D. Watt, of Sydney University (Chairman), Mr. Norman Fraser, of Bell & Fraser (commercial member), and Messrs. R. Dalrymple Hay and N. W. Jolly, Forestry Commissioners, has been appointed by the Government to carry on the forest research work. Details as to the scope of their undertakings and the manner of working are left entirely to the committee, which will be financed by the Commonwealth and State Governments jointly on the basis of pound for pound, not exceeding £500 each in the first year, nor £1,000 each in subsequent years. While this cannot be regarded as by any means an extravagant expenditure, the financial limits will not detract from efficiency, particularly if the need for setting up a special laboratory can be overcome by the agricultural laboratory at the University being opened to the committee. The general direction of the inquiries and tests is to be the determination of—

The pulping and paper making qualities of indigenous woods and material;

To find by distillation the tar, oil, gas, acids, and other properties of indigenous woods;

Investigation of starch, spirit and other values in forest products;

Investigation of chemical properties of gums, resins and saps;

Investigation of fibre values of forest material.

This for a commencement will make a fairly full programme, but one which will be capable of expansion as occasion may arise, and in any case the headings quoted suggest a condition of elasticity which should satisfy the ambitions of the most optimistic among us. The point of the subject is that a practical start has been made—another step has been taken towards placing Australian forest management upon its proper plane.

Australian Import Tax on Timber.

Advice has been received by private cable from Melbourne that the recently revised Commonwealth tariff includes a substantial increase in the import duty on New Zealand timber to Australia. Hitherto the rate for white and red pine has been one shilling per 100ft. The new duty is 3s. 6d. per 100ft., with the exception of white pine used in Australia solely for the manufacture of butter boxes.

Board of Trade Act, 1919.

The following is a digest of the New Zealand Board of Trade Act, 1919, prepared by Mr. F. Cooper, Secretary to the Canterbury Employers' Association, and published for general information.

The Board of Trade Act, 1919 (Nov. 4, 1919), is designed to make better provision for the maintenance and control of the industries, trade and commerce of New Zealand.

The Act provides that if you are engaged, for profit, in any trade, business, profession or undertaking, you may be called by the Board of Trade—which consists of the Minister for Commerce and four others, three to form a quorum—to answer any question, and produce any books or documents in order to satisfy the Board whether you are obtaining more than is deemed by it to be a fair and reasonable profit, or whether you are destroying or hoarding goods or refusing to make them available for sale, in order to enhance the value of other similar goods to the public. Regulations may make it an offence to differentiate in rates for goods or services as between different persons or classes of persons.—Sections 2, 6, 14, 32 (3), 26 (1a).

An inquiry either for prosecution or investigation may be held at the instance of the Board on its own initiative, or by reference from Governor-General, or at the instance of any person.—Section 13.

The Board may do this either in its own corporate capacity or through association of experts, who may be your competitors. Failure to comply with requests of Board as to evidence, production of books, etc., is an offence punishable by a fine of £100 or three months' imprisonment.—Sections 17 (1), 18 (1).

Offenders against any trade regulation shall be liable on summary conviction before a magistrate to a fine of £200 or three months' imprisonment under one section; £1000 penalty under another section.—Sections 30 (1), 31 (1).

Offenders against regulations in respect of selling, supplying, or offering to sell or supply any goods at a price which is unreasonably high are liable in the case of persons to £200 fines, and in the case of corporate bodies to £1000. The offence may date back three years or five years.—Sections 32 (4), 30 (3).

No prosecution shall be instituted except with the consent of the Board of Trade.—Sections 31 (10), 30 (2).

The Board has power to fix maximum and minimum selling prices.—Sections 32 (6), 21 (10).

The Board must investigate privately, but may publish facts, and is free from action for defamation. The Board may issue inquiries to be answered by letter to a time and in a form required. Refusal to comply or false information, is punishable by a fine of £100; deceit or obstruction, £100 or three months' imprisonment. The information is confidential, but the Board may publish, and publication is privileged.—Sections 21, 23 (2), 23 (4), 23 (5), 23 (6).

Subsidy to Builders in England.

The subsidy to builders of £150 per house that is referred to elsewhere in this issue, seems to have aroused a deal of opposition in some quarters. Major Barnes, in speaking in the English Parliament on the subject, complained that by this proposal the jerry-builder and the speculator were to be subsidised. He insisted that the pressure which had produced the Bill came from landowners and land jobbers who had got land on their hands which under the Housing Act was unsaleable. Mr. Lorden, a London builder in a large way, expressed the hope that the application of the Bill would be so extended as to encourage the building of middle-class houses, of which there was just as great a scarcity as of working-class houses. He warned the Government that, instead of the middle-classes going up to better houses, they would have to come down to the houses proposed to be erected under the Bill.

Sir J. Tudor Walters, who replied for the Government, gave away the whole case for the original Act. He is the new broom whom the Prime Minister has appointed to clear up the housing muddle. He gave it as his opinion that they could get their 100,000 houses built by men who were not contracting for local authorities, and at least 70 or 80 per cent. of the men they employed would be a new contribution to the housing construction of the country. As for the local authorities' housing schemes, he believed there was never so much profiteering in the building trade as was going on under them. Three classes of people were profiteering—the people who supplied the materials, the contractor who was carrying out the work, and the workmen who were laying the bricks. He affirmed his belief that any contractor who wanted to could build these houses for at least £300 less than they were doing to-day.

After this candid confession—and several appeals to the Government to encourage the building of wooden houses on the Canadian model—the House had no alternative but to vote the second reading without a division,

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"Progress" will be pleased to have its friends contribute from time to time, their experiences. If you have any new ideas, or old ones for that matter, they will be welcomed. Let us hear from you.

—EDITOR.

Building Notes.

Messrs. Hoggard, Prouse, and Gummer are calling for tenders for a new building for Messrs Huddart, Parker, and Co., to be erected in Quay Street; and Messrs. Chilwell and Trevithick have in hand a new building for Messrs. Burns, Philp, and Co.

Messrs. N. Wade and A. M. Barclay are calling for tenders for the following: Offices in brick in Shortland Street; alterations to Carlton Club, Newmarket; electric light installation, King's Chambers, Queen Street; premises in brick, Federal Street.

Mr. W. A. Cumming invites tenders for a new block of buildings, and additions to the east wing (in timber) for the Girls' Grammar School at Epsom.

Messrs. Grierson and Aimer invite tenders for the erection of two Boys' Homes in brick at Onehunga for the Presbyterian Social Service Association.

The Ellerslie Racing Club has let a contract for its new grandstand for £66,000.

CHRISTCHURCH.

Messrs. J. S. and M. J. Guthrie called for tenders for a soldiers' memorial to be erected at Doyleston in, concrete. The same architects invite tenders for additions to a picture theatre at Lyttelton, and residence in brick, Lower High Street.

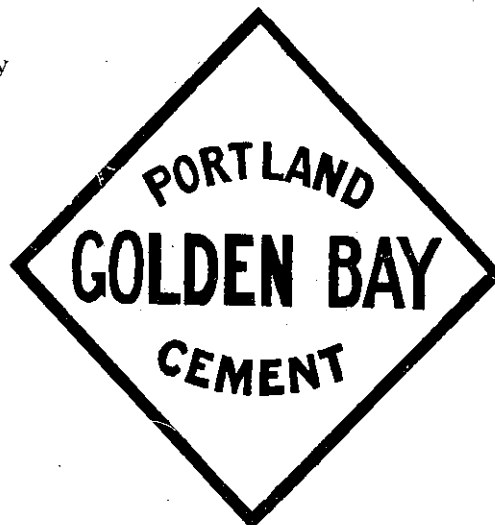
Messrs. Walter Panton and Son, of Timaru, invited tenders for the erection of additions to offices, Hereford Street, Christchurch, for the N.Z. Refrigerating Co.

Messrs. Greenstreet and Anderson invite tenders for the erection of a bungalow at Hawkins.

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CANTERBURY AGENTS

Mr. H. St. A. Murray invited tenders early this month for a motor garage for the Canterbury Motor Co., Tuam Street.

The Public Works Department invited tenders for a post office at Papanui, and the Education Board invited tenders for two class rooms in brick for the Linwood School.

HAMILTON.

Mr. H. L. White invited tenders for a two-storey residence in timber.

MASTERTON.

Messrs. Watson and Gooder invited tenders for the erection of a new school in Pownall Street for the Trustees of St. Matthews School for Girls, and a garage in Queen Street for Reliable Motors, Ltd. The same architects have in hand a residence in Essex Street for Mr. T. Ross.

PALMERSTON NORTH.

The P.W. Department, Wellington, invited tenders for the erection of a new police station.

TAUHIRI.

The P.W. Department invite tenders for the erection of a post office.

WESTPORT.

Messrs. Collins, Harman, and Munnings, of Wellington, invite tenders for a technical school and workshops at Westport.

ENGINEERING TENDERS.

The Auckland Gas Co. invite tenders for the supply and delivery and erection of structural steel Telfer track at the company's works, Beaumont Street.

The Wanganui Hospital and Charitable Aid Board invite tenders—(1) for a 50 h.p. suction gas engine, direct coupled to 25 k.w. 220 volt generator; (2) a switchboard and feeder panel; (3) alternative battery (a) 1 300 amp. hr. 220 volt (116 cell leaden battery), (b) 1 300 amp. hr. 220 volt (190 cell Edison battery).

Patents of Interest to Builders.

Reinforced Concrete Floor Construction.—A patent, No. 42,266, has been taken out by H. L. Barraclough, Grosvenor Road, London, S.W. According to this invention, the floor is constructed of a plurality of reinforced concrete inverted T-shaped girders or beams, provided towards the centre with small flanges on the tops of their webs and widening towards the centre, laid in position contiguously, with a filling of concrete between the

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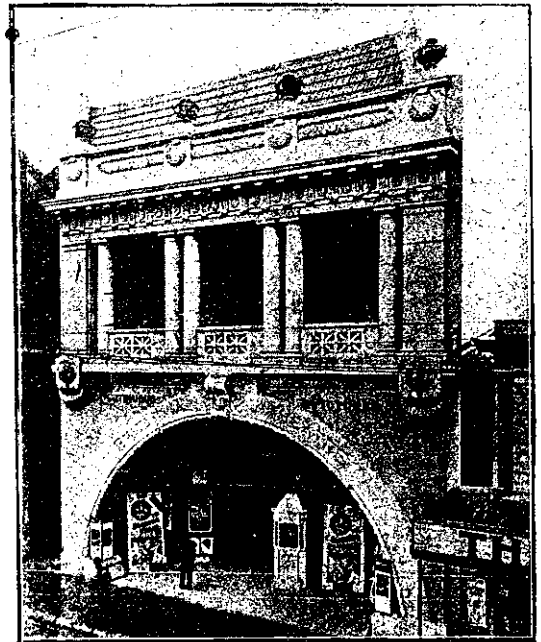
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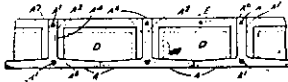
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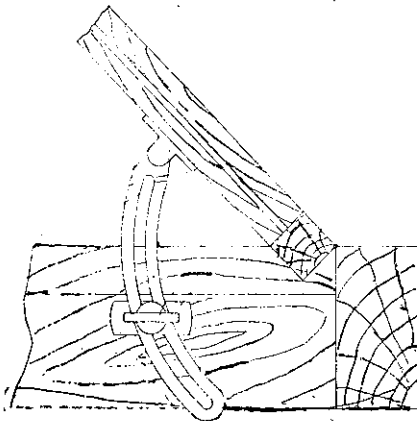
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beams, and with or without inverted pots, filler-blocks, or other void-forming means between them. The girders or beams are cast with reinforcements at the works, the tops or upper parts of their webs being made towards the centre with flanges of increasing width towards the centre to take up the extra strain of the compression at the centre of the flooring. The girders or beams can be all placed in position, and the inverted pots or other void-forming means, when such are used, can be slid



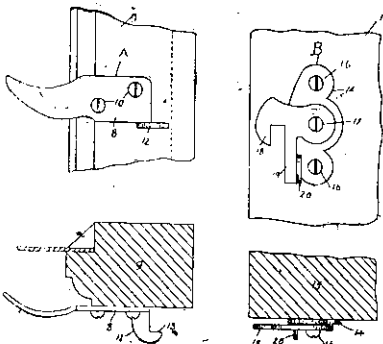
from the ends of the floor between the beams or girders under the gradually widening tops or upper parts; or the beams and posts or other void-forming means may be laid down alternately. When all are in position the spaces between the girders and the pots or void-forming means, and above the pots or void-forming means, are filled with concrete in situ. If required, the floor may be reinforced longitudinally between the girders and the pots or void-forming means.

Casement Window Fastener.—A patent, No. 40,641, has been taken out by J. W. L. Wanan, Customs Street, Auckland, which consists of a radial window-stay with



a bar of circular shape which passes through or around the clamp or screw-plate on window-sill, which is held in position by a wing-nut.

Casement Window, Etc., Latch.—A patent, No. 42,218, has been taken out by Messrs. Gilberthorpe, Miller, Watt, and Elder, of Pitt Street, Sydney, which invention comprises two members, one of which may be



termed the bolt and the other the latch; the former is attached to the casement or door, and the latter to the inner face of frame. The bolt-member consists of a plate adapted to be attached to the casement or door, and

having at one end an elongation or knob to form a handle to operate the casement or door, and at the other end a right-angular projecting finger having one edge curved and the other notched. The latch-member consists of a base-plate adapted to be screwed to the window or door frame, and having a swinging counterbalanced hook pivotally attached thereto.

Walls, Floors, or Roofs, Indicating Movements in.—A patent, No. 42,230, has been taken out by G. D. Hodges, Adelaide Street, Brisbane. This machine is constructed preferably of suitable metal tubing in two lengths, one capable of telescoping within the other, but kept extended by an internal spring. At both extremities are either pointed shoes or jointed flat plates with spikes so that the device can be used either vertically, horizontally, or at an angle. On the tube of larger diameter and at a convenient height is provided a box of wood, metal or other suitable material, which is attached to the tube by a set-screw or other means. This box carries an electric bell, a red electric lamp, and, preferably, a dry-cell battery with the necessary fixed terminals. The contact-maker is adjustable on the smaller tube, and when in place is brought almost in contact with the box

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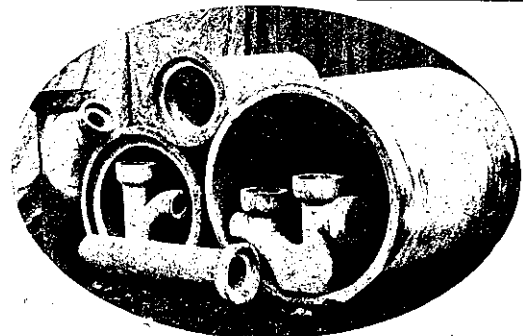
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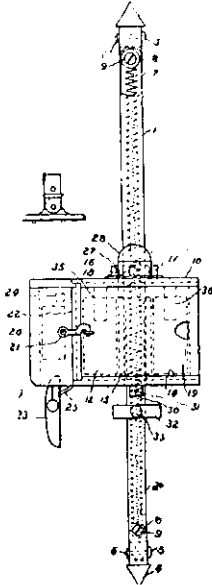


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contact on the larger tube. When necessary the shoes can be removed and jointed shoes use in their place. Owing to the variation in the height of roofs different lengths of extension pieces are provided, which fit in after removing the top shoe; by this means the mechan-



ism is always handy at a convenient height. The smaller tube is graduated so that the slightest movement can be observed whether the bell rings or not. The battery is preferably of the dry-cell type, with one fixed contact at the back of the box and the other—that operated by the

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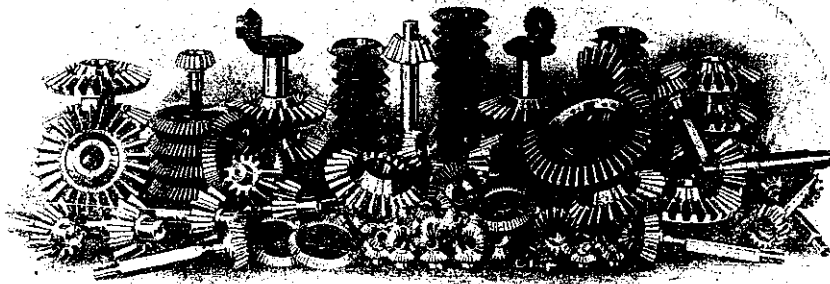
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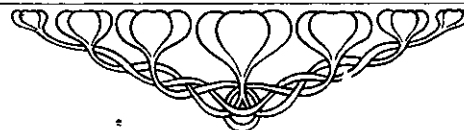
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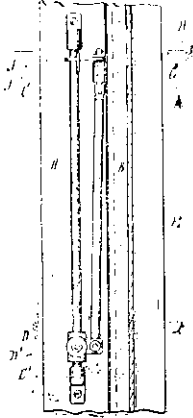


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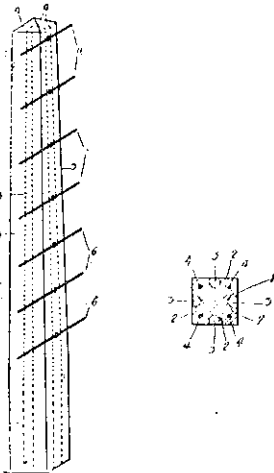
movement of the smaller tube—in the bottom, and so protected as not to be liable to cause an explosion by sparks. When the adjustable portion of the contact on the smaller tube has been fixed, any movement of the floor, roof, or walls, as the case may be, will cause the closing of the circuit, ring the bell, and light the lamp.

Caseament Window Stay.—A patent, No. 41,481, has been taken out by Messrs. E. F. Willoughby and E. B. M. Revill, of Wellington, which, according to this invention, the stay is composed generally of two main members—a runner-bar that is fastened to the window-



frame in a line parallel with the plane thereof, and a stay-bar that is pivoted at one of its ends by a universal joint to the sash and at the other is pivoted to a sleeve mounted to slide along the runner-bar and adapted to be locked thereto at any point.

Constructional Concrete and the Like.—A patent, No. 42,411, has been taken out by T. Creedon, of Mt. Eden, Auckland. The post 1 is made of hard concrete and cast with longitudinal grooves 2 on each face, and these grooves are filled with the breeze or pumice concrete or the like 3 after the cores have been removed from the



mould. Reinforcing rods, wires, pipes, or the like 4 are cast in the post to give the necessary strength. Staples 5 are driven into the softer concrete 3 to support fencing wires 6. The staples may be withdrawn when it is desired to remove the fencing wires and redriven when the wires are replaced.

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